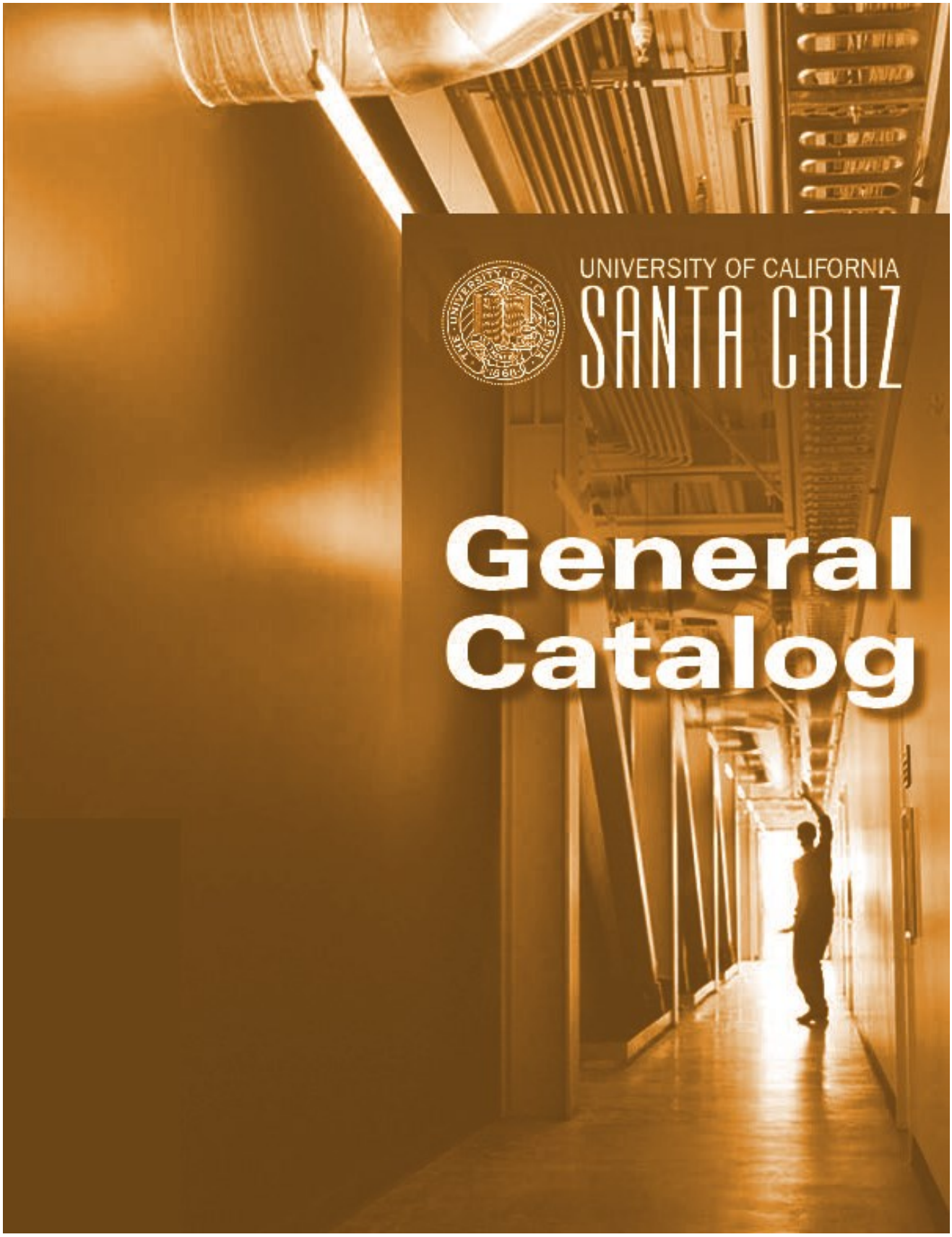

UNIVERSITY OF CALIFORNIA
SANTA CRUZ
General
Catalog

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2025-2026 UCSC General Catalog

WELCOME TO UC SANTA CRUZ

Welcome to UC Santa Cruz!

The student experience at UCSC is unique, fusing high academic standards with a passion for transformative engagement in the world. UCSC is ranked as a top public university for students seeking to make an impact. The student experience is shaped by exceptional faculty whose work is at the forefront of their fields and who are invested in helping students grow their own intellectual interests. As a result, UCSC is routinely ranked among the top universities in the world for research excellence and impact. Our students have opportunities to collaborate with top scholars and scientists in the creation of new knowledge.

But what defines UCSC is not just academic excellence or our spectacularly beautiful campus. It is our diverse community. The motto of UCSC's first residential college is "the pursuit of truth in the company of friends." Since 1965, UCSC has been the site of innovation and experimentation about what a university community could and should be. Today, our residential college system provides flexible support and opportunities aimed at recognizing the student as a whole person and prioritizing their success. Only through community can we realize the responsibilities we have to one another, and the ways the pursuit of knowledge can improve the lives of our many communities — local, national, and global.



I encourage you to take advantage of all of the opportunities that UCSC has to offer. There is so much to learn about — from the depths of the ocean to the farthest stars and everything in between.

I welcome you to UC Santa Cruz, which is not just a place, but a community of learning that spans the world.

Sincerely,



Cynthia Larive

Chancellor

INTRODUCING UC SANTA CRUZ

THE UNIVERSITY OF CALIFORNIA

The University of California opened its doors in 1869 with just 10 faculty members and 38 students, and it has since developed into one of the world's most distinguished public university systems. Acclaimed for its research, scholarship, and dedication to undergraduate and graduate education, the UC system improves the lives of people in California and around the world through world-class educational opportunities, groundbreaking research, top-rated health care, and agricultural expertise.

Ten University of California campuses are located regionally throughout the state. The system also includes five medical centers, three national laboratories, and more than 800 associated research institutes, laboratories, agricultural field stations, and extension centers.

The University of California includes nearly 300,000 students and about 265,000 faculty and staff. More than 2 million UC alumni live and work around the world. UC faculty and staff have been awarded 71 Nobel Prizes, and 63 National Medals of Science. UC academics include more than 600 members of the National Academy of Sciences. Detailed information about the University of California's teaching, research, and public service mission is available at the University of California website.

THE UC SANTA CRUZ CAMPUS

The University of California, Santa Cruz, has earned international distinction for high-impact research and an uncommon commitment to teaching and public service. UC Santa Cruz faculty and alumni have been at the forefront of sequencing the human genome, creating the organic farming movement, unlocking the mysteries of our galaxy, and using interdisciplinary research to create a more just and equitable society. Members of the UC Santa Cruz campus community share a commitment to use their voices, knowledge, and talents to effect real change in the world.

UC Santa Cruz holds the distinction of being one of only six members of the Association of American Universities (AAU) designated both as a Hispanic Serving Institution (HSI) and an Asian American Native American Pacific Islander Serving Institution (AANAPISI), highlighting our commitment to equitable educational access and research excellence. The campus is among the founding members of the Alliance of Hispanic Serving Research Universities, which aims to increase opportunity for those historically underserved by higher education.

About 19,000 students are enrolled at UC Santa Cruz in undergraduate, graduate, and professional degree programs. The campus pairs high-impact research with 10 tight-knit residential colleges that offer undergraduate students both the experience of a small liberal arts college and the depth and rigor of a major research university. The colleges are guided by distinct themes that inform their academic and student-life programs.

Graduate education is a critical element of our research and teaching missions. UC Santa Cruz enrolls approximately 1,300 Ph.D. and 500 master's candidates in 60 graduate programs. UC Santa Cruz offers several professional master's degrees, including programs in the Baskin School of Engineering based at our Silicon Valley Campus (Games and Playable Media, Natural Language Processing, and Human-Computer Interaction) and one program on our residential campus (Applied Economics and Finance), housed in the Economics department. Among many academic master's degrees, several stand out as distinctive degrees that uniquely prepare students for careers as change-makers: our programs in Scientific Communication, widely regarded as one of the best science-writing programs in the world; Coastal Science and Policy, equipping emerging leaders to respond to complex problems with effective, practical solutions; and Social Documentation, designed for future documentarians committed to social change.

Enrollment for the 2024-25 academic year was 17,366 undergraduates and 1,888 graduate and professional students, for a total of 19,254. UC Santa Cruz strives to enroll a student population that reflects the ethnic and socioeconomic diversity of California. About 56 percent of our students are underrepresented minorities, first-gen students, and/or Pell Grant recipients.

The UC Santa Cruz faculty includes one Nobel Laureate, 30 members of the American Academy of Arts and Sciences, 17 members of the National Academy of Sciences, and 49 fellows of the American Association for the Advancement of Science. Seven MacArthur "genius grants" have been awarded to UC Santa Cruz faculty and alumni.

In fiscal year 2024, UCSC faculty and researchers received more than $194 million in external funding. More information about our distinguished faculty can be found in the UCSC Newscenter.

The 10 residential colleges are supportive living and learning communities that characterize the UC Santa Cruz experience. All undergraduate students, whether they live in university housing or not, are affiliated with one of the colleges. Self-contained and architecturally distinct, each college is a community of 1,500 to 1,800 students, about half of whom typically live on campus. In addition to housing students in small-scale residential communities, each college provides academic support, organizes student activities, and sponsors events that enhance the intellectual and social life of the campus.

Each college has a distinctive quality derived from its core course and extracurricular programs and from its faculty fellows and their academic disciplines. However, all of the colleges are interdisciplinary, and all academic majors are open to students from all colleges. Detailed descriptions of the 10 colleges can be found in The Colleges section of the catalog.

Undergraduate education

The campus offers 70 undergraduate majors in the arts, engineering, humanities, physical and biological sciences, and social sciences, as well as interdisciplinary major programs and minors. A complete list of academic programs and concentrations appears on the Fields of Study chart, and detailed descriptions begin in the Academic Programs section of the catalog.

The major and minor programs are administered by departments and colleges within the academic divisions. In most cases, departments are composed of faculty in the same field, but interdisciplinary programs draw on faculty from several fields.

Undergraduate education at UC Santa Cruz is focused on student success. For students entering in fall, preparation for success begins with the summer orientation course, a 1-credit online course preparing and exposing students to our academic and college communities. The fall college core courses give first-year students a small-seminar experience, including intensive work in reading, discussion, and critical reasoning, while also providing an orientation to academic life. New transfer students can begin in-depth engagement with UC Santa Cruz and their majors in Summer Edge for transfer students.

Original undergraduate research is encouraged, and hundreds of research papers co-authored by UC Santa Cruz undergraduates and their professors have been published in

journals. For additional information, visit the Undergraduate Research Opportunities website.

Global Engagement programs at UC Santa Cruz include Study Abroad opportunities and International Student and Scholar Services (ISSS). Global Engagement facilitates the exchange of people, ideas, and knowledge to support and promote the internationalization of teaching, learning, and research. Each year about 500 UC Santa Cruz students broaden their academic horizons through the UC Education Abroad Program (UCEAP), which enables students to incorporate full-time study abroad as UC credit toward their degrees. The UC Santa Cruz campus also strongly encourages undergraduate students to take advantage of the many opportunities for public service, such as those provided through the campus's field programs, colleges, and Career Center. Individual studies, apprentice teaching, field studies, and internships can be important parts of the undergraduate experience (see Field Programs).

Graduate education

UC Santa Cruz offers graduate study in 41 academic fields, encompassing 57 concentrations. Graduate study at UC Santa Cruz emphasizes close interaction between faculty and students, independent student research, supervised teaching experience, and interdisciplinary work. Further graduate program information is provided in the Academic Programs and Graduate Information sections of the catalog.

Research

The UC Santa Cruz campus hosts a number of major research units. UC Observatories, the Santa Cruz Institute for Particle Physics (SCIPP) and the Institute of Marine Sciences, all within the Physical and Biological Sciences Division, and Engineering's Genomics Institute conduct state-of-the-art research on topics ranging from the discovery of planets outside our solar system, to the detection of new sub-atomic particles, to the ecology of marine mammals, to understanding molecular processes and the underpinnings of disease. UC Santa Cruz is also a primary partner in inter-UC campus initiatives such as the Institute for Quantitative Biomedical Research (QB3) and the Center for Information Technology Research in the Interest of Society (CITRIS), which focus on human health and the use of information technology to solve social, environmental, and health-care problems.

Research enterprises within the Arts benefit from the Arts Research Institute and the Center for Documentary Arts and Research, while the Institute of the Arts and Sciences emphasizes interdisciplinary exhibitions, events, and residency programs.
Engineering at UC Santa Cruz has focused on strategic initiatives that include the Institute for the Biology of Stem Cells, the Center for Games and Playable Media, and the Center for Sustainable Energy and Power Systems.
The Humanities Institute is a hub for academic research, cross-discipline collaboration, and public engagement that oversees a range of topical centers, including the Center for Cultural Studies, the Center for Jewish Studies, the Center for Public Philosophy, the Linguistics Research Center, and the Dickens Project.

Interdisciplinary collaborations thrive in Physical and Biological Sciences, from astrobiology to materials science. The Theoretical Astrophysics Santa Cruz (TASC) group spans four UCSC departments involved in research in astrophysics and planetary sciences. The Center for Molecular Biology of RNA, spanning three departments, now represents the largest grouping of RNA laboratories in the world.

The Institute for Social Transformation, the Center for Agroecology, the Center for Integrated Spatial Research, the Research Center for the Americas, and the Science and Justice Research Center provide pioneering directions for research in the Social Sciences.

Beyond these organized research enterprises, UC Santa Cruz has a suite of investigator-driven research that spans the width and breadth of campus inquiry. For additional information see Resources for Learning and Research.

Location and facilities

Located in the redwoods overlooking the Monterey Bay, our residential campus is widely regarded as one of the most beautiful in the world. UC Santa Cruz includes three sites in Santa Cruz: the 2,000-acre residential campus, the Westside Research Park facility, and our Coastal Science Campus located at the edge of the Monterey Bay National Marine Sanctuary.

Our Silicon Valley Campus in Santa Clara extends the reach of UC Santa Cruz and is home to UCSC Extension, which includes UC Scout and Smarter Balanced, and houses the four Baskin School of Engineering professional master's programs. Many of the university's office and business functions are located at the Scotts Valley Center, which is about nine miles away from our residential campus.

UC Santa Cruz also manages the Año Nuevo, Fort Ord, Younger Lagoon, Strathearn Ranch, and Landels-Hill Big Creek Natural Reserves, which are part of the UC Natural Reserve System (UCNRS). These varied environments offer students, staff and faculty multiple locations in which to learn, experiment, and innovate, and provide opportunities and resources to leverage academic research to positively impact the region, the state, and the world.

The city of Santa Cruz is a well-known recreational area and center for the arts. Mild weather, miles of beaches, and many cultural opportunities combine to make Santa Cruz an enjoyable place to study and live.

Accreditation

The University of California, Santa Cruz, is accredited by the Western Association of Schools and Colleges (WASC), Senior College and University Commission, 1001 Marina Village Parkway, Suite 402, Alameda, CA 94501, (510) 748-9001, an institutional accrediting body recognized by the Council for Higher Education and the U.S. Department of Education.

Specific degree programs at UC Santa Cruz are also accredited: The Engineering Accreditation Commission of ABET, http://www.abet.org (Electrical Engineering); the

American Chemical Society Committee on Professional Training (Chemistry); and the California State Commission on Teacher Credentialing (Education). To review accreditation documents, please contact the Office of the Vice Provost for Academic Affairs, Kerr Hall, (831) 459-1349, or vpaa@ucsc.edu.

ACADEMIC PROGRAMS

BACHELOR'S DEGREES

UNDERGRADUATE MINORS

BACHELOR'S/MASTER'S

CONTIGUOUS PATHWAYS

MASTER'S DEGREES

PH.D. DEGREES

DESIGNATED EMPHASES

FIELDS OF STUDY CHART

	Undergraduate Education				Graduate Education				
	B.A.	B.S.	Minor	Certificate	M.A/M.F.A.	M.S.	Ph.D.	Designated Emphasis	Contiguous Pathway
Agroecology (p. 757)	x								
Ancient Studies (p. 179) [32]	x		x						
Anthropology (p. 655) [34]	x		x				(s)	x	
Archaeology							c		
Cultural Anthropology							c		
Biological Anthropology							c		
Applied Linguistics and Multilingualism (p. 208)	x								
Applied Mathematics (p. 509)		x	x			x	x		
Applied Physics (p. 482)		x							
Computational Physics		c							
Art (p. 41)	x								
Art and Design: Games and Playable Media (p. 128)	x								
Assistive Technology (p. 627)			x						

	Undergraduate Education				Graduate Education				
Astronomy and Astrophysics (p. 277)							x		
Astrophysics (p. 278)			x						
Bioelectronics/Biophotonics (p. 628)			x						
Biochemistry and Molecular Biology (p. 300)		x							
Bioinformatics (p. 542)			x						
Biology (p. 435) [2]	x	x	x						2, 8
Biomolecular Engineering and Bioinformatics (p. 526) [2,3]		x				x	x		2, 3
Bioinformatics		c							
Biomolecular Engineering		c							
Biotechnology (p. 538)	x								
Black Studies (p. 156)			x						
Business Management Economics (p. 680)	x								
Accounting	c								
Chemistry (p. 280) [2]	x	x	x			x	x		2
Biochemistry		c							
Coastal Science and Policy (p. 313)						x		x	
Cognitive Science (p. 843)		x							
Community Studies (p. 673)	x								

	Undergraduate Education				Graduate Education				
Community-Based Action Research and Advocacy (CARA) (p. 893)				x					
Computational Media (p. 547)						x	x	x	
Computer Engineering (p. 568)		x	x						
Computer Systems		c							
Digital Hardware		c							
Networks		c							
Systems Programming		c							
Computer Science (p. 568) [4]	x	x	x						
Computer Science: Computer Game Design (p. 547)		x							
Computer Science and Engineering (p. 568) [4]						x	x		4
Creative Technologies (p. 48)	x								
Critical Race and Ethnic Studies (p. 148) [5]	x							x	5
Data Science (p. 647)								x	
Digital Justice Studies (p. 863) [29]			x						
Earth and Planetary Sciences (p. 316) [7]		x	x			x	x		7
Geology		c							
Geophysics		c							
Ocean Sciences		c							
Planetary Sciences		c							
Earth Sciences /	x								

	Undergraduate Education				Graduate Education				
Anthropology Combined B.A. (p. 341)									
East Asian Studies (p. 185)			x						
Ecology and Evolution (p. 360)		x							
Ecology and Evolutionary Biology (p. 352) [2, 8]					x		x	x	2, 8
Economics (p. 679)	x		x				x		
Economics / Mathematics Combined B.A. (p. 702)	x								
Education (p. 716) [9, 10, 11, 18, 20, 26]			x		x		x	x	11, 18, 20, 26
Bilingual-Multicultural Education					c				
Multiple Subjects Credential (elementary)					c				
Single Subjects Credential (secondary)					c				
Education, Democracy, and Justice (p. 717) [11]	x								11
Education: Science, Technology, Engineering, and Mathematics (p. 723)			x						
Electrical Engineering (p. 608) [12]		x	x						12
Electronics/Optics		c							
Communications, Signals, Systems, and Controls		c							
Electrical and Computer Engineering (p. 608) [12]						x	x		12

	Undergraduate Education				Graduate Education				
Environmental Art and Social Practice (p. 45) [13]					x				
Environmental Sciences (p. 335) [7]		x							7
Environmental Studies (p. 737)	x						x	x	
Conservation Science and Policy	c								
Geographic Information Systems	c								
Global Environmental Justice	c								
Environmental Studies / Biology Combined B.A. (p. 763)	x								
Environmental Studies / Earth Sciences Combined B.A. (p. 770) [14]	(d)								
Environmental Studies / Economics Combined B.A. (p. 776)	x								
Feminist Studies (p. 158) [15]	x						(s)	(s)	
Film and Digital Media (p. 57)	x		x				x	x	
Critical Studies	c								
Integrated Critical Practice	c								
Games and Playable Media (p. 563) [16]						(s)			
Geographic Information Systems, Spatial Technologies, Applications and Research (p. 782)					x				

	Undergraduate Education				Graduate Education				
Global Economics (p. 696)	x								
Global and Community Health B.A. (p. 787)	x								
Global and Community Health B.S. (p. 441)		x							
Global Information and Social Enterprise Studies (p. 863)			x						
History (p. 169) [1,17]	x		x		x		x		17
The Americas and Africa	c								
Asia and the Pacific	c								
Europe and the Mediterranean World	c								
History of Art and Visual Culture (p. 74)	x		x						
Curation, Heritage, and Museums	c								
History of Consciousness (p. 202)							x	x	
Human Computer Interaction (p. 565)						x			
Human Language Media and Modeling (p. 605)								x	
Humanizing Technologies (p. 274)				x					
Innovation and Entrepreneurship (p. 893)				x					
Italian Studies (p. 243)			x						
Jewish Studies (p. 169)	x		x						

	Undergraduate Education				Graduate Education				
Language Studies (p. 205)	x		x						
Chinese	c		c						
French	c		c						
German	c		c						
Italian	c		c						
Japanese	c		c						
Spanish	c		c						
Latin American and Latino Studies (p. 793) [18]	x		x				x	x	18
Language Intensive	c								
Latin American and Latino Studies / Education Combined (p. 800)	x								
Latin American and Latino Studies / Politics Combined (p. 803)	x								
Latin American and Latino Studies / Sociology Combined (p. 807)	x								
Legal Studies (p. 816)	x		x						
Linguistics (p. 220) [19]	x		x		x		x		19
Literature (p. 243) [1, 20]	x		x		x		x	x	20
Creative/Critical Writing							c		
Creative Writing	c								
Ancient Literature	c								
French Literature	c								
General Literature	c								
German Literature	c								
Greek and Latin	c								

	Undergraduate Education				Graduate Education				
literatures									
Italian Literature	c								
Spanish/Latin American/Latino literatures	c								
Marine Biology (p. 369)		x							
Materials Science and Engineering (p. 390)						x	x		
Mathematics (p. 390) [21]	x	x	x		x		x		21
Mathematics Education (p. 406)	x								
Mathematics: Theory and Computation (p. 411)		x							
Microbiology (p. 423)		x							
Microbiology and Environmental Toxicology (p. 423) [2]		x				x	x	x	2
Molecular, Cell, and Developmental Biology (p. 434) [2]		x				x	x		2
Middle Eastern and North African Studies (p. 264)			x						
Music (p. 86) [22]	x				x		x		
Compositional Practices [30]	c								
Global Musics	c								
Western Music [31]	c								
Music: Electronic Music (p. 111)			x						
Music: Jazz, Spontaneous			x						

	Undergraduate Education				Graduate Education				
Composition, and Improvisation (p. 113)									
Music: Western Music (p. 109) [31]			x						
Natural Language Processing (p. 603)						x			
Network and Digital Technology (p. 589)	x								
Neuroscience (p. 456)		x							
Ocean Sciences (p. 464)						x	x		
Biological Oceanography							c		
Chemical Oceanography							c		
Geological Oceanography							c		
Physical Oceanography							c		
Philosophy (p. 266) [23]	x		x		x		x	x	23
Physics (p. 469) [24]		x	x			x	x		24
Quantum Information Science	c								
Physics (Astrophysics) (p. 477)		x							
Plant Sciences (p. 377)		x							
Politics (p. 816)	x		x				x	x	
Psychology (p. 830) [1]	x						x		
Cognitive Psychology							c		
Developmental Psychology							c		
Social Psychology							c		
Qualitative Economics						x			

	Undergraduate Education				Graduate Education				
and Finance (p. 708) [28]									
Robotics Engineering (p. 617)		x							
Robotics and Control (p. 637)								x	
Science Communication (p. 501)						x			
Scientific Computing (p. 518)								x	
Scientific Computing and Applied Mathematics (p. 523) [25]						x			25
Science Education (p. 490) [26]		x							26
Social Documentation (p. 57) [3]					x			x	
Sociology (p. 852)	x						x	x	
Digital Justice Studies [29]	c								
Spanish Studies (p. 213)	x		x						
Languages and Linguistics	c								
Literature and Culture	c								
Statistical Science (p. 637) [27]						x	x		27
Statistics (p. 637)			x					x	
Sustainability Studies (p. 887)			x						
Teaching English as a Second Language (TESOL) (p. 219)				x					

	Undergraduate Education				Graduate Education				
Technology and Information Management (p. 648)		x	x						
Theater Arts (p. 127) [33]	x		x						
Dance	c		x						
Design and Technology	c								
Drama	c								
Visual Studies (p. 74)							x	x	
Visualizing Abolition Studies (p. 275)				x					
Writing (p. 274)									

Combined majors. In addition, students may complete a combined major leading to a B.A. degree in a number of designated fields. Combined majors currently available include those in Earth sciences/anthropology, economics/mathematics, environmental studies/biology, environmental studies/Earth sciences, environmental studies/economics, Latin American and Latino studies/politics, and Latin American and Latino studies/sociology. Students also have the option of pursuing a double major.

c = concentration, or emphasis, within a program. Some programs give students the option of following a general course of study or selecting a concentration; other programs require students to choose a concentration. Consult the linked program.

[1] An intensive major is also available.

[2] A five-year contiguous bachelor's/master's pathway is available coordinating an existing bachelor's degree from within the chemistry or biology programs (majors administered by the departments of MCD Biology, EE Biology, Chemistry and Biochemistry, and Biomolecular engineering) and the M.S. in microbiology and environmental toxicology.[3] A Master of Fine Arts (M.F.A.) degree is awarded in digital arts and new media, social documentation, and environmental art and social practice.

[3] A five-year contiguous bachelor's/master's pathway is available coordinating the biomolecular engineering and bioinformatics bachelor's degree (bioinformatics concentration) with the master's degree.

[4] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree and master's degree in computer science and engineering.

[5] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree in critical race and ethnic studies and the MA/Credential Master's in education.

[6] Admission to DANM MFA suspended for the 2023-24 and 2024-25 academic years.

[7] A five-year contiguous bachelor's/master's pathway is available coordinating existing bachelor's degree in Earth sciences or environmental sciences and the M.S. degree in Earth sciences.

[8] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degrees and the ecology and evolutionary biology M.A.

[9] The state of California does not allow academic majors in education that lead to a teaching credential. Instead, we offer an undergraduate major in education, democracy and justice and two minors in education for students who are considering a career in teaching or who hold a more general interest in educational studies. Please note that the major and minors in education do not provide a California Teaching Credential. Additionally, please note that the UC Santa Cruz teaching credential program is a graduate program and coursework taken in the major or minor cannot be substituted for credential requirements, except in specifically designated pathways.

[10] UCSC offers the professional clear Cross-cultural, Language, and Academic Development (CLAD) and Bilingual Cross-Cultural, Language and Academic Development (BCLAD) multiple subjects credentials, which are used in self-contained elementary classrooms (K-6) where all subjects are taught by the same teacher. UCSC also offers the CLAD and BCLAD single subjects credentials, which are used in departmentalized settings where the teacher is responsible for one subject (7-12).

[11] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree and the M.A/Credential Master's in Education.

[12] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degrees and M.S. in Electrical and Computer Engineering.

[13] A Master of Fine Arts (M.F.A.) degree is awarded in digital arts and new media, social documentation, and environmental art and social practice.

[14] Environmental Studies / Earth Sciences Combined B.A. discontinued beginning Fall 2024.

[15] Admission for the Feminist Studies Ph.D. suspended for the 2025-26 academic year.

[16] Admissions to the Games and Playble Media Professional M.S. suspended for the 25-26 academic year.

[17.] Admissions for the History M.A. reinstated the 2025-26 admissions cycle.

[18.] A four-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree in Latin American and Latino Studies and the M.A/Credential Master's in Education..

[19] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree and master's degree in linguistics.

[20] A four-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree in Literature and the M.A/Credential Master's in Education.

[21] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's and master's degree in mathematics.

[22] A Bachelor of Music (B.M.) degree in music also available. A Doctor of Musical Arts (D.M.A.) degree in composition is also available.

[23] A five year contiguous bachelor's/master's pathway is available coordinating the exiting bachelor's and master's degree in philosophy.

[24] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree and master's degree in physics. Students in the B.S./M.S. path can pursue concentrations in material and device physics, energy and the environment, computational physics, and medical biophysics.

[25] A five-year contiguous bachelor's/master's pathway is available coordinating existing bachelor's degrees in applied mathematics, mathematics, computer science, robotics engineering, physics, applied physics, physics (astrophysics), and the M.S. in scientific computing and applied mathematics.

[26] A five-year contiguous bachelor's/master's pathway is available coordinating the existing bachelor's degree in science education and the M.A/Credential Master's in Education.

[27] A five-year contiguous bachelor's/master's pathway is available coordinating existing bachelor's degrees and the M.S. in Statistical Science.

[28] Formerly Applied Economics and Finance

[29] Formerly Global Information and Social Enterprise Studies

[30] Formerly Contemporary Practices

[31] Formerly Western Art Music

[32] Formerly Classical Studies

[33] Theater Arts M.A. suspended for the 2025-26 academic year

[34] Admissions to the Anthropology Ph.D suspended for the 2025-26 academic year

Degrees

B.A. = Bachelor of Arts
B.M. = Bachelor of Music
B.S. = Bachelor of Science
D.M.A. = Doctor of Musical Arts
Ed.D = Doctor of Education
M.A. = Master of Arts
M.F.A. = Master of Fine Arts
M.S. = Master of Science
Ph.D. = Doctor of Philosophy

ACADEMIC UNITS

ARTS DIVISION

Porter College, D Building,
(831) 459-4940
http://arts.ucsc.edu

The Arts Division offers creative practice and critical, historical, and theoretical studies of art and culture at the undergraduate and graduate levels. The division is committed to building our students' innovative and analytic thinking as scholars and impactful voices and visions as artists through inclusive excellence. Instruction in the arts inspires and develops the skills needed for individual and collaborative thought and action within and beyond the university. Our faculty consists of artists, performers, historians, critics, makers, and theorists working across the arts in a global context, and addressing some of the most pressing issues of our day.

Undergraduate education in the arts includes Bachelor of Arts (B.A.) programs in art, art and design: games and playable media, creative technologies (online major), film and digital media, history of art and visual culture, music, and theater arts, and a Bachelor of Music (B.M.). There are also concentrations offered in film and digital media (integrated critical practice), history of art and visual culture (curation, heritage, and museums), and music (compositional practices, global musics and Western music). Minors are offered in film and digital media, history of art and visual culture, electronic music, jazz spontaneous composition and improvisation, Western music, theater arts, and dance.

Graduate programs include the Social Documentation Master of Fine Arts (M.F.A.), the Environmental Art and Social Practice Master of Fine Arts (M.F.A.), and the interdisciplinary digital arts and new media master of fine arts (M.F.A.) program (currently suspended) as well as the music Master of Arts (M.A.) and the theater arts Master of Arts (M.A.). Doctoral programs include the music composition Doctorate of Musical Arts (D.M.A.) and Ph.D. programs in music, visual studies, and film and digital media.

The Arts Division provides students with access to quality research, work and maker spaces, including a digital-arts research facility with two experimental media labs, along with a state-of-the-art music recital hall, practice rooms, electronic music studios, and recording facilities, four theaters for dramatic productions, filmmaking studios and editing suites, surround-sound screening theaters, drama and dance studios, painting and printmaking studios, a foundry (unique to the U.C. system), photography and computer laboratories, and specialized lecture and seminar classrooms, as well as the Art M.F.A. Lab and the recently opened SocDoc Lab at the UC Santa Cruz Westside Research Park. This year the UC Santa Cruz Arts Division is introducing a state-of-the-art artificial intelligence (AI) multimedia lab that will give students the opportunity to gain hands-on experience using the very latest in advanced technology under the supervision of faculty. The Arts, AI, Augmentation and Acceleration Lab, also known as the A4 Lab, will help the next generation gain access to advanced technology and its open-source ecosystem—preparing them for varied career opportunities. McHenry Library houses an extensive collection of books and periodicals on the arts, as well as an analog and digital slide collection, music scores and recordings, and one of the largest collections of films and DVDs in the University of California system. Exhibition space in the arts includes galleries for students, faculty, and visiting artists to show their work. The Mary Porter Sesnon Art Gallery presents curated exhibitions to the university community and the general public. The Institute of the Arts and Sciences Galleries, a focus for interdisciplinary creative work, exhibitions, conferences, symposia, and seminars, offers a robust schedule of programming and curatorial opportunities.

Other Division Highlights: The newly launched online B.A. major in Creative Technologies is the first online major in the UC system. The Performance, Play and Design Department offers a wide variety of performances in four venues, ranging from faculty-directed productions of classics and musicals on our Mainstage to intimate student-created productions. Student work is regularly broadcast on SCTV. The Music Department hosts an annual festival of contemporary music, April in Santa Cruz, and an opera in the spring quarter of each year, and presents a variety of solo and ensemble concert programs throughout the year. Music also hosts Classical Indian Music concert series, featuring world-renowned artists, funded by the Hasan Endowed Chair in Classical Indian Music. Music composition programs will also soon be supported by the newly announced Corday Family Chair in Music for Film, Television, Emerging Media, and Multimedia Collaboration. The History of Art and Visual Culture Department hosts a series of speakers and seminars each year on rotating topics, some of which are supported by the Rebele Endowed Chair, and sponsors the grad student-run journal Refract. The Art Department sponsors regularly scheduled public presentations, including an M.F.A. exhibition in the spring, as well as quarterly open studios and a print sale in the spring. The Film and Digital Media (FDM) Department offers a year-round Visiting Artists Series, co-sponsors the Visual Media Cultures Colloquium, curated by FDM Ph.D and visual studies Ph.D. students, and the end-of-year screenings for the M.F.A. in Social Documentation draw many Santa Cruz residents every year. Many of these events are supported by the Corday Family Chair in Writing and Television and Film. The Arts Division supports the dissemination and completion of student work through the Arts Dean's Fund for Excellence and Equity, the University of the Future Now! grants and provides professional mentorship opportunities through Arts Professional Pathways and departmental internship programs including a speaker series on expanding career paths and removing obstacles to careers in the arts.

For more information about specific programs in the arts, please visit catalog listings and web sites for: Art; Creative Technologies; Digital Arts and New Media; Film and Digital Media; History of Art and Visual Culture; Music; and Performance, Play and Design, which hosts Art + Design: Games + Playable Media and Theater Arts.

Art

Elena Baskin Visual Arts Studios
Room E-104
(831) 459-2272
visart@ucsc.edu
http://art.ucsc.edu

PROGRAMS OFFERED

Art B.A. (p. 41)

Environmental Art and Social Practice M.F.A. (p. 45)

UNDERGRADUATE PROGRAM

The Art Department's innovative, interdisciplinary studio art program focuses on the power of visual communication for personal expression and public interaction. Students learn hands-on skills in a variety of fine arts mediums alongside rigorous conceptual approaches to critical thinking and art making. Students develop foundational skills in their first and second years, then launch into experimentation across media. Students explore personal projects alongside broader social, environmental and public projects. The Elena Baskin Visual Arts Studios at the University of California, Santa Cruz provide world-class facilities for art production in drawing, animation, painting, photography, foundry, metal, wood, new media and conceptual sculpture, print media, intermedia, critical theory, digital media art, public art, environmental art and social practice. The Art Department is invested in exploring diverse perspectives, world views, and approaches to art making. Diversity, equity and inclusion are core to our curriculum and teaching. Our goal is to prepare students for creative participation in a rapidly changing world.

The bachelor of arts degree prepares students for dynamic careers within the visual arts. Our graduates go on to pursue careers as professional practicing artists, as well as in arts education, arts management, art direction, social design, web design, photography, social practice and environmental art, curation and consulting, multimedia, illustration, animation, among other arts-related fields. Many of our students continue to study art and professional practices in graduate and post-graduate programs.

GRADUATE PROGRAM

The Environmental Arts and Social Practice M.F.A. integrates ecological thinking with social justice principles in a two-year degree program focusing on creative artistic inquiry and project-based research. Designed for students who seek to develop their artwork in relation to social and environmental justice questions, contexts, and communities, our place-based program emphasizes making and locating art in the world, with human and non-human collaborators, and grounded in individual and collective commitments, inventions, and aesthetic visions.

The program invites students to experiment with a breadth of approaches, art mediums, research methods, theoretical frameworks and technologies ranging from the traditional to the most contemporary, with the understanding that all media can be relevant in developing new approaches and responses to environmental and social issues. The program's interdisciplinary emphasis also encourages students to engage with other departments, divisions, centers, labs, and faculty across the university to deepen and enrich their research, and to partner with groups and organizations outside the university in the development and realization of their projects.

Students gain practical experience through direct engagement with places and communities and hone their skills of critical analysis, while studying methods, histories and theories of the field, and developing their own creative directions through their thesis projects. Students build career paths connecting multimedia art practices with environmental justice, social justice, public policy, public art, curatorial practices, art education, art writing, urban planning, landscape architecture, and other professional and creative practices.

COURSES FOR NON-MAJORS

The Art Department offers courses for non-art majors that fulfill general education requirements and offer students a chance to explore art to see if it interests them as a major.

These courses include ART 10D, 2D Foundation; ART 10E, 3D Foundation; ART 10F, 4D Foundation; ART 80E, Environmental Art in the Expanded Field (online course); ART 80T, Digital Tools for Contemporary Artists (online course); ART 101, Introduction to Computer Programming for the Arts; ART 20L, Introduction to Drawing (online course); and ART 106O, 2D Animation (online course).

ART B.A.

Information and Policies

Introduction

The Art Department's innovative, interdisciplinary studio art program focuses on the power of visual communication for personal expression and public interaction. Students learn hands-on skills in a variety of fine arts mediums alongside rigorous conceptual approaches to critical thinking and art making. Students develop foundational skills in their first and second years, then launch into experimentation across media. Studio art courses at UC Santa Cruz build skills and encourage creative innovation and intellectual rigor. Students explore personal projects alongside broader social, environmental and public projects. The Elena Baskin Visual Arts Studios at the University of California, Santa Cruz provide world-class facilities for art production in drawing, animation, painting, photography, foundry, metal, wood, new media and conceptual sculpture, print media, intermedia, critical theory, digital media art, public art, environmental art and social practice.

The Art Department at UCSC is invested in exploring diverse perspectives, world views, and approaches to art and art making. Diversity, equity and inclusion are core to our curriculum and teaching. Our goal is to prepare students for creative participation in a rapidly changing world.

The bachelor of arts degree prepares students for dynamic careers within the visual arts. Our graduates go on to pursue careers as professional practicing artists, as well as in arts education, arts management, art direction, social design, web design, photography, social practice and environmental art, curation and consulting, multimedia, illustration, animation, among other arts-related fields. Many of our students continue to study art and professional practices in graduate and post-graduate programs.

Program Learning Outcomes

Students who earn a Bachelor of Arts (B.A.) in Art will gain the skills, knowledge, and understanding that will enable them to:

- demonstrate proficiency in a range of techniques and media;
- demonstrate the ability to imagine, create and resolve a work of art incorporating research with an awareness of contemporary and historical practices, approaches and cultural perspectives;
- demonstrate the ability to discuss and revise their own and other students' artistic process and production based on a foundation in forms and ideas with a knowledge of diversity through multiple historical and contemporary contexts, cultural perspectives and approaches;
- demonstrate the ability to communicate in writing analysis of a work of art using vocabulary that reflects a foundational knowledge in the diversity of forms and ideas encompassing multiple historical and contemporary contexts, cultural perspectives and approaches.

Academic Advising for the Program

For more information and advising on the art major, please contact the undergraduate advisor at artadvisor@ucsc.edu. For junior transfer students, please also see more detailed information below under Transfer Information and Policy.

Getting Started in the Major: Frosh

Acceptance to the Art Major

This is a course-intensive and sequential program; students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz. Students are encouraged to schedule an appointment with the undergraduate advisor in their first year to develop a plan of study. We recommend that students pass two foundation courses in their first year in order to meet the campus deadline to declare the major. However, all three foundation courses (ART 10D, ART 10E, ART 10F) are requirements for the major. A portfolio review is not required for frosh entry students.

Getting into Studio Classes

Studio art classes are primarily small (25 students or fewer), making room for both individual attention and instruction as well as opportunities to develop strong relationships and networking with faculty and fellow students.

General Education Requirements

Students are required to complete general education (GE) requirements alongside their major courses throughout their career at UCSC. Students who are unable to enroll in an art course in any given quarter are encouraged to complete general education requirements. It is important to balance major requirements and GE requirements throughout your career at UC Santa Cruz. Focusing exclusively on GEs during frosh and sophomore years could delay your graduation.

Transfer Information and Policy

Transfer Admission Screening Policy

Transfer students interested in the art major should plan to complete two art foundation (ART 10 equivalent) courses listed on assist.org prior to entering UC Santa Cruz. If students have not taken two equivalent foundation courses before arriving at UC Santa Cruz, they have the option of declaring the major through a portfolio review, as summarized in the section below. For full information on the portfolio review process, see our portfolio review page.

In addition to the two foundation courses, it is recommended that students have completed a minimum of three studio art courses prior to entering UCSC. These courses should be comparable to UCSC's ART 20 courses – transferable courses from California community colleges are listed on assist.org. It is also recommended that students complete two art history courses prior to entering UCSC for timely graduation.

Getting Started in the Major: Transfer Students

Once a student is accepted to the university and has submitted their Statement of Intent to Register, the undergraduate advisor will be in contact with the student regarding first quarter enrollment and an academic plan. Transfer students qualify to declare the art major by passing two art foundation courses (ART 10 equivalent courses) or by passing the portfolio review. The portfolio review waives the two required foundation courses. A declaration petition can be submitted as soon as a transfer student has completed either option.

Portfolio Review

A portfolio review is not required for transfer students if they have taken two art foundation courses (ART 10 equivalent courses listed on assist.org). If transfer students have not taken two art foundation courses, the portfolio review is an option to waive those two foundation courses.

A portfolio is not required for entering frosh students. Frosh students may refer to the Major Qualification section for qualification criteria.

Currently enrolled transfer students who wish to pursue art should contact the art advisor as soon as possible to get information on the portfolio review application.

Major Qualification Policy and Declaration Process

Major Qualification

Students entering UC Santa Cruz as frosh qualify to declare the art major after completing two courses from the list below.

Transfer students should consult the Transfer Admissions Screening Policy section above.

ART 10D	2D Foundation	5
ART 10E	3D Foundation	5
ART 10F	4D Foundation	5

Some courses may be satisfied via exam credit.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

To declare, log into MyUCSC and click the link to submit the Petition for Major/Minor.

If you are eligible to declare, the art advisor will approve your petition and create or update your academic plan. It is recommended to schedule an advising appointment with the undergraduate advisor to review your academic plan.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair within 15 days from the date of the notification. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. Students should submit their petition via email to artadvisor@ucsc.edu.

Letter Grade Policy

Students must receive a C/P or higher for an art course to be applied toward the major.

Three-Year Pathway

The Art Department has a three-year pathway designed for students who want to complete their Art B.A. in three years. This is an intensive program that includes all of the courses for the current art B.A. major, as well as all of the general education requirements and electives for the university. Students should begin this pathway in their first year to be able to complete the required courses in three years. Summer Session attendance is required for all three years. For more information, contact the undergraduate advisor.

Course Substitution Policy

A maximum of three courses total from outside the Art Department (including UC Education Abroad Program [EAP] courses) may be substituted for regular art courses with the approval of a major advisor.

Double Majors and Major/Minor Combinations Policy

Study Abroad

The UC Santa Cruz Global Learning office offers students the opportunity to study abroad or away through a variety of programs. Art students typically participate during their junior year or over the summer, but can participate anytime during their studies after declaring their major. When considering participation in one or more of these programs, the student should be mindful that only three courses may be substituted in the art major and each must go through a review process upon return to UCSC.

Honors

Honors in the art major are awarded to graduating seniors whose academic performance demonstrates excellence at a grade point average of 3.95 or above in their upper-division art studio courses and ART 190A. Highest honors in the art major are awarded to graduating seniors whose academic performance demonstrates excellence at a grade point average of 4.0 in their upper-division art studios and ART 190A.

[Optional Catchall]

Materials Fee

A materials fee is required for some art studio courses. Materials fees are noted in the course description when applicable. A majority of courses do not carry an additional materials fee. The fee is billed to the student's account for specific course materials purchased by the Art Department through the university. Fees range from $120 to $175 per course. Students may incur additional expense purchasing individual supplies.

Requirements and Planners

Course Requirements

The Art B.A. requires a total of nine lower-division courses, eight upper-division courses, and completion of the senior comprehensive requirement. The comprehensive requirement may be fulfilled by ART 190B, Senior Project, as part of the required seven upper-division studios. The comprehensive requirement may also be fulfilled by a review of the students artwork by a ladder rank faculty. If the latter choice is selected, the student must then complete seven upper-division studios. Some courses may be satisfied via exam credit.

Lower-Division Courses

Students complete nine courses as follows. Some courses may be satisfied via exam credit.

The Foundation

All of the following (junior transfers must complete two at a community college):

ART 10D	2D Foundation	5
ART 10E	3D Foundation	5
ART 10F	4D Foundation	5

Introduction to Contemporary Art Practice

Three of the following (junior transfers should complete them at a community college):

ART 20G	Introduction to Print Media and Drawing	5
ART 20H	Introduction to Sculpture and Public Art	5
ART 20I	Introduction to Photography	5
ART 20J	Introduction to Drawing and Painting	5
ART 20K	Introduction to New Media and Digital Artmaking	5
ART 20L	Introduction to Drawing	5

Credit for ART 20L is granted for an AP Drawing score of 4 or higher.

Digital Tools

Students must take:

ART 80T	Digital Tools for Contemporary Art Practice	5

Critical Theory and Historical Context

Students complete two courses from the History of Art and Visual Culture (HAVC) geographic regions:

One course from Europe and the Americas: HAVC courses numbered 30-49 or 130-149

One course from Africa, Asia, Mediterranean, Native Americas, or Oceania: HAVC courses numbered 10-29, 50-80, 110-129, or 150-179.

A full list of courses by region can be found on the History of Art and Visual Culture program statement.

Note: A score of 3 or higher on the Advanced Placement (AP) Art History exam will satisfy the Europe and the Americas requirement.

Upper-Division Courses

Students complete eight courses as follows:

Studio Work

Students take seven upper-division studio courses. These include courses numbered ART 101—ART 189, ART 190B, ART 194, ART 196, ART 198, and ART 199. ART 190B satisfies both an upper-division studio as well as the comprehensive requirement.

Transfer students are strongly encouraged to take ART 194 during their junior year.

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in art is satisfied by completing:

ART 190A	Writing for Artists	5

Comprehensive Requirement

All art majors satisfy the capstone/comprehensive requirement with the following:

ART 190A	Writing for Artists	5

Plus one of the following options:

- Presenting an exhibition and, by appointment, meeting with a faculty member for review and critique of the exhibition; or
- Submitting a portfolio and, by appointment, meeting with a faculty member for review and critique of the portfolio; or
- Completing the following course:

ART 190B	Senior Project	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Art Major Planner (Incoming Frosh)

The following is a recommended academic plan for students to complete:

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)

1st (frosh)	ART 10D College 1	ART 10E WRIT 1/WRIT 1E (if needed)	ART 10F	
2nd (soph)	ART 20 series HAVC * WRIT 2**	ART 20 series ART 80T	ART 20 series HAVC *	
3rd (junior)	UD studio	ART 190A UD studio	UD Studio	
4th (senior)	UD studio UD studio	UD studio	UD studio or ART 190B	

*Courses from history of art and visual culture (HAVC): one from Europe and the Americas, one from Africa, Asia, Mediterranean, Native Americas, or Oceania; please see HAVC Course List by Geographic Region.

** WRIT 2 should be taken in or before spring quarter of the second year.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the CC, ER, MF, SI, SR, TA, and C General Education requirements.

Art Major Planner (Junior Transfers)

The following is a recommended academic plan for junior transfers who have completed three lower-division studios across three different media and partial IGETC:

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	UD Studio ART 10 Series†	ART 190A ART 80T	UD studio HAVC *	
2nd (senior)	UD studio HAVC *	UD studio UD studio	UD studio UD studio or ART 190B	

† Art 10 series: All three ART 10 series courses are required for junior transfers - two must be taken prior to entering UCSC. Art 10 series courses are offered in fall, winter and spring.

*Courses from history of art and visual culture (one from Europe and the Americas, one from Africa, Asia, Mediterranean, Native Americas, or Oceania; please see HAVC Course List by Geographic Region). It is recommended that junior transfers take history of art and visual culture courses at the community college. California Community College courses that can cover the history of art and visual culture requirement can be found on assist.org.

ENVIRONMENTAL ART AND SOCIAL PRACTICE M.F.A.

Introduction

The Master of Fine Arts (M.F.A.) in Environmental Art and Social Practice (EASP) is a unique graduate program that trains students to critically analyze, understand, and respond to the challenges of our contemporary era through creative artistic inquiry and project-based research. The two-year program is designed for the student who seeks a career in the field of environmental art and social practice artmaking as these forms relate to environmental justice, social justice, public policy, and multimedia art practices, criticism, and

theory. One of the first of its kind in the country integrating this dual focus, the program builds on the unique intellectual reputation of UC Santa Cruz as a leader in promoting social justice, ecological thinking, and inventive explorations of the nature/culture interface, and contributes to this ongoing legacy through the world-transforming potential of creative practice.

The field of environmental and social practice artmaking continues to develop rapidly in relation to the urgency of social and environmental pressures, requiring artists to learn new tools and strategies for effective engagement in society at large, along with important aspects of traditional artistic training. Within this frame, the program invites students to utilize a breadth of approaches, art mediums, research methods, theoretical frameworks, and technologies ranging from the traditional to the most contemporary, with the understanding that all media can be relevant in developing new approaches and responses to environmental and social issues. The program's interdisciplinary emphasis also encourages students to engage with other departments, divisions, centers, and faculty across the university to deepen and enrich their research, and to partner with groups and organizations outside the university in the development and execution of their projects.

Graduates of the program find employment in the art world and in academia as well as qualifying for job opportunities in hybrid and developing fields, including in green technology, environmental policy, public arts policy, community planning, public space design, and other forms of advising and design where creative approaches to problem-solving is called for. Depending on the focus of their thesis project, graduates' access to academic positions is not limited to art practice fields, but may include political theory, humanities, and social issue curricula, as well as hybrid and cross- disciplinary art programs linked with science, social science, and the humanities. Graduates may also work as arts administrators in a variety of institutions or seek employment in curatorial positions, journalism, research, and editorial positions, as well as in audio-visual production and in the digital economy. Some graduates may also work as self-employed artists or in unique positions that defy existing job categories and are specifically tailored to their skills and interests.

Objectives

The M.F.A. in Environmental Art and Social Practice program supports the development of a student's artistic practice in relation to issues and contexts relevant to these two related areas of study. The program aims to train students in practical skills as they relate to project-based arts research in the areas of: creative methodologies, critical analysis, historical perspectives, ethical standards, collaborative strategies, reflective critique, and art pedagogies.

Students learn to conceive and execute projects, articulate narratives to support their ideas, and establish working relationships with other practitioners in the field. They develop methods, perspectives, and concepts to support lifelong artistic inquiry and thriving careers, and to contribute to, and further develop, the emergent fields of environmental art and social practice.

Requirements

In the first year, students work collaboratively on practice-based research topics while studying methodologies, histories, theories and pedagogies relevant to the field. They also take electives relevant to their research interests chosen from course offerings throughout the university. In the spring of their first year they also take a 2-credit thesis course in which they develop a working bibliography and thesis outline.

In the second year, students develop and realize their thesis projects. They identify a focus and geographic location, find partners and design a project individually, or in collaboration. Each student's creative research is supported by a series of core critique classes as well as electives chosen by the student to deepen their knowledge and fine-tune their research direction, and by 2 credits of thesis advising every quarter. In the spring of the second year they also take a 2-credit curatorial class focusing on the public presentation of their M.F.A. research.

Course Requirements

A minimum of 71 credits are required for the Environmental Art and Social Practice M.F.A. degree. 51 credits are required core courses and 20 credits are electives.

First Year

Students take the following core courses in their first year. ART 230 can be taken in the first or second year.

ART 210A	Practice-Based Research Group: Sites	5
ART 210B	Practice-Based Research Group: Systems	5
ART 210C	Practice-Based Research Group: Contexts	5
ART 220	Methods and Histories	5
ART 230	Theory and Practice	5
ART 250	Writing Matters	5

Second Year

Students take the following courses in their second year. If students did not take ART 230 in their first year, they should take it in their second year.

ART 299F	Thesis Research	2
ART 270A	Project Development and Critique I	5
ART 270B	Project Development and Critique II	5
ART 280	MFA Project Production	5

ART 299F is taken each quarter of the second year for a total of 6 credits.

Electives

EASP students are required to take 20 credits of electives to support the development of their thesis project. Electives can be selected from any department of the university but students must have their elective choices approved by the director of Graduate Studies (DGS) (first year) or the student's Committee Chair (second year). The list below provides

examples of courses that EASP students have taken or might take, but it is not comprehensive and not all courses are offered each year. Electives can be graduate (ART 200+) or upper-division (ART 100+) courses, including upper-division art studio courses. However, students can take no more than 15 credits of upper-division coursework. Some courses may require consent of the instructor or have prerequisites. Consult with the affiliated department for more information.

Other Requirements

First-Year Review and Advancement to Candidacy

At the end of the spring quarter of their first year, students will present their thesis project proposal to their thesis committee in order to advance in the program. The committee will be selected by the student and approved by the graduate program director by the seventh week of the spring quarter of the first year. The thesis committee will include two EASP/Art Department Senate faculty members and an external member who may be faculty from another department or division, another institution, or a community member (the external members are selected based on their research interests and close work with the student).

At this time, students will present to their committee a final project proposal, revised and developed over the course of the first year, that will serve to direct their thesis research in their second year. Proposals will outline the focus of the project, conceptual and theoretical grounding, materials, location, partners and/or collaborators, preliminary annotated bibliography/list of related artworks, and a step-by-step plan for carrying out the project. Proposals will be evaluated based on clarity and quality of purpose, concept, and plan, feasibility within the time frame and budget proposed, evidence of established relationships with partners/collaborators, and potential to make a significant creative contribution to the field. The thesis committee must approve the thesis proposal/project outline no later than the end of the spring quarter of the first year.

[Optional Catchall]

Capstone/Thesis

Students meet with their thesis committee at least once a quarter, and more if needed, and with additional thesis advisors throughout their second year as they develop their thesis projects. For the M.F.A. thesis capstone, each student is required to present a public facing exhibition and/or other presentation of their creative work and submit a thesis paper that describes their thesis, research and findings, which will be no less than 25 pages. Students will also be required to pass an oral examination with their thesis committee.

The final exhibition may take place on campus or off campus with an accompanying component on campus. The M.F.A. thesis review committee will review each final thesis project in the spring quarter of the second year or after a student has completed a minimum of 71 credits. While form and media will vary greatly, completed thesis projects will reflect original creative research and professional level production (individually or collaboratively authored), as well as command of the field.

Applying for Graduation

Students should contact the department advisor to confirm all requirements for the degree have been completed. Students must submit an Application for the M.F.A. to the department for review by the end of the second week of the quarter in which you intend to receive the certificate.

ENVIRONMENTAL ART AND SOCIAL PRACTICE M.F.A. ELECTIVES

Suggested Electives for the Environmental Art and Social Practice M.F.A.

Environmental Art and Social Practice (EASP) students are required to take 20 credits of electives to support the development of their thesis project. Electives can be selected from any department of the university but students must have their elective choices approved by the director of Graduate Studies (first year) or the student's Committee Chair (second year). The list below provides examples of courses that EASP students have taken or might take, but it is not comprehensive and not all courses are offered each year. Electives can be graduate (ART 200+) or upper-division (ART 100+) courses, including upper-division art studio courses. However, students can take no more than 15 credits of upper-division coursework. Some courses may require consent of the instructor or have prerequisites. Consult with the affiliated department for more information.

Electives

DANM 201	Recent Methods and Approaches to Digital Arts and Culture	5
DANM 202	Dialogues and Questions in Digital Arts and Culture	5
DANM 210	Project Design Studio	5
DANM 211	Critique	5
DANM 216	Digital Bodies	5
DANM 219	Introduction to Electronics for Artmaking	5
DANM 220	Introduction to Programming for the Arts	5
DANM 221	Mathematics and the Arts	5
DANM 227	Projected Light in Performance	5
DANM 233	The Object as Interface	5
DANM 241B	Modern Art: Cubism to Pop	5
DANM 250A	Art and Science	5
DANM 250B	Socially Engaged Art	5
DANM 250C	Performance and Embodiment	5

DANM 250E	Collaborative Research Project Group: Experimental Play	5
DANM 254I	Empirical Approaches to Art Information	5
DANM 281	Special Topics in Digital Arts and New Media	5
ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 142	Sustainable Energy	5
ENVS 147	Global Environmental Justice	5
ENVS 156	Environmental Action Through Writing	5
ENVS 158	Political Ecology and Social Change	5
ENVS 165	Sustainable Water Systems	5
ENVS 169	Climate Change Ecology	5
ENVS 201A	Research Approaches in Environmental Studies	5
ENVS 210	Political Ecological Thought and Environment	5
ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 235	Social Theories of Nature	5
ENVS 271	Valuing the Environment	5
FILM 136C	Visual Culture and Technology: History of New Media	5
FILM 177	Digital Media Workshop: Computer as Medium	5
FILM 200A	Introduction to Graduate Study	5
FILM 200B	Theory and Praxis of Film and Digital Media 1	5
FILM 200C	Theory and Praxis of Film and Digital Media 2	5
FILM 223	The Film/Video Essay	5
FILM 224	Mediating Difference	5
FILM 227	Representing Memory	5
FILM 283	New Media Art and Digital Culture	5
HAVC 201A	Introduction to Visual Studies and Critical Theory	5
HAVC 202	Introduction to Visual Studies Methods	5
HAVC 213	Theories and Visual Cultures of Iconoclasm	5
HAVC 233	Visuality, Blackness, and the Human	5
HAVC 236	Contemporary Art and Theories of Democracy	5
HAVC 240	Seeing Race	5
HAVC 241	Decolonizing Nature: Contemporary Art and Ecology	5
LALS 200A	Power and Structure in the Américas	5
LALS 200B	Cultures and Subjectivities in the Américas	5
LALS 220	Transnational Civil Society: Limits and Possibilities	5
LALS 225	Race in the Americas	5
LALS 240	Culture and Politics of Human Rights	5
LALS 242	Globalization, Transnationalism, and Gender in the Americas	5
LALS 244	Digital Mapping and Human Geographies	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 254C	Performativity and Music	5
PHIL 152	Aesthetics	5
PHIL 290H	Environmental Ethics	5
POLI 203	Making of the Modern	5
POLI 207	Political Economies of Affect	5
POLI 208	Race	5
POLI 222	Conflict and Change in American Politics and Policy	5
POLI 232	United States Political History	5
POLI 245	Latin American Politics	5
POLI 247	Comparative Urban Politics	5
POLI 255	Comparative Anti-Colonialisms	5
POLI 272	Critical Interventions in IR Theory and Global Political Economy	5
POLI 275	Contemporary Capitalism	5
PSYC 211A	Proseminar: Social Justice and the Individual	5
PSYC 211B	Social Justice, Society, and Policy	5
PSYC 213	Special Topics in Social Psychology	5
PSYC 246	Cultural Diversity in Human Development	5
SOCD 202	Multiple-Platform Social Documentary Production	5
SOCD 204	Ethnographic Writing and Social Documentation	5
THEA 161S	American Drama: Politics and Theater	5

Creative Technologies

Arts Division Dean's Office
302 Digital Arts Research Center
creative@ucsc.edu

Creative Technologies (CT) is the University of California's first online undergraduate major. Housed in the Arts Division, the major focuses on the arts, media, and design, emphasizing the study of conscientious creativity in digital environments. Digital arts/design environments are powerful and exciting spaces for the pursuit of justice, freedom of inquiry, and imagination, as well as for the cultivation of knowledge, democracy, and stronger communities. Students majoring in creative technologies may complete all of the major

requirements online, provided they have completed three prior quarters of in-person instruction (with at least six credits of in-person instruction per quarter) at a UC campus.

The CT program combines online and in-person modalities to allow UC Santa Cruz Arts students to earn their degree with fewer quarters of on-campus residency. It also combines courses from many arts genres and arts disciplines, allowing its students to pursue arts and design training without being stuck "in the box" of traditional arts genres or disciplines—instead, they move freely between those practices to gain more contemporary, collaborative, and multimedia arts experience.

Creative Technologies arose from a community need identified at UC Santa Cruz to comprehend how new media and new technology can be sites where we bring society's best futures into reality: futures in which justice, democracy, and sustainability arise from truly participatory works of art and design.

Creative Technologies graduates will be highly skilled users of technology in a job market that increasingly centers creative work. They will work in film, music, television, games, and other media, but increasingly, creative work is transformative in fields like law, healthcare, politics, non-profit organizations, schools, and in traditional businesses. CT grads will not just be artist-scholars, but user-experience designers, journalists, teachers, and other cultivators and curators of human knowledge.

PROGRAMS OFFERED

B.A. in Creative Technologies (p. 49)

Contact:

Creative Technologies
c/o Arts Division Dean's Office
University of California
1156 High St.
Santa Cruz, CA 95060
creative@ucsc.edu

CREATIVE TECHNOLOGIES B.A.

Information and Policies

Introduction

Creative Technologies (CT) is an online interdisciplinary arts and design major, with contributions from faculty across the Arts Division. Its curriculum features innovative teaching and learning environments, paired with an emphasis on emerging arts and design technologies and the active roles of artists and designers in cultivating a just and ethical society. Our courses intersect faculty commitments to justice, accessibility, equity, diversity, and inclusion—along cultural, gender, racial, economic, and social dimensions—with commitments to expanding access to innovative arts education, re-contextualizing and challenging Western and other hegemonic frameworks for art and design, and amplifying marginalized and historically silenced voices.

Students in creative technologies develop fluency in the languages and tools of contemporary media, arts, and design technologies, including technologies for creativity in sound, image, and animation; games and playable media; documentary and knowledge-curation media; web-based and participatory media; and creative interactions with machine learning and AI. At the core of the creative technologies ethos is a conviction that *technology literacy* is inseparable from *technology ethics*. Artists and designers are primary curators of knowledge, dialogue, and cultural representation; with those roles we hold a responsibility to cultivate community agency, democracy, environmental justice including climate action, and broad access to knowledge and social dialogue. To support that crucial work, the creative technologies program aims to prepare students for a lifetime of relevant, meaningful, and impactful creative engagement—while instilling capacity for work and play, activism and education, self-expression, self-efficacy, and even fun.

This program is delivered in lab-based online environments, operating both synchronously and asynchronously. The majority of its first-year curriculum, and some of its second, involves real-time interactions with teachers and classmates, via video and other live remote learning technologies. Courses will sometimes be offered "asynchronously," allowing students to navigate all materials at paces that suit their needs and interests. In both types of learning, creative technologies generates a robust community in which students learn through their collaborative journeys of art-making, engaging in critical inquiry, and critique. We aim to inspire collaborative art and design that connect online and traditional communities with creative vitality, critical inquiry, improvisation, and lasting meaning. You will learn how to navigate the platforms and venues in which sound and image, story and play, character and action, can be brought effectively to a wide and inquisitive public. And you will learn effective production practices—including improvisation, dialogue, research skills, and styles of collaboration—that bring complex, impactful projects to fruition.

Program Learning Outcomes

1. **Gain literacy in creative tools for digital expression**, and in the effective use of technology in arts and design: including digital platforms and algorithms, AI- and algorithmic arts and design tools, and emerging technology in a variety of media.

2. **Critically comprehend media and media culture**, potentially including institutions, creative labor and labor practices; the ethics of data, information, and digital platforms; with a focus on digital media's diverse impacts on dialogues surrounding tradition, culture, and racial, social, and environmental justice.

3. **Understand contemporary creative practices in their contexts**: relating them to the impactful practices of our contemporaries and predecessors; contextualized by theory, history, and ethics in the arts, design, and media.

4. **Learn strategies for bringing complex work to completion**, individually and collaboratively, across a variety of media, including written, image- and sound-based, performance-based, and socially engaged media.

5. **Cultivate a mindset of curiosity, dialogue, and growth**, with respect to one's work and process, and its social and ethical impact. We learn from mistakes as well as triumphs—ours and others'—as we work toward meaningful creative work and social change.

6. **Learn to engage in informed social practices**, shaped by reflection on practical activism for positive change; individual and collective identity; sustainability; equity; and justice; and by a community-focused commitment to re-contextualize and challenge Western and other hegemonic frameworks for art and design.

Academic Advising for the Program

Students who plan to major in creative technologies should meet with the undergraduate advisor early in their UC Santa Cruz career to create an academic plan that can accommodate the inflexible nature of major course offerings.

For more information and advising on the creative technologies major, please contact the undergraduate advisor at creative@ucsc.edu.

Getting Started in the Major: Frosh

Students interested in majoring in creative technologies are encouraged to speak with the undergraduate advisor early in their academic career. Due to the rigid nature of the courses, students move through the program in cohorts beginning their junior year. Incoming frosh do not need to satisfy any requirements prior to arriving at UCSC.

During the first two years, students should complete their general education requirements and major qualification requirements. Instruction in coding, 2D drawing, 3D modeling, and/or audio design is encouraged.

Transfer Information and Policy

Creative technologies is a non-screening major. Transfer students planning to apply to UC Santa Cruz with this major are not required to complete specific major preparation courses for consideration of admission.

Recommended Pre-Transfer Courses

To establish foundational knowledge and practices in arts and/or design prior to the major, the following courses are *recommended* prior to transfer:

- Coursework in programming, 2D drawing, 3D modeling, or sound design.
- At least one course in a justice-related topic, including *but not limited to*: courses in critical race and ethnic studies (or similar), indigenous studies, labor studies, disability and accessibility, feminist studies, gender studies, and/or courses on postcolonial or decolonizing practices.
- At least one course in critical art and media studies, including *but not limited to:* courses in the dissemination and interpretation of contemporary media; visual and aural culture studies; film studies; documentary or archive studies; media history; relationships between media, power, and representation; and critical studies of journalism, social media, or popular culture.

Planning for General Education:

Due to the availability of online courses outside of creative technologies, students are encouraged to complete the UCSC general education requirements in one of three ways:

1. Complete the Intersegmental General Education Transfer Curriculum (IGETC) or the California General Education Transfer Curriculum (CalGETC) from a California community college.
2. Complete the general education requirement from another University of California campus, if transferring from another UC.
3. Complete equivalent courses at another institution to apply toward the general education requirements at UCSC.

If students have not completed the general education requirements, they should ensure, prior to transferring, that they have completed coursework that satisfies the Ethnicity and Race (ER), Scientific Inquiry (SI), Statistical Reasoning (SR), and Composition (C) general education requirements. The Creative Technologies curriculum satisfies the remaining GE requirements.

Getting Started in the Major: Transfer Students

Students are admitted to UC Santa Cruz with a "proposed major" in most cases, and later petition to officially declare the major. Junior transfer students must be formally declared by the deadline in their second quarter of enrollment.

Transfer students are strongly encouraged to participate conscientiously in Summer Orientation, connect with the undergraduate advisor, and utilize transfer-focused campus partners like STARRS upon their arrival.

Major Qualification Policy and Declaration Process

Major Qualification

Qualification for the creative technologies major is determined by *required coursework* and a *personal statement*. In addition, prospective students are advised to consider a range of recommended courses that can help prepare them for the major.

Major Qualification Coursework:

Courses in the following two categories are required as part of the major qualification process:

- One introductory arts course in theory or history
- One practice-based, "maker"/production-oriented arts course

Students should consult the list of approved major qualification courses for examples of courses fulfilling the categories above. Courses not listed there may fulfill the requirement; please consult with the undergraduate advisor for information about the process to petition for that approval.

Personal Statement:

Prospective majors' personal statements should address three issues:

- (~1 paragraph) Describe relevant courses you have taken that you believe support your goals in the creative technologies major. You may wish to consult our list of "Recommended Courses" below.
- (~2 paragraphs) Describe a creative project that you are proud of, completed either in a course or in your own personal practice as an artist. Did you intend it for a specific audience, and if so, how did that intention shape the work? What did you hope audiences would gain from it? You may opt to describe a series of smaller projects, if you wish.
- (~1 paragraph) What are your aims in creative technologies? What kind of creative arts or design practices do you envision working on after you have completed your degree?

Additional Recommended Courses:

In addition, the following courses are recommended prior to qualification:

- Coursework in programming, 2D drawing, 3D modeling, or sound design.
- At least one course in a justice-related topic, including *but not limited to*: courses in critical race and ethnic studies (or similar), indigenous studies, labor studies, disability and accessibility, feminist studies, gender studies, and/or courses on postcolonial or decolonizing practices.
- At least one course in critical art and media studies, including *but not limited to:* courses in the dissemination and interpretation of contemporary media; visual and aural culture studies; film studies; documentary or archive studies; media history; relationships between media, power, and representation; and critical studies of journalism, social media, or popular culture.

Students who enter as frosh need to complete these major qualification courses early in their studies so that the petition to major status is accomplished by the end of their sophomore year.

Transfer students should complete the required coursework and declare the major by the end of their second quarter.

Appeal Process

Students who are informed that they are not eligible to declare the major can email the undergraduate advisor at creative@ucsc.edu for further information on the appeal process.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first). Please note that an academic plan must be on file for your petition to declare to be processed.

The Petition for Major/Minor is available in MyUCSC. Go to your Student Homepage and select the Undergraduate Student eForms tile > Petition for Major/Minor.

Students will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

Letter Grade Policy

This program does not have a letter grade policy outside the university's Pass/No Pass limit and minimum grade requirement (more information is available on the Pass/No Pass website).

Course Substitution Policy

Double Majors and MajorMinor Combinations Policy

Required Equipment

Given the online nature of creative technologies and its subject matter, students are required to own either a laptop computer, or a desktop computer and a tablet. Technology chosen in these categories need not be brand new, but should be capable of running the latest version of its respective (Mac, iOS, PC, etc.) operating system. All current creative technologies courses require a webcam and microphone, which are integrated into most recent devices.

Requirements and Planners

Course Requirements

Colloquium

Students must take at least three quarters of colloquium.

CT 1	Creative Interventions: A Colloquium in Contemporary Media	2

Breadth of Arts Electives

Students must take three Breadth of Arts elective courses. At least one of the three Breadth of Arts elective courses must be upper-division (numbered 100 and above). Courses relevant to the requirement, but not listed here (including graduate seminars), may be proposed to fulfill this requirement via petition; please contact the undergraduate advisor to learn about the petition process.

Students are encouraged to take courses in their preferred artistic media.

Students may choose from the following list of Breadth of Arts elective courses:

ART 10D	2D Foundation	5
ART 10E	3D Foundation	5
ART 10F	4D Foundation	5
ART 20L	Introduction to Drawing	5
ART 80E	Environmental Art in the Expanded Field	5
ARTG 80G	Visual Communication and Interaction Design	5
ART 80T	Digital Tools for Contemporary Art Practice	5
ART 101	Introduction to Computer Programming for the Arts	5
ART 104	Digital Video	5
ART 106O	2D Animation	5
ART 113	Illustrating Stories: Fantasy and Documentary Narratives	5
ART 125	Environmental Art Studio	5
ART 135	Digital Painting	5
ART 145	Vector Art and Illustration	5
ART 172	Public Art: Memory, Landscape, and Artist as Activist	5
ARTG 80H	Critical History of Digital Games	5
ARTG 91	Introduction to Game Art Production	5
ARTG 131	3D Game Art Production	5
ARTG 132	3D Character Rigging and Animation for Video Games	5
FILM 80A	The Film Experience	5
FILM 80M	Understanding Media	5
FILM 80S	Special Topics in Film and Digital Media	5
FILM 80T	Technothrillers	5
FILM 80V	Video Games as Visual Culture	5
FILM 80X	Sex in the Cinema	5
MUSC 11C	Popular Music in the United States	5
MUSC 11E	Global Popular Music	5
MUSC 14	Beginning Western Theory and Musicianship	5
MUSC 20A	Global Music Theory and Musicianship	5
MUSC 20B	Theoretical Foundations of Music	5
MUSC 20C	Beginning Jazz Theory	5
MUSC 58	Songwriting Craft and Practice	5
MUSC 71	Laptop Music	5
MUSC 74	Beginning Spontaneous Composition and Improvisation	5
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 80C	History, Literature, and Technology of Electronic Music	5
MUSC 80H	The Hollywood Musical	5
MUSC 80K	Listening to the Environment	5
MUSC 80L	Artificial Intelligence and Music	5
MUSC 80M	Film Music	5
MUSC 80N	Music of the Grateful Dead	5
MUSC 80O	Music, Politics, and Protest	5
MUSC 80R	Music in the Digital Age	5
MUSC 80V	The Music of the Beatles	5
MUSC 81A	Survey of Rap and Hip Hop Music	5
MUSC 81E	Music and Resilience in Latin America	5
MUSC 81J	Jazz Mirror of Global Interconnection	5
MUSC 81L	Music in Animated Film	5
MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 101H	Music of Insular Southeast Asia	5
MUSC 123A	Electronic Music: Synthesis & Composition I	5
THEA 10	Introduction to Theater Design and Technology	5
THEA 14	Drawing	5
THEA 18C	Drafting-Computer Aided	5
THEA 61A	Ancient and Medieval Drama	5
THEA 80A	Introduction to African American Theater	5
THEA 80B	Rock 'n' Roll Design	5
THEA 80C	Monsters	5
THEA 80D	Commercial Design 1900 to Present	5
THEA 80L	Muppet Magic: Jim Henson's Art	5
THEA 80M	Chicano/a Teatro	5
THEA 80N	Walt Disney	5
THEA 80P	Pixar - Story Matters	5
THEA 80S	Theater Arts Education and the Community	5
THEA 80Q	Introduction to Queer Theater	5
THEA 80R	Bollywood Dance and Culture in India and Indian Diaspora	5
THEA 80U	Everybody Dance Now!	5
THEA 80X	The Performance of Story in Theater and Film	5

THEA 80Y	American Musical Theater	5
HAVC 27	Image and Ideology in Indian Art	5
HAVC 30	Introduction to European Visual Culture	5
HAVC 40	Museum Cultures: The Politics of Display	5
HAVC 41	Introduction to Modern Art	5
HAVC 45	Photography Now	5
HAVC 46	Introduction to U.S. Art and Visual Culture	5
HAVC 47	Introduction To Contemporary Art	5
HAVC 49	From Memes to Metadata: an Introduction to Digital Visual Culture	5
HAVC 51	Greek Eyes: Visual Culture and Power in the Ancient Greek World	5
HAVC 55	Unclothed: The Naked Body from Antiquity to the Present	5
HAVC 123A	Modernity and the Arts of India	5
HAVC 137E	Renaissance Prints	5
HAVC 140C	Race and American Visual Arts	5
HAVC 140F	Black Visual Culture	5
HAVC 141H	Media History and Theory	5
HAVC 141N	Data Cultures: Art, Technology, and the Politics of Visual Representation	5
HAVC 141O	Sex, Lies, and Surveillance: Contemporary Documentary Arts	5
HAVC 141P	Networks and Natures: Art, Technology, and the Nonhuman	5
HAVC 186	Horror and Gender in Art and Visual Culture	5
HAVC 191G	Art, Cinema, and the Postmodern	5

Lower-Division CT Courses

Students take three lower-division core courses.

CT 10	Understanding Digital Design	5
CT 11	Digital Media Perspectives	5
CT 20	Introduction to Creative Coding	5

Upper-Division CT Courses

Students take eight upper-division courses; the Breadth of Arts elective (outlined above), plus the following. Courses marked with an asterisk are pending approval in the 2024-25 academic cycle.

- CT 100 - Digital Platforms: Observations and Practices
- CT 101 - Persuasion and Resistance: Power in Contemporary Digital Media *
- CT 110 - Sensors, Signals, and Interaction *
- CT 120 - Intermediate Creative Coding
- CT 125 - Collaborative Production Practicum *
- CT 195 - Creative Technologies Senior Studio *

Upper-Division CT Special Topics

Students choose one course from the CT 160 series:

- CT 160 - Fabrication and Production Studio *
- CT 161 - Narration and Participation: Modes of Representation in Media
- CT 162 - Immersive Reality Studio *
- CT 163 - Queer Art

Disciplinary Communication DC Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in creative technologies is satisfied by completing the following two courses:

- CT 101 - Persuasion and Resistance: Power in Contemporary Digital Media *
- CT 195 - Creative Technologies Senior Studio *

Comprehensive Requirement

Students satisfy the senior comprehensive requirement by completing:

- CT 195 - Creative Technologies Senior Studio *

Planners

Major Program Planners

The planners below reflect full-time study; if you are interested in pursuing part-time study, the CT advisor will create an individualized plan with you that suits your needs.

Frosh Planner (Full-Time)

	Fall	Winter	Spring
1st year	Choice of GE (5 credits)	Choice of GE (5 credits)	Choice of GE (5 credits)
	Choice of GE (5 credits)	Choice of GE (5 credits)	Choice of GE (5 credits)
	College 1 (5 credits)	Composition - WRIT 1 (5 credits)	Composition - WRIT 2 (5 credits)
2nd	Choice of GE (5	Choice of GE (5 credits)	Choice of GE (5

year	credits)		credits)
	Major Qualification: Introductory arts course in theory or history (5 credits)	Major Qualification: Practice-based, "maker"/production-oriented arts course (5 credits)	5 credit class
	American History and Institutions (5 credits)	5 credit class	5 credit class
3rd year	CT 1 (2 credits)	CT 1 (2 credits)	CT 1 (2 credits)
	CT 10 (5 credits)	CT 20 (5 credits)	CT 120 (5 credits)
	CT 11 (5 credits)	5 credit class	CT 100 (5 credits)
	Lower-division or Upper-division Breadth of Arts Elective (5 credits)	Lower-division or Upper-division Breadth of Arts Elective (5 credits)	5 credit class
4th year	CT 101 (5 credits)	CT 110 (5 credits)	Upper-division Breadth of Arts Elective (5 credits)
	Upper-division CT Special Topics (5 credits)	CT 125 (5 credits)	CT 195 (5 credits)
	5 credit class	5 credit class	

Transfer Planner (Full-Time)

Year	Fall	Winter	Spring
1st year	CT 1 (2 credits)	CT 1 (2 credits)	CT 1 (2 credits)
	CT 10 (5 credits)	CT 20 (5 credits)	CT 120 (5 credits)
	CT 11 (5 credits)	5-credit class	CT 100 (5 credits)
	Lower-division or Upper-division Breadth of Arts Elective (5 credits)	Lower-division or Upper-division Breadth of Arts Elective (5 credits)	5-credit class
2nd year	CT 101 (5 credits)	CT 110 (5 credits)	Upper-division Breadth of Arts Elective (5 credits)
	Upper-division CT Special Topics (5 credits)	CT 125 (5 credits)	CT 195 (5 credits)
	5-credit class	5-credit class	

CT MAJOR QUALIFICATION COURSES

Major Qualification Courses

Introductory Theory or History Courses

Art

ART 80E	Environmental Art in the Expanded Field	5

Art and Design: Games and Playable Media

ARTG 80H	Critical History of Digital Games	5

Film and Digital Media

FILM 80A	The Film Experience	5
FILM 80M	Understanding Media	5
FILM 80S	Special Topics in Film and Digital Media	5
FILM 80T	Technothrillers	5
FILM 80V	Video Games as Visual Culture	5
FILM 80X	Sex in the Cinema	5

History of Art and Visual Culture

HAVC 10	Introduction to African Visual Culture	5
HAVC 20	Visual Cultures of Asia	5
HAVC 22	Religion and Visual Culture in China	5
HAVC 24	Southeast Asia Visual Culture	5
HAVC 27	Image and Ideology in Indian Art	5
HAVC 28	Ghosts, Haunting, Memory, and Erasure in the Films of Asia	5
HAVC 30	Introduction to European Visual Culture	5
HAVC 35	European Visual Culture in a Global Context 1500-1900	5
HAVC 39	African-American Art	5
HAVC 40	Museum Cultures: The Politics of Display	5
HAVC 41	Introduction to Modern Art	5
HAVC 43	History of Modern Architecture	5
HAVC 44	Designing California: Architecture, Design, and Environment	5
HAVC 45	Photography Now	5
HAVC 46	Introduction to U.S. Art and Visual Culture	5
HAVC 48	Climate Justice Now! Art, Activism, Environment Today	5
HAVC 49	From Memes to Metadata: an Introduction to Digital Visual Culture	5
HAVC 50	Ancient Mediterranean Visual Cultures	5
HAVC 51	Greek Eyes: Visual Culture and Power in the Ancient Greek World	5
HAVC 55	Unclothed: The Naked Body from Antiquity to the Present	5
HAVC 58	Gardens of Delight: Fifteen Centuries of Islamic Visual Culture	5
HAVC 60	Indigenous American Visual Culture	5
HAVC 64	Indigenous North American Materiality and Resistance	5
HAVC 65	Native American Art and the Environment	5
HAVC 70	Visual Cultures of the Pacific Islands	5
HAVC 80	Colonial Histories and Legacies: Africa, Oceania, and the Indigenous Americas	5
HAVC 85	Introduction to Global Architecture	5

Music

MUSC 11A	Introduction to Western Classical Music	5
MUSC 11B	Introduction to Jazz	5
MUSC 11C	Popular Music in the United States	5
MUSC 11D	Introduction to World Music	5
MUSC 11E	Global Popular Music	5
MUSC 20A	Global Music Theory and Musicianship	5
MUSC 14	Beginning Western Theory and Musicianship	5
MUSC 15	Preparatory Musicianship	5
MUSC 20B	Theoretical Foundations of Music	5
MUSC 20C	Beginning Jazz Theory	5
MUSC 80A	Music of the Silk Road	5
MUSC 80B	Music of Asia	5
MUSC 80C	History, Literature, and Technology of Electronic Music	5
MUSC 80E	Race and American Music	5
MUSC 80F	Music in Latin American Culture: Regional Traditions	5
MUSC 80G	American Musical Theater	5
MUSC 80H	The Hollywood Musical	5
MUSC 80I	Music of Modern Israel	5
MUSC 80J	American Folk Music	5
MUSC 80K	Listening to the Environment	5
MUSC 80L	Artificial Intelligence and Music	5
MUSC 80M	Film Music	5
MUSC 80N	Music of the Grateful Dead	5
MUSC 80O	Music, Politics, and Protest	5
MUSC 80Q	A Survey of African Music	5
MUSC 80R	Music in the Digital Age	5
MUSC 80S	Women in Music	5
MUSC 80T	Mizrach: Jewish Music in the Lands of Islam	5
MUSC 80V	The Music of the Beatles	5
MUSC 80W	Music Business	5
MUSC 80X	Musics of South Asia	5
MUSC 80Y	Music, Anti-Semitism, and the Holocaust	5

MUSC 81A	Survey of Rap and Hip Hop Music	5
MUSC 81D	Music and Empire	3
MUSC 81E	Music and Resilience in Latin America	5
MUSC 81G	A Cultural History of the Guitar	5
MUSC 81H	The Golden Age of Hip Hop	3
MUSC 81I	Music of Indonesia	5
MUSC 81J	Jazz Mirror of Global Interconnection	5
MUSC 81K	Scenes and Subcultures	5
MUSC 81L	Music in Animated Film	5
MUSC 81M	Chicano/Latino Music in the United States	5
MUSC 81P	History of Jewish Music	5
MUSC 81R	The 1970s: A Decade in Rock	3
MUSC 81S	Music and Science Fiction	3
MUSC 72	Fundamentals of Music Technology	2

Courses in the above list that are less than 5 credits may fulfill this requirement when 5 or more credits are accrued.

Theater Arts

THEA 25	Understanding Shakespeare	5
THEA 61A	Ancient and Medieval Drama	5
THEA 61B	Drama from the Renaissance to the Modern Age	5
THEA 61C	The Birth of the Modern: Drama and Performance After the Renaissance	5
THEA 64	Shakespeare and Adaptation in Text and Performance	5
THEA 80A	Introduction to African American Theater	5
THEA 80B	Rock 'n' Roll Design	5
THEA 80C	Monsters	5
THEA 80D	Commercial Design 1900 to Present	5
THEA 80H	Hamlet Conundrums	5
THEA 80K	Shakespeare 4every1	5
THEA 80L	Muppet Magic: Jim Henson's Art	5
THEA 80N	Walt Disney	5
THEA 80P	Pixar - Story Matters	5
THEA 80Q	Introduction to Queer Theater	5
THEA 80R	Bollywood Dance and Culture in India and Indian Diaspora	5
THEA 80T	Flashmob! Mass Performance in the Information Age	5
THEA 80U	Everybody Dance Now!	5
THEA 80V	The Circus in American Culture	5
THEA 80X	The Performance of Story in Theater and Film	5
THEA 80Y	American Musical Theater	5

Practice-Based, "Maker"/Production-oriented Courses

Art

ART 10D	2D Foundation	5
ART 10E	3D Foundation	5
ART 10F	4D Foundation	5
ART 20L	Introduction to Drawing	5
ART 80T	Digital Tools for Contemporary Art Practice	5

Art and Design: Games and Playable Media

ARTG 10	Aesthetic Designs	5
ARTG 20	Games as Art	5
ARTG 25	Games as Art & Activism	5
ARTG 30	Games as Activism	5
ARTG 80G	Visual Communication and Interaction Design	5
ARTG 91	Introduction to Game Art Production	5

Music

MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 6	Classical Guitar Ensemble	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 10	Central Asian Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 12B	Mexican Folklorico Music and Dance	2
MUSC 53A	Beginning Ghanaian Ensemble	2
MUSC 54	North Indian Music Workshop	2
MUSC 55	Rhythms of North India	2
MUSC 56	Collaborative Music-Making for Beginners	2
MUSC 58	Songwriting Craft and Practice	5
MUSC 59	Introductory Keyboard Skills	2
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2
MUSC 73	Music and the Ocean	3
MUSC 74	Beginning Spontaneous Composition and Improvisation	5
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 71	Laptop Music	5

MUSC 72	Fundamentals of Music Technology	2

Ensemble and studio courses (2- and 3-credit courses) may fulfill this requirement when 5 or more credits are accrued. Students may combine different courses to reach the 5-credit minimum.

Theater Arts

THEA 10	Introduction to Theater Design and Technology	5
THEA 12	Stage Management	5
THEA 14	Drawing	5
THEA 15	Special Topics in Textiles	5
THEA 17	Costume Construction	5
THEA 18	Drafting for Theatrical Production	5
THEA 18C	Drafting-Computer Aided	5
THEA 20	Introductory Studies in Acting	5
THEA 21	Acting Studio I: Psychological Realism	5
THEA 22	Indonesian Dance and Drama	5
THEA 23	Voice for the Actor	5
THEA 24	Movement for Performers	5
THEA 30	Introduction to Dance Theory and Technique	5
THEA 31A	Dance Studio I: Asian or Asian Diasporic Practice	5
THEA 31B	Dance Studio I: Ballet	5
THEA 31C	Dance Studio I: Contemporary Dance Theory and Technique	5
THEA 36	Introduction to Dance Making	5
THEA 37	African Dance	5
THEA 40	Introduction to Directing	5
THEA 41	Fundamentals of Directing	5
THEA 55A	Workshop in Performance: Barnstorm	5
THEA 80M	Chicano/a Teatro	5
THEA 80S	Theater Arts Education and the Community	5
THEA 80Z	Indian Dance	5

Film and Digital Media

For Film and Digital Media

101 Communications Building
(831) 459-3204
film@ucsc.edu
http://film.ucsc.edu

For Social Documentation

(831) 459-3445
socdoc@ucsc.edu
http://film.ucsc.edu/socdoc

PROGRAMS OFFERED

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Film and Digital Media Minor (p. 68)

Social Documentation M.F.A. (p. 68)

Film and Digital Media Ph.D. (p. 70)

Film and Digital Media Designated Emphasis (p. 73)

Social Documentation Designated Emphasis (p. 73)

UNDERGRADUATE PROGRAM

How do I translate my ideas into images and sounds? What is the role of media in an era of climate crisis? Are documentaries real? Does social media change democracy? How does listening inform our understanding of culture and environment? How can we move toward an algorithmically ethical future? Who and what has been left out of the history of cinema and television? Do streaming services make film history more or less accessible? Who should be responsible for caring for historical media? How can the study of media contribute to forging a more just and sustainable future?

Sound, images and code shape today's reality and our perspectives on the world. Students from diverse backgrounds join our program for its inclusiveness and the opportunity to explore media's past, present and future in relation to race, ethnicity, gender and sexuality, class, intersectionality, community, place, and environment, among others.

The Film + Digital Media general major is neither strictly a theory program nor a production program; it is both—a liberal arts program using a rich toolbox of practical skills and collaborative strategies (writing, research, coding, editing, image making, recording, cinematography) to ask questions critical to our shared future. The major prepares students to analyze and contribute to an ever-evolving and interconnected landscape of film, TV, animation, games, software, social media, and other media forms. Courses in the major connect students with faculty research strengths in nonfiction media, screen representation and race, feminist media, queer theory, experimental and avant-garde movements, animation, games and playable media, global cinema, video and computer art, personal media, and collections and archives. Students in the program have many opportunities to work with one another and to work closely with faculty members as mentors, critics, and sponsors of independent studies. Together, we share the excitement of remaking the study of film and other media for the 21st century, equipping students to critique and produce in ways that will create a more just, inclusive, equitable, and environmentally sustainable world.

Our curriculum reflects an understanding that intellectual and creative work are related forms of production and inquiry. Undergraduates in Film + Digital Media may enroll in both critical studies and production-focused classes, and some of our classes incorporate overlapping skills and knowledge. Each of our pathways through the major equips our students with a foundation in historical and theoretical concepts, and exposes them to global and cross-cultural perspectives on a constantly widening media spectrum.

GRADUATE PROGRAM

The Doctor of Philosophy (Ph.D.) program in film and digital media challenges the traditionally conceived borders between creative and critical practice. The program enables dialogue between creative practice and theoretical knowledge as related forms of intellectual work and provides the conditions for students to realize a wide range of possible projects, including those that exist across the traditional divides of critical studies and production.

FILM AND DIGITAL MEDIA B.A.

Information and Policies

Introduction

Students in the general film and digital media (FDM) major develop an understanding of major movements in world cinema and different aesthetic approaches to the medium while studying the cultural impact of television and the rise of video and digital art in recent decades.

The integrated critical practice concentration is designed for film and digital media majors who have a special aptitude for and interest in combining work in critical studies and production. The concentration provides them with a more rigorous pathway through the major and, in their senior year, allows them to work on a senior project that integrates creative and intellectual work.

Students in all facets of the major acquire skills in media analysis while maintaining a broadly based, liberal arts perspective.

Students enrolled in film and digital media production classes have access to audio, video, and digital production and postproduction equipment. Facilities include a digital media lab; stop-motion animation lab audio recording studio; sound stage with green screen; motion capture facility; digital nonlinear editing rooms; video format conversion rooms; a computerized sound effects library; and student equipment checkout. Additionally, computer laboratories equipped for digital image manipulation, web authoring, and interactive interface design and viewing rooms are available. The critical studies facilities include classrooms equipped for high-end film, video, and data projection. The library holdings in film and video history, theory, and literature are complemented by a large collection of films, videos, laser disks, and DVDs, including a diverse range of international feature films, experimental film and video work, animation, silent films, and documentaries.

Some courses offered by the Film and Digital Media Department are restricted in enrollment; admission is based on the completion of prerequisites and other specific written application requirements.

Upper-division digital media and production studio courses require coursework to be completed on computers. Instruction in and software for production courses utilizes the macOS platform and primarily consists of Apple and Adobe video production software packages. Many University of California, Santa Cruz, students purchase laptop computers. Film and digital media students who are considering purchasing a laptop computer for production work are encouraged to consult with the department's operations staff. A list of recommended computer configurations and information regarding education pricing on software packages is available on the Film and Digital Media website.

Program Learning Outcomes

Students who earn a B.A. in the film and digital media major will gain the skills, knowledge, and understanding that will enable them to:

1. Demonstrate their ability to employ research skills, including the use of appropriate print and technology sources in the discipline, to construct effective arguments.
2. Demonstrate that they understand the pre-production, production, and postproduction digital media and filmmaking process.
3. Demonstrate the relationship between different types of form and meaning through the creation of film and digital media projects or the critical analysis of them.
4. Demonstrate their ability to work collaboratively to produce a film or digital media project.
5. Demonstrate broad knowledge of film and media history internationally.
6. Demonstrate scholarly writing skills appropriate to the discipline of film and digital media.
7. Demonstrate an ability to analyze, interpret, and critique films and media from a variety of theoretical perspectives using the critical vocabulary and methodologies of the discipline.
8. Demonstrate their ability to articulate and defend their research and practice in a critical environment.

Academic Advising for the Program

Academic advising for the film and digital media major is done via email and advising appointments. Please email fdmadvising@ucsc.edu and refer to the department's website for the most up-to-date advising information.

Transfer students should review the Transfer Information and Policy Section.

Getting Started in the Major: First-Year Students

For information about getting started in the film and digital media major please see the Getting Started in the Major guide for first-year students.

This major is not highly sequential or course intensive. Students may begin taking courses toward the major in the first year, but it is not required.

Transfer Information and Policy

Transfer Admission Screening Policy

Film and digital media is a non-screening major. Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz.

Transfer students can finish the film and digital media general major requirements within two years. While not required for admission, transfer students are encouraged to complete UCSC general education requirements. the Intersegmental General Education Transfer Curriculum (IGETC), or the California General Education Transfer Curriculum (CalGETC) prior to transferring.

Getting Started in the Major: Transfer Students

To meet major qualifications, all major qualification courses (FILM 20A, AND either FILM 20B or FILM 20C) must be completed by the end of their first quarter in residence.

A maximum of two courses from another department or institution may be substituted if articulated through assist.org or approved by Film and Digital Media faculty. At least one of the major qualification courses must be taken at UCSC.

Transfer students are strongly encouraged to participate in the campus orientation programs, connect with the undergraduate advisor, and utilize transfer-focused campus partners like STARRS upon their arrival.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete two courses: FILM 20A, AND either FILM 20B or FILM 20C with letter grades of C or better or P grades to qualify for the film and digital media major. Letter grades of C- or below, and NP grades, may not be used to fulfill the major qualification requirements.

At least one of the major qualification courses must be taken at UC Santa Cruz.

FILM 20A	Introduction to Film Studies	5
	AND	
	Either one of these courses	
FILM 20B	Introduction to Television Studies	5
FILM 20C	Introduction to Digital Media	5

Appeal Process

Students may appeal a negative decision within 15 days by submitting an appeal letter to the film and digital media undergraduate advisor. The department will notify the student of the outcome within 15 days of receipt of the appeal.

How to Declare a Major

Students must submit a petition to declare and complete the major declaration workshop as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Please see the department's website for details on the process for submitting the petition to declare and completing the declaration of major workshop.

Students petitioning to declare when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh; in their second quarter, for students admitted as junior transfers), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification (MQ) courses.

Acceptance into the film and digital media major does not constitute acceptance into a concentration.

Letter Grade Policy

Letter grades of C or better or P grades are required in the major requirement courses (See Major Qualification above). Letter grades of C- or below, or NP grades, may not be used to fulfill the major's requirements. Students must follow the campus policy on grading requirements, including the P/NP grading policy.

[Optional Catchall]

Course Substitution Policy

A maximum of two courses from another department or institution may be substituted if articulated through assist.org or approved by Film and Digital Media faculty. For transfer students, FILM 20 equivalents completed at another institution do not count toward the two course maximum.

Double Majors and Major/Minor Combinations Policy

Study Abroad

The department strongly encourages students to explore studying abroad while attending UC Santa Cruz. Please see the UCSC Global Learning website for more information and consult with the undergraduate advisor as early as possible to discuss planning.

Film and digital media has unique department-based exchanges with the University of Sussex in England and the University of Bergen in Norway. UCSC Global Seminars taught by our Film and Digital Media faculty in Italy and Morocco are also offered. Students in these programs may be allowed an additional substitution for participation in these programs. Please see the Film and Digital Media Department's website for more information.

Honors

Honors in film and digital media are awarded to graduating seniors who meet or exceed a cumulative GPA of 3.5 in the required major courses.

Three-Year Pathway

The Film and Digital Media Department has designed a three-year pathway for students who want to complete their film

and digital media B.A. in three years. It is an intensive program that includes all of the courses for the current film and digital media general major as well as all general education requirements and electives required for the university. The three-year pathway is designed for the FDM general major; completing a concentration is not feasible for a three-year pathway. Students should begin the FDM general major three-year pathway in their first year to be able to complete the required courses in three years. A sample planner can be found on the university advising website. For more information, contact the Film and Digital Media undergraduate advisor.

Critical Studies and Production Pathways

For students interested in pursuing a focused area of study, the film and digital media major offers unique pathways embedded within the general major in critical studies and in production. If interested in pursuing these specialized academic plans, please contact the undergraduate advisor as early as possible. Please note that these pathways are not officially recognized on your transcript.

General Film and Digital Media Major

The film and digital media general major requires:

- Three lower-division courses
- Ten upper-division courses
- At least one of the upper-division courses must meet the department's diversity requirement
- Satisfaction of the senior comprehensive requirement
- Satisfaction of the Disciplinary Communication (DC) requirement.

Course Requirements

Lower-Division Courses

Take the following course:

FILM 20A	Introduction to Film Studies	5

Plus two additional 20-level courses:

FILM 20B	Introduction to Television Studies	5
FILM 20C	Introduction to Digital Media	5
FILM 20P	Introduction to Production Technique	5

FILM 20P cannot be used toward declaring the major.

Upper-Division Courses

Core Curriculum

The core curriculum consists of the following course, plus one course from each of the three groups below.

FILM 120	Introduction to Media Theory	5

One course from each of the following three groups:

Group 1:

FILM 130	Silent Cinema	5
FILM 132A	International Cinema to 1960	5
FILM 132B	International Cinema, 1960 to Present	5

Group 2:

FILM 134A	American Film, 1930-1960	5
FILM 134B	American Film, 1960-Present	5

Group 3:

FILM 136A	Experimental Film and Video	5
FILM 136B	History of Television	5
FILM 136C	Visual Culture and Technology: History of New Media	5
FILM 136D	Documentary Film and Video	5

Plus the Diversity Requirement

Students take at least one course from the following list focusing on non-Western perspectives, races, ethnicities, genders, classes, sexualities, or abilities. The course chosen will satisfy the Diversity Requirement along with its respective category of the Core Curriculum or upper-division elective requirement.

ANTH 110P	India and Indian Diaspora through Film	5
FILM 132A	International Cinema to 1960	5
FILM 132B	International Cinema, 1960 to Present	5
FILM 165A	Film, Video, and Gender	5
FILM 165B	Race on Screen	5
FILM 165C	Lesbian, Gay, and Queer Film and Video	5
FILM 165D	Asian Americans and Media	5
FILM 165E	Chicana/o Cinema, Video	5
FILM 165G	Gender and Global Cinema	5
FILM 168A	Arab and North African Cinemas	5
FILM 168F	Francophone African Cinema	5
FILM 168M	National Cinema and Culture: Morocco	5
HAVC 141O	Sex, Lies, and Surveillance: Contemporary Documentary Arts	5
LALS 122	Media and Nationalism	5

Non-FILM courses on this list will count toward the two-course maximum outlined in the Course Substitution Policy.

Students may submit a petition to the department to have other courses reviewed to satisfy the diversity requirement. Please send course syllabi to fdmadvising@ucsc.edu for review.

Plus one course from the following to satisfy the senior comprehensive requirement:

FILM 194A	Film Theory Seminar	5

FILM 194B	Electronic Media Theory Seminar	5
FILM 194C	New Media Theory Seminar	5
FILM 194D	Film History Seminar	5
FILM 194E	International Cinemas	5
FILM 194F	Film and the Other Arts	5
FILM 194G	New(s) Media	5
FILM 194H	Ethics and Documentary Filmmaking	5
FILM 194S	Special Topics Seminar	5
FILM 196A	Senior Project in Narrative Production	5
FILM 196B	Senior Project in Screenwriting	5
FILM 196C	Senior Project in Documentary	5
FILM 197	Senior Digital Media Workshop	5

Electives

Five (5-credit) upper-division elective courses are to meet the following criteria:

- Five courses total, in any combination of 5-credit critical studies (FILM 145, FILM 160 and the 180 series), production (FILM 150 and 170 series), and/or additional Core Curriculum courses (FILM 130/FILM 132/FILM 134/FILM 136 course, taken after its respective Core Curriculum requirement has been satisfied). FILM 185F (a two-credit course) is excluded from this list.
- A maximum of two upper-division electives may be taken in another department or at another institution if pre-approved by the Film and Digital Media Department.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement.

The DC requirement is met by passing one course from each of the two following categories:

First Category

FILM 130	Silent Cinema	5
FILM 132A	International Cinema to 1960	5
FILM 132B	International Cinema, 1960 to Present	5
FILM 134A	American Film, 1930-1960	5
FILM 134B	American Film, 1960-Present	5

Second category:

FILM 194A	Film Theory Seminar	5
FILM 194B	Electronic Media Theory Seminar	5
FILM 194C	New Media Theory Seminar	5
FILM 194D	Film History Seminar	5
FILM 194E	International Cinemas	5
FILM 194F	Film and the Other Arts	5
FILM 194G	New(s) Media	5
FILM 194H	Ethics and Documentary Filmmaking	5
FILM 194S	Special Topics Seminar	5
FILM 196A	Senior Project in Narrative Production	5
FILM 196B	Senior Project in Screenwriting	5
FILM 196C	Senior Project in Documentary	5
FILM 197	Senior Digital Media Workshop	5

Comprehensive Requirement

Senior Seminar

Seniors in the general film and digital media major satisfy the comprehensive requirement with one of the following senior-level classes.

FILM 194A	Film Theory Seminar	5
FILM 194B	Electronic Media Theory Seminar	5
FILM 194C	New Media Theory Seminar	5
FILM 194D	Film History Seminar	5
FILM 194E	International Cinemas	5
FILM 194F	Film and the Other Arts	5
FILM 194G	New(s) Media	5
FILM 194H	Ethics and Documentary Filmmaking	5
FILM 194S	Special Topics Seminar	5
FILM 196A	Senior Project in Narrative Production	5
FILM 196B	Senior Project in Screenwriting	5
FILM 196C	Senior Project in Documentary	5
FILM 197	Senior Digital Media Workshop	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Plan One is a guideline for students beginning the major early in the first term of their academic career.

Plan Two is a guideline for students considering the major after their first term.

Students following either plan are able to meet the campus' major declaration deadline and complete their degree in four years. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education and degree requirements.

Plan One

Year	Fall	Winte	Spring	Summ

		r		**er**
Entering				College 1A Summer Edge (optional)
1st (frosh)	FILM 20A	FILM 20C WRIT 1/WRIT 1E (if needed)	FILM 20B or FILM 20P	
2nd (soph)	FILM 130 or FILM 132 or FILM 134 or FILM 136 WRIT 2*	FILM 120	FILM 130 or FILM 132 or FILM 134 or FILM 136	
3rd (jr)	FILM 130 or FILM 132 or FILM 134 or FILM 136 FILM Upper-Division Elective 1	FILM Upper-Division Elective 2	FILM Upper-Division Elective 3 (Diversity Requirement)	
4th (sr)	FILM Upper-Division Elective 4	FILM 194 or FILM 196 or FILM 197	FILM Upper-Division Elective 5	

* WRIT 2 should be taken in or before spring quarter of the second year.

Plan Two

Year	**Fall**	**Winter**	**Spring**	**Summer**
Entering				College 1A Summer Edge (optional)
1st (frosh)	FILM 80	WRIT 1/WRIT 1E (if needed)	FILM 20A	
2nd (soph)	FILM 20B WRIT 2*	FILM 20C or FILM 20P FILM 120	FILM 130 or FILM 132 or FILM 134 or FILM 136	

3rd (jr)	FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM Upper-Division Elective 3 (Diversity Requirement)
	FILM Upper-Division Elective 1	FILM Upper-Division Elective 2	
4th (sr)	FILM Upper-Division Elective 4	FILM 194 or FILM 196 or FILM 197	FILM Upper-Division Elective 5

* WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Transfer Planner

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T
				FILM 20A (Summer Edge - optional)
3rd (jr)	FILM 20A	FILM 20C or FILM 20P	FILM 130 or FILM 132 or FILM 134 or FILM 136	
	FILM 20B	FILM 120	FILM Upper-Division Elective 1	
4th (sr)	FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM 194 or FILM 196 or FILM 197	FILM Upper-Division Elective 4	
	FILM Upper-Division Elective 2(Diversity Requirement)	FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM Upper-Division Elective 5	
	FILM Upper-Division Elective 3			

General education requirements can be satisfied with Film and Digital Media courses are: IM, ER, CC, PE-T, PR-E, PR-C, DC.

General education requirements not satisfied with Film and Digital Media courses are: MF, SI, SR, TA, C

Integrated Critical Practice Concentration

The integrated critical practice concentration (ICPC) provides a rigorous pathway beyond the general major requirements. ICPC offers classes specifically reserved for seniors with exceptional abilities in both critical studies and production who seek to combine creative and scholarly work. The concentration consists of three lower-division and 13 upper-division courses. The senior comprehensive requirement and the disciplinary communication requirement are included within the 13 upper-division courses.

Admission to the integrated critical practice concentration will be granted to students who have excellent grades in film and digital media courses, an outstanding writing sample, a clear statement of purpose outlining a senior project that integrates critical studies and production work, and a strong Film and Digital Media faculty endorsement.

Students are eligible to apply for the integrated critical practice concentration in the last quarter of their junior year. Students may apply a second time if not accepted, but not later than the first quarter of their senior year.

Application materials and instructions are available on the department's website. Student application materials are reviewed by a committee of Film and Digital Media faculty.

ICPC course requirements at the time of application:

- Completed or are currently enrolled in FILM 120
- Completed or are currently enrolled in at least three other upper-division critical studies classes
- Completed FILM 170A or FILM 170B
- Completed one other course from the 150 or 170 series
- Declared film and digital media major
- In good academic standing.

ICPC application materials:

- Completed application form
- One-page statement of purpose
- Sample essay
- Statement of support from FDM faculty (submitted directly to the department undergraduate advisor)

Course Requirements

Lower-Division Courses

Take the following course:

FILM 20A	Introduction to Film Studies	5

Plus two additional 20-level courses

FILM 20B	Introduction to Television Studies	5
FILM 20C	Introduction to Digital Media	5
FILM 20P	Introduction to Production Technique	5

FILM 20P cannot be used toward declaring the major

Upper-Division Courses

Students in the integrated critical practice concentration complete the following required upper-division core curriculum:

FILM 120	Introduction to Media Theory	5

One course from each of the following five groups

Group 1:

FILM 130	Silent Cinema	5
FILM 132A	International Cinema to 1960	5
FILM 132B	International Cinema, 1960 to Present	5

Group 2:

FILM 134A	American Film, 1930-1960	5
FILM 134B	American Film, 1960-Present	5

Group 3:

FILM 136A	Experimental Film and Video	5
FILM 136B	History of Television	5
FILM 136C	Visual Culture and Technology: History of New Media	5
FILM 136D	Documentary Film and Video	5

Group 4:

FILM 170A	Fundamentals of Digital Media Production	5
FILM 170B	Fundamentals of Film and Video Production	5

Group 5:

FILM 194A	Film Theory Seminar	5
FILM 194B	Electronic Media Theory Seminar	5
FILM 194C	New Media Theory Seminar	5
FILM 194D	Film History Seminar	5
FILM 194E	International Cinemas	5
FILM 194F	Film and the Other Arts	5
FILM 194G	New(s) Media	5
FILM 194H	Ethics and Documentary Filmmaking	5
FILM 194S	Special Topics Seminar	5

Two courses to satisfy the senior comprehensive requirement:

The following course:

FILM 199	Tutorial	5

Plus one of the following courses:

FILM 195	Senior Thesis/Project	5
FILM 196A	Senior Project in Narrative Production	5
FILM 196B	Senior Project in Screenwriting	5
FILM 196C	Senior Project in Documentary	5
FILM 197	Senior Digital Media Workshop	5

Electives

Five upper-division elective courses to be chosen from the following:

Two upper-division critical studies courses

In film and digital media chosen from the following:

FILM 145	Social Media Documentary Theory and Production	5
FILM 160	Film Genres	5
FILM 162	Film Authors	5
FILM 162F	Female Filmmakers	5
FILM 165A	Film, Video, and Gender	5

FILM 165B	Race on Screen	5
FILM 165C	Lesbian, Gay, and Queer Film and Video	5
FILM 165D	Asian Americans and Media	5
FILM 165E	Chicana/o Cinema, Video	5
FILM 165G	Gender and Global Cinema	5
FILM 168	National Cinema and Culture	5
FILM 168A	Arab and North African Cinemas	5
FILM 168M	National Cinema and Culture: Morocco	5
FILM 180	Writing About Film, Television, and Digital Media	5
FILM 185D	Sound and Image in Theory and Criticism	5
FILM 185R	The Film Remake	5
FILM 185S	Advanced Topics in Film Studies	5
FILM 185X	EyeCandy Seminar	5
FILM 187	Advanced Topics in Television Studies	5
FILM 189	Advanced Topics in Digital and Electronic Media Studies	5

Three upper-division production courses

In film and digital media chosen from the following:

FILM 145	Social Media Documentary Theory and Production	5
FILM 150	Screenwriting	5
FILM 151	Film Directing	5
FILM 170A	Fundamentals of Digital Media Production	5
FILM 170B	Fundamentals of Film and Video Production	5
FILM 171A	Sound	5
FILM 171C	Special Topics Workshop: Found Footage	5
FILM 171D	Social Information Spaces	5
FILM 171F	Special Topics Workshop: Autobiographical Film	5
FILM 171S	Special Topics in Film and Digital Media Production	5
FILM 172	Narrative Video Workshop	5
FILM 173	Narrative Digital Media Workshop	5
FILM 175	Documentary Video Workshop	5
FILM 176	Experimental Video Workshop	5
FILM 177	Digital Media Workshop: Computer as Medium	5
FILM 178A	Personal Computers in Film and Video	5
FILM 178B	Advanced Personal Computers in Film and Video	5
FILM 179A	Special Topics in Animation	5
FILM 179B	Documentary Animation Workshop	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement.

The DC requirement is met by passing one course from each of the two following categories:

First category

FILM 130	Silent Cinema	5
FILM 132A	International Cinema to 1960	5
FILM 132B	International Cinema, 1960 to Present	5
FILM 134A	American Film, 1930-1960	5
FILM 134B	American Film, 1960-Present	5

Second category

FILM 194A	Film Theory Seminar	5
FILM 194B	Electronic Media Theory Seminar	5
FILM 194C	New Media Theory Seminar	5
FILM 194D	Film History Seminar	5
FILM 194E	International Cinemas	5
FILM 194F	Film and the Other Arts	5
FILM 194G	New(s) Media	5
FILM 194H	Ethics and Documentary Filmmaking	5
FILM 194S	Special Topics Seminar	5
FILM 196A	Senior Project in Narrative Production	5
FILM 196B	Senior Project in Screenwriting	5
FILM 196C	Senior Project in Documentary	5
FILM 197	Senior Digital Media Workshop	5

Comprehensive Requirement

One of the following courses

Seniors in the integrated critical practice concentration must complete one of the following courses:

FILM 195	Senior Thesis/Project	5
FILM 196A	Senior Project in Narrative Production	5
FILM 196B	Senior Project in Screenwriting	5
FILM 196C	Senior Project in Documentary	5
FILM 197	Senior Digital Media Workshop	5

Plus the following course

FILM 199	Tutorial	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two recommended academic plans for students pursuing the integrated critical practice concentration for the film and digital media major.

Plan One is a guideline for students pursuing the major, beginning in the first term of their academic career.

Plan Two is for students who begin pursuing the major after their first term.

Students who are interested in the integrated critical practice concentration should consider Plan One to be better prepared for application to production studio classes in their junior year. Four-year students following Plan Two should be able to pursue a concentration and still meet their expected graduation term.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education and degree requirements.

Plan One

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	FILM 20A College 1	FILM 20C WRIT 1/WRIT 1E (if needed)	FILM 20B or FILM 20P	
2nd (soph)	FILM 130 or FILM 132 or FILM 134 or FILM 136 WRIT 2*	FILM 120	FILM 130 or FILM 132 or FILM 134 or FILM 136 FILM Upper-Division Elective (Critical Studies)	
3rd (jr)	FILM 170A or FILM 170B	FILM 130 or FILM 132 or FILM 134 or FILM 136 FILM Upper-Division Elective (Production)	FILM Upper-Division Elective (Critical Studies)(Diversity Requirement) FILM Upper-Division Elective (Production)	
4th (sr)	FILM 194 FILM Upper-Division Elective (Production)	FILM 199	FILM 195 or FILM 196 or FILM 197	

* WRIT 2 should be taken in or before spring quarter of the second year.

Plan Two

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st	FILM		FILM	

(frosh)	80	WRIT 1/WRIT 1E (if needed)	20A
2nd (soph)	FILM 20B	FILM 20C or FILM 20P	FILM 130 or FILM 132 or FILM 134 or FILM 136
	WRIT 2*	FILM 120	
3rd (jr)	FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM Upper-Division Elective (Critical Studies)
	FILM 170A or FILM 170B	FILM Upper-Division Elective (Production)	FILM Upper-Division Elective (Production)
4th (sr)	FILM 194	FILM 199	FILM 195 or FILM 196 or FILM 197
	FILM Upper-Division Elective (Critical Studies)	FILM Upper-Division Elective (Production)	

* WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Transfer Planner

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T FILM 20A (Summer Edge - optional)
3rd (junior)	FILM 20A	FILM 20C or FILM 20P	FILM 130 or FILM 132 or FILM 134 or FILM 136	
	FILM 20B	FILM 120	FILM Upper-Division Elective (Critical Studies)	
	FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM 170A or FILM 170B	FILM Upper-Division Elective (Production)	
4th (senior)	FILM 194	FILM 199	FILM 195 orFILM 196 or FILM 197	

FILM 130 or FILM 132 or FILM 134 or FILM 136	FILM Upper-Division Elective (Production)	FILM Upper-Division Elective (Critical Studies)
FILM Upper-Division Elective (Production)		

The following general education requirements can be satisfied with Film and Digital Media courses: IM, ER, CC, PE-T, PR-E, PR-C, DC.

General education requirements not satisfied with Film and Digital Media courses are: MF, SI, SR, TA, C.

FILM AND DIGITAL MEDIA MINOR

The minor in film and digital media offers a foundation in visual culture and contributes important scholarly techniques of value to other disciplines.

Students earn a minor in film and digital media by completing eight courses: FILM 20A and either FILM 20B or FILM 20C, and six upper-division courses including three from the core curriculum of the general major and three electives. There is no production component or comprehensive requirement in the minor. Courses may be completed for a letter grade or pass/no pass.

Declaring the Film and Digital Media Minor

Students who pass FILM 20A and either FILM 20B or FILM 20C are eligible to declare the film and digital media minor. To enroll in these classes, students contact the instructor and request a permission code.

Course Requirements

Lower-Division Courses

Complete the following course:

FILM 20A	Introduction to Film Studies	5

Plus one of the following courses:

FILM 20B	Introduction to Television Studies	5
FILM 20C	Introduction to Digital Media	5

Upper-Division Courses

Students in the minor must complete the following upper-division core curriculum.

One course from each of the following three groups:

Choose one of the following courses:

FILM 130	Silent Cinema	5
FILM 132A	International Cinema to 1960	5
FILM 132B	International Cinema, 1960 to Present	5

Plus one of the following courses:

FILM 134A	American Film, 1930-1960	5
FILM 134B	American Film, 1960-Present	5

Plus one of the following courses:

FILM 136A	Experimental Film and Video	5
FILM 136B	History of Television	5
FILM 136C	Visual Culture and Technology: History of New Media	5
FILM 136D	Documentary Film and Video	5

And three electives

Students take three additional 5-credit, upper-division film and digital media critical studies courses numbered FILM 100-149, FILM 152-169, FILM 180-189, or from the FILM 194 series. Production studio courses (FILM 150, FILM 151, and FILM 170A through FILM 179B) may not be used to satisfy this requirement.

Courses used to satisfy other requirements of the minor may not count toward the electives. One of the electives may be substituted from another department or institution. Course substitutions must be approved by the Film and Digital Media Department. For transfer students, FILM 20 equivalents completed at another institution do not count toward the one course maximum.

SOCIAL DOCUMENTATION M.F.A.

Introduction

The Master's of Fine Arts (M.F.A.) in Social Documentation (SocDoc) is an innovative interdisciplinary two-year program in the Film and Digital Media Department (FDM) that trains students to critically analyze, frame, and reflect on contemporary social issues through the art of documentary media. Designed for future documentarians committed to social change and to documenting communities, cultures, issues, and individuals who are marginalized in our current landscape of representation, the SocDoc Program supports students who share a commitment to social justice and human rights and who have a desire to study their subject areas in depth. In a rapidly expanding and changing field, SocDoc invites students to investigate critical social issues through an approach that fuses arts-based, social science and humanities research methods to artful and ethical documentary media practices. We prepare graduates for careers in independent and community media, public broadcasting, media education, human rights work and more.

Objectives

The Social Documentation M.F.A. program aims to train graduate students in critical thinking, social science analysis, arts-based approaches, and ethical standards for engaging with and documenting underrepresented communities. The curriculum concentrates on the analysis of social and structural systems, the creation of a rigorous and ethical approach in the collection and presentation of documentary material, and on the potential role of the documentary in social change.

SocDoc leverages faculty advisors across the campus to provide students with access to interdisciplinary expertise, grounding M.F.A. students in a deep understanding of their research subjects as well as in fluency with documentary production and postproduction techniques. Benefiting from deep faculty experience with media-making, documentary history, and community organizing, students in our program hone documentary approaches suited to their topical interests, ground themselves in social science analysis and research methodologies, and acquire professional skills, while maintaining a commitment to social justice and to communities in need. Central to our ethos is training in critical documentary frameworks, documentary ethics, and modes of community engagement and collaboration.

M.F.A. candidates build a curriculum around a required set of core courses that offer a foundation in the theory, methods, and production practices of social documentary, combined with elective courses in their substantive area of interest. The culminating work in the program is the creation of a creative documentary thesis project, developed in stages across the duration of the two-year degree.

Requirements

Course Requirements

The Social Documentation M.F.A. program offers a required and foundational core curriculum in the theory, history and practice of social documentary. Students work with three faculty advisors to design an individualized course of study that supplements the core curriculum with classes that support the student's specific project, both in terms of content and technical production. Toward that end, students take elective courses in their area of interest in the social sciences and/or humanities, write and develop a written thesis, and then create a final documentary media project.

A total of 72 credits is required to complete the SocDoc M.F.A. Required courses include seminars on social documentary history; practice, theory, and social science research; and technical instruction on production and post-production processes and techniques. Full-time enrollment is required.

First Year (32 credits):

Students must successfully complete all first-year core courses below, one FILM or SOCD graduate-level production elective, and one interdisciplinary elective related to their project research area. Students must enroll in at least one graduate-level FDM production elective every year.

Sometimes, this elective is a production elective with a SocDoc course number (for example SOCD 202 or SOCD 293, which offer instruction in a variety of different media platforms and are taught by a rotating group of instructors), but you may also choose from other graduate electives that have FILM course numbers, so long as the class has a production/making focus. The department regularly offers joint Ph.D. SocDoc making-focused courses with topics that change from year to year. Recent examples of these electives include: The Film/Video Essay (FILM 223), Expanded Documentary (FILM 230), Representing Memory (FILM 227), and Audiovisual Ethnography (FILM 232).

SOCD 200	Approaches to Social Documentation	5
SOCD 201A	Introduction to Documentary Field Production and Editing	5
SOCD 201B	Advanced Documentary Field Production and Editing	5
SOCD 201C	Project Planning for the Social Documentary	5
SOCD 203	Documentary Research Methods and Social Science Representation	5
FILM 202	Pedagogy in Film and Digital Media	2

Second Year (25 credits):

SOCD 294A	Production/Analysis/Editing	5
SOCD 294B	Production/Analysis/Editing	5
SOCD 294C	Production/Analysis/Editing	5
SOCD 295	Project Completion	5

Additional Course Requirements

Electives (15 credits)

In addition to the required courses above, 15 credits of electives (offered by departments) are identified individually in consultation with the director of Graduate Studies and faculty advisors. SocDoc students choose elective courses based on their research needs and interests and will be advised to take graduate elective courses offered by their thesis advisors. Students may also elect to take independent studies with their advisors as a form of concentrated study in a specialized area. (Please note that independent studies not may not be used to fulfill elective requirements.)

Advancing to Candidacy

To satisfy requirements for the M.F.A. degree, a student must complete and pass all of the required first-year courses and electives, assemble a committee of three (or more) advisors, develop a thesis proposal and successfully pass a qualifying examination (QE). The written thesis proposal serves as the basis for the QE. Approval of the written proposal and satisfactory completion of the qualifying examination is a prerequisite for advancement to further coursework or fieldwork on the master's project. The successful pre-

qualifying examination proposal should address the following:

- A detailed description of the subject to be documented
- A creative treatment
- A work plan including budget and timeline
- A preliminary annotated bibliography and filmography/videography of related works

The second year is focused on completion of the final documentary project, required for the M.F.A. degree. This project must reflect original research and creative activity while demonstrating a command of the field or topic of study. With an understanding of budgetary, equipment, and time limitations, students' projects should reflect a level of quality appropriate for exhibition.

Typically, the thesis expectation is as follows:

Documentary Film/Video: One 20-minute documentary suitable for broadcast and/or festival exhibition. Moving image work must include open captions to make the work accessible for deaf and hard-of-hearing viewers. All thesis films must be screened in an end-of-year M.F.A. exhibition screening.

Our core curriculum is oriented around filmmaking skills and the majority of our students create documentary films. Occasionally, SocDoc students have opted to create a social documentation creative project in a different format. There is some precedent for students working in: documentary still photography, audio documentary, animation, web-based/interactive documentary, documentary installation, and documentary performance. It may be possible to work in these and other forms, provided that appropriate advisors and resources can be available to support the project for the duration of the student's time in the program. The final presentation format for any non-film thesis projects must be determined in consultation with the advisors and director of Graduate Studies.

In addition to the creative thesis component, each student must produce a written thesis document (typically 15-20 pages), which should include an updated description of all the elements first elaborated in the first-year proposal, and should further reflect on the conceptualization, rationale, and methodology of the project in its finished form. A new section of analytical writing, describing the relationship between the documentary project and the field of social documentation, should be added. Bibliographies/mediographies (as appropriate to the discipline and form of the project) should also be revised and updated, in discussion with faculty advisors. The final M.F.A. critique consists of a thesis defense—a presentation and discussion of the student's thesis work with their advisors.

Final deliverables also include a basic website for the thesis project along with a trailer, a press kit, and other promotional materials. The public presentation of the project will complete graduation requirements. All materials will be filed in digital form and archived for future reference and access. All final projects, in every medium, must be submitted in the formats specified by the director of Graduate Studies.

[Optional Catchall]

Applying for Graduation

You must submit an Application for the M.F.A. to your graduate coordinator for review by the end of the second week of the quarter in which you intend to receive the certificate. The graduate coordinator will forward your application to the Graduate Division.

Please see Registration Requirements for all Graduate Degrees for details about registration requirement the quarter you intend to graduate.

For additional forms and information please visit the UC Santa Cruz Graduate Division website.

FILM AND DIGITAL MEDIA PH.D.

Introduction

This doctoral program integrates advanced media studies with practice-led research creation, enabling students to examine and produce work responsive to diverse forms of media in transition and in consideration of small- and large-scale cultural and environmental shifts. Through innovative coursework and close mentorship from program faculty, students develop rigorous interdisciplinary and practice-oriented methodologies for media research while pursuing their own creative practice. While our program is oriented by traditional film and media studies through a grounding in a range of forms including commercial and amateur cinema, radio transmission, television, sound and video art, and emerging digital media platforms, our faculty and affiliated faculty are attuned to pressing questions related to human and nonhuman existence, social justice, and cultural politics.

The program emphasizes international and cross-cultural perspectives, encouraging students to situate their media-making research within specific global contexts. This approach enables them to identify points of convergence across cultures while advancing new understandings of how media shapes broader cultural and historical transformations.

Graduates are prepared for careers in higher education, including teaching and research positions in media studies, film and television studies, digital culture, and related fields. The program's combination of theoretical rigor and creative practice also positions graduates for leadership roles in cultural institutions such as museums, film archives, arts organizations, and other spaces dedicated to moving image curation and preservation.

Advancement to Candidacy

Course Requirements

- A minimum of 108 units of study in coursework at UC Santa Cruz. Residence for a minimum of six quarters.

    - Applicants who already hold an M.A. or M.F.A. degree may petition to waive up to 30 credits of coursework; including up to two of the six required Film and Digital Media (FDM) Ph.D. electives; such a waiver is subject to the approval of the director of Graduate Studies. Such a waiver would advance the normative timeline described below; students will determine the exact timing of milestones with their advisors and the director of Graduate Studies.
- Residence for a minimum of six quarters.
- When in residence, students will take a minimum of 36 credits per year until advancement to candidacy.
- First-year students will be required to take the three foundational courses (FILM 200A-FILM 200B-FILM 200C), FILM 202 (Pedagogy in Film and Digital Media, 2 credits), plus at least two film and digital media graduate elective courses.*
- FILM 296F must be taken quarterly with the primary advisor until advancement to candidacy.
- Second-year students must then take at least four film and digital media graduate elective courses.*
- FILM 203 (Professional Development in Film and Digital Media) is a required course, to be taken after the first year.
- Students are not permitted to enroll in FILM 295 (Directed Reading) classes during their first year and are limited to one during their second year, unless they enter the program with an M.A. or M.F.A.
- Third-year students arrange three Directed Readings (FILM 295) to prepare for the three topic areas of their qualifying examination.
- Prior to advancing to candidacy, students will continue to meet the minimum number of credits with other 2-5 credit elective courses as appropriate.
- A student will thus take at least nine film and digital media graduate courses over the degree, not including FILM 295, FILM 297 and FILM 299 classes.
    - The remaining course units may be selected from film and digital media graduate courses or graduate courses other departments, subject to approval from the student's faculty advisor.
    - Any course taken to fulfill the six-course Film and Digital Media (FDM) Ph.D. elective requirement may only count once toward satisfaction of this elective requirement.
- Students must obtain permission from the director of Graduate Studies, their faculty advisor to take advanced undergraduate courses.
- Students are expected to complete at least one year of supervised teaching as part of the degree requirements.

*Non-film and digital media graduate courses that are taught by film and digital media faculty can count as film and digital media graduate electives. Graduate electives in this category are listed in the annual and quarterly courses posted on the Programs page on department's website, select Courses.

Foreign Language Requirements

Students must demonstrate proficiency in a language other than English. This may include a computer programming language instead of a natural language when such a language is integral to the student's field of study. The language requirement may be satisfied in one of two ways:

- by passing an upper-division course in a language related to the student's research;
- by passing a reading proficiency test administered by a qualified person approved by the director of Graduate Studies.

A student must pass the language requirement before taking Ph.D. qualifying examinations. There are three exceptions. (Documentation for the exception must be received and approved by the director of Graduate Studies at least two months before the qualifying examination.)

- The "foreign" language requirement may be waived for a non-English native speaker who has passed the proficiency test in English required for admission.
- The requirement may be waived for a student who is a native speaker of another language in addition to English. The student must submit a statement to the director of Graduate Studies attesting to their proficiency in the additional native language.
- The requirement may be waived if a student has proof of proficiency in a language other than English in the form of a language major or minor from recent undergraduate or master's level education or equivalent. This must have been completed within the past five years at an accredited institution.

Teaching Requirement

Students are expected to complete at least one year of supervised teaching as part of the degree requirements.

Pre-Qualifying Requirements

During the first year of study in FILM 200A-FILM 200B-FILM 200C classes, students will be introduced to the methodologies of developing a critical practice approach. This will occur while students simultaneously strengthen, with the appropriate elective classes, areas of theory or practice that pertain to their focus.

During the second year, the student will focus on selecting classes from the film and digital media elective series numbered FILM 200–FILM 289. Students will also be encouraged to take electives from other graduate programs on campus.

At the end of the second year, students undergo a second year review which functions as the master's examination. Students will submit four to five coursework projects for the examination. One of these must be the final project from FILM 200C. Students will also submit a statement about that work and its contexts, which will form the basis for oral examination questions by faculty members.

Students may nominate faculty members to the committee. The student's faculty advisor and the director of Graduate Studies will assemble the committee, taking into account the student's nominations. The committee will have a minimum of three faculty members, at least two of whom must be from the film and digital media faculty. One of those two must be the faculty advisor, who will chair the meeting. The committee must also include the director of Graduate Studies. (The director of Graduate Studies will not necessarily sit on the student's committee for future exams/reviews.) The examination is closed; only the student and the faculty committee will be present.

For students entering without a master's degree, the committee will recommend one of three grades for the M.A. examination: fail, pass, or pass with permission to proceed. Students who fail may retake the oral component of the examination one time. A student with a pass only may leave the program with the degree of master of arts. Students who pass with permission to proceed may enter the third year of coursework toward the Ph.D. For students entering with a master's degree, the committee will discuss the result of the review and its recommendations for further progress in the program, including the timeline to the Ph.D. qualifying examination (QE).

Qualifying Examination

The third year will be spent developing three qualifying examination topics that will lead to the dissertation in close consultation with the student's faculty advisor. (This may occur earlier for students who enter with a master's degree.) Students work with three faculty members to develop three distinct topic areas with a corresponding bibliography/mediagraphy in FILM 295 (Directed Reading). Topic areas must be pre-approved by the director of Graduate Studies who will ensure that the breadth requirement is met.

Students will also begin assembling a qualifying examination (QE) committee. The QE committee will be comprised of three faculty members, at least one of whom must be from another discipline at UC Santa Cruz or from another campus. Students will also nominate a faculty member to chair the examination committee. The chair should be a tenured faculty member from the Film and Digital Media Department, holding a Ph.D., but should not be the student's primary faculty advisor or the person who will chair the dissertation. The composition of the QE committee must be approved by the Graduate Division and must be submitted to the director of Graduate Studies at least five weeks prior to the written examination.

The qualifying examination will typically be scheduled for the fall of the fourth year and no later than the end of the fourth year. (Students who enter with a master's degree may be eligible to take the qualifying examination before their fourth year.) The QE will consist of a written examination and an oral examination. A student who fails the Ph.D. qualifying examination will be permitted to re-take it one time. During the qualifying examination quarter, students may enroll in up to two FILM 299 (Thesis Research) classes with members of their committee.

Post-Qualifying Examination Requirements

No later than two academic quarters after successfully passing the qualifying examination, students must submit and defend a Dissertation Prospectus. The candidate's dissertation committee must approve this prospectus. After the dissertation prospectus has been approved, the student will schedule a dissertation colloquium open to all film and digital media faculty and graduate students. The colloquium can be scheduled before or shortly after the official advancement to candidacy.

Students will advance to candidacy once they have successfully:

- completed all required coursework with satisfactory grade;
- satisfied the language requirement;
- passed the Ph.D. qualifying examination;
- organized an approved dissertation committee, through the dissertation nomination form; and
- defended a dissertation prospectus and had it approved by their dissertation committee.

[Optional Catchall]

Dissertation

Dissertation

Completion of the Degree

Upon successful advancement to candidacy, students must then complete the following requirements for the Ph.D.

The dissertation, or Ph.D. thesis, is to be an original contribution of high quality to the field of film and digital media. If a student's thesis contains a substantial creative component, the thesis project must also include a written component of no less than 75 pages. The dissertation must be approved by a committee consisting of a minimum of three faculty members. The dissertation chair must be a film and digital media faculty member and at least two committee members must be from the film and digital media faculty. If the dissertation chair does not hold a Ph.D. degree, then the majority of the remaining committee members must hold Ph.D.s. Also, the majority of the dissertation committee membership shall be members of the Santa Cruz Division of the Academic Senate.

The Ph.D. candidate shall submit the dissertation providing a minimum of 45 days for the committee members to review it. Once the committee has deemed it ready to defend, the

candidate will work with the department and committee to schedule the oral dissertation defense.

Dissertation Defense

The oral defense will be comprised of a brief introduction of the dissertation's form and content, and an articulation of the scholarly and artistic intervention it forges; the student will then answer questions posed by their dissertation committee. Invited members of the academic community may attend the defense, but the discussion will remain among the candidate and the committee.

Once the student has passed the oral dissertation defense, responds to any questions or suggestions for revisions, and has the dissertation approved by the committee, they will be eligible to "Announce Candidacy for Ph.D." by submitting the dissertation and required documents to the Division of Graduate Studies.

Academic Progress

Normative time for completion of the program is six years. The first two years of the program are primarily devoted to coursework. Preliminary exams for the master's degree occur in the spring of the second year. By the end of the third year, students should have formulated a dissertation topic and proposal deriving from their work in that year and should have nominated a Ph.D. qualifying examination committee and dissertation committee. Qualifying examinations for advancement to Ph.D. candidacy typically occur in the fall of the fourth year. These are approximate timelines, subject to variation depending on previous degree(s), transfer credits, substitutions, progress in program, leaves and/or other factors.

Applying for Graduation

You must submit an application for the Ph.D. to your graduate coordinator for review by the end of the second week of the quarter in which you intend to receive the certificate. The graduate coordinator will forward your application to the Graduate Division.

Please see Registration Requirements for all Graduate Degrees for details about registration requirement the quarter you intend to graduate.

For additonal forms and information please visit the UCSC Graduate Division website.

[Optional Catchall]

FILM AND DIGITAL MEDIA DESIGNATED EMPHASIS

Introduction

UC Santa Cruz graduate students enrolled in doctoral programs may obtain a designated emphasis in film and digital media as part of their Ph.D. degree.

Requirements

Students must meet the following requirements in order to obtain the designated emphasis:

Committee Composition and Departmental Approvals

Secure approval from a member of the film and digital media core faculty to serve as the advisor for the designated emphasis.

Course Requirements

Successfully complete four graduate courses (not independent studies) taught by either core or affiliated faculty of the film and digital media Ph.D. program. The courses must be pre-approved by the student's designated emphasis advisor.

Writing, Research and/or Teaching Requirements

Submit a significant piece of writing, or a project that includes both writing and creative practice, that demonstrates competence in the field of film and digital media. A writing submission could take the form of a seminar paper or dissertation chapter. A writing/creative project may be constituted from a range of possible media such as film, video, web-based or other digital media. The submitted project must meet the approval of the student's film and digital media advisor.

[Optional Catchall]

SOCIAL DOCUMENTATION DESIGNATED EMPHASIS

Introduction

UC Santa Cruz graduate students enrolled in doctoral programs may obtain a designated emphasis in social documentation as part of their doctoral or master of fine arts degree.

Requirements

Students must meet the following requirements in order to obtain the designated emphasis:

Committee Composition and Departmental Approvals

Secure approval from a member of the Film and Digital Media (FDM) faculty to serve as the adviser for the designated emphasis.

Have one faculty member from the FDM faculty serve on the student's qualifying examination committee or dissertation committee.

Course Requirements

Successfully complete four graduate courses within the Social Documentation Program curriculum. The courses must be pre-approved by the student's FDM faculty adviser. In most cases, these courses would include SOCD 200, SOCD 202,

and two others, but may be adapted to fit the needs of particular students.

Writing, Research and/or Teaching Requirements

Submit a significant piece of documentary work that demonstrates competence in the field of social documentation. This project could consist of a digital video or photography project, or possibly an audio or web-based piece, focused on the student's area of study and thus constituting a parallel investigation into the subject of the Ph.D. or M.F.A. dissertation. In certain circumstances, a documentary project on a subject other than the dissertation could be approved, but generally that would not be the case. The submitted project must meet the approval of the student's FDM faculty adviser.

[Optional Catchall]

History of Art and Visual Culture

D-201 Porter College
(831) 459-4564
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https://havc.ucsc.edu

PROGRAMS OFFERED

History of Art and Visual Culture B.A. (p. 74)

History of Art and Visual Culture Minor (p. 81)

Visual Studies Ph.D. (p. 81)

Visual Studies Designated Emphasis (p. 83)

UNDERGRADUATE PROGRAM

In the History of Art and Visual Culture (HAVC) Department, students study the production, use, form, and reception of visual products and cultural manifestations past and present. Objects of study include paintings, sculptures, and architecture, which are within the traditional purview of art history, as well as art and non-art objects and visual expressions that sit beyond disciplinary boundaries. The HAVC Department offers courses covering a wide variety of material from the cultures of Africa, the Americas, Asia, Europe, the Mediterranean, and the Pacific Islands, including media as diverse as ritual, performative expression, bodily adornment, landscape, the built environment, installation art, textiles, manuscripts, books, photography, film, video games, apps, websites, and data visualizations.

HAVC students at UC Santa Cruz investigate complex questions concerning the social, political, economic, religious, and psychological impact of images from the perspective of their producers, users, and viewers. Visual objects play a central role in the formation of values and beliefs, including the perception of gender, sexuality, ethnicity, race, and class. Through attentive historical study and close analysis, students are taught to recognize and assess these systems of value, and are introduced to theoretical and methodological frameworks for future research.

COURSES FOR NON-MAJORS

HAVC courses numbered 10-85 are lower-division introductory courses appropriate for non-majors. Most upper-division HAVC courses are also open to non-majors, but we recommend first completing at least one year of university coursework before taking upper-division classes.

GRADUATE PROGRAM

The Visual Studies Ph.D. offers an interdisciplinary program focused on visual-cultural scholarship, comprising specialized coursework and individual dissertation research in close coordination with faculty supervision. The expansive expertise of our diverse faculty addresses, and offers a broad scope of supervisory possibilities in researching, a variety of art forms and visual cultures with historical and contemporary perspectives and with global reach, including such regions as Sub-Saharan Africa, the Middle East, North America, Latin America, the Indigenous Americas (including pre-colonial California), Asia, Europe, the Mediterranean, and the Pacific Islands. Our program provides students with unparalleled opportunities to consider the role of social, political, and cultural forces in both shaping and being shaped by assorted modes of visual experience and their relations as well as to complex workings of multisensory perception. Areas of particular concern, both historical and current, include spatial and visual theories, environmental, social, and racial justice, colonial and decolonial visual culture, Anthropocene and Indigenous studies.

HISTORY OF ART AND VISUAL CULTURE B.A.

Information and Policies

Introduction

The history of art and visual culture (HAVC) curriculum guides students in acquiring skill in critical thinking about art and visual culture, leading to a bachelor of arts (B.A.) degree. The lower-division HAVC courses numbered 10-85, intended for general education students and prospective majors, provide an introduction to the field of visual culture according to geographic areas and visual traditions within those areas. Upper-division HAVC courses numbered 110-189 cover a broad range of issues in various aspects of world cultures from earliest times to the present. The most advanced HAVC courses, numbered in the 190-191 series, are taught in seminar format. Students also have the opportunity to take independent study courses and write senior theses.

Program Learning Outcomes

Graduates from the history of art and visual culture B.A. program will have demonstrated the following:

Program Learning Outcome (PLO) 1: Breadth of Knowledge

1a. Develop knowledge and understanding of diverse visual creations in different social and cultural contexts and/or historical periods.

1b. Develop knowledge of modes of production as well as technical and physical properties of the architecture, objects, images, and material cultures studied.

PLO 2: Analysis and Interpretation

2a. Conduct visual analysis proficiently using culturally and historically appropriate terms.

2b. Contextualize, evaluate, and/or explain visual, material, and historical cultural forms and values.

PLO 3: Research and Critique/Contextualization

3a. Formulate research questions and conduct research based on knowledge and critical evaluation of primary and secondary sources (archival, library, and/or field research) relevant to the discipline.

3b. Develop original interpretations and thesis statements based on factual evidence and critical argumentation.

3c. Identify and analyze dynamics of injustice, inequity, and other issues of critical/political concern that determine the production, reception, and continued legacy of visual, material, architectural, or spatial forms.

PLO 4: Critical Thinking and Reading

4a. Recognize, interpret, contextualize, and critically analyze different scholarly arguments, debates, and/or primary source materials.

4b. Consult and synthesize relevant literature in history of art, visual culture, and other disciplines to present independent analysis.

PLO 5: Written Communication

5a. Write clear, concise prose to present visual and historical analysis and interpretation.

5b. Formulate, present, and support strong, cohesive arguments in writing.

5c. Apply scholarly methods of citation, formatting, etc.

Academic Advising for the Program

Undergraduate Advisor

The undergraduate advisor offers specific information about navigating through the program and the curriculum and assists students with academic planning, requirements, policies and procedures, learning support, scholarships, and enrichment opportunities. Please contact the HAVC undergraduate advisor at havc@ucsc.edu.

Faculty Advisors

Faculty are the best resource for learning about the philosophies and foundations of history of art and visual culture. Faculty advisors can work individually with students to develop a specific course of study, recommend additional courses of interest, and discuss long-term career goals including education beyond the baccalaureate. A faculty advisor is selected by the student within one quarter of declaring the major or minor. Students choose a faculty advisor who specializes in their field of interest within HAVC.

Getting Started in the Major: Frosh

The HAVC major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required.

Lower-Division Coursework

It is recommended that students begin by taking four lower-division HAVC courses, each from a different geographic region. Students are encouraged to consult with the HAVC undergraduate advisor to develop a plan of study.

Languages

Though not required, all majors are encouraged to study at least one foreign language. Graduate programs in visual culture, art history, and other related disciplines generally require competence in one or more languages beyond English. Students are encouraged to consult with their faculty advisor to discuss an appropriate course of language study.

Transfer Information and Policy

Transfer Admission Screening Policy

Students may pursue the HAVC major even if they did not list it on their application. Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz. Transfer students are, however, encouraged to complete some of their lower-division history of art and visual culture requirements prior to transfer. Refer to the ASSIST articulation agreements at www.assist.org for approved lower-division courses offered at California community colleges. Transfer credit for courses from four-year institutions or for community college courses not included in the ASSIST system is evaluated on a case-by-case basis. To petition for transfer credit, submit a comprehensive syllabus and any supporting documentation (reading lists, papers written, etc.) to the HAVC undergraduate advisor by email to havc@ucsc.edu and specify the requirement you are petitioning to satisfy.

A student may transfer up to three lower-division and two upper-division art history courses toward the major. HAVC majors must take a minimum of eight regularly scheduled HAVC courses. Please keep in mind that the four lower-division courses required for the HAVC major must each satisfy a different geographic region.

Prospective students are also encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC), California General Education Transfer Curriculum (CalGETC), or to complete all UC Santa Cruz general education requirements before matriculation.

Getting Started in the Major: Transfer Students

Students seeking to declare the HAVC major should consult with the undergraduate advisor for assistance with academic planning. Please email havc@ucsc.edu.

Major Qualification Policy and Declaration Process

Major Qualification

To be eligible to declare the major, students must pass two lower-division HAVC courses, each from a different geographic region listed below:

- HAVC courses 10-19: Africa and its Diaspora
- HAVC courses 20-29: Asia and its Diaspora
- HAVC courses 30-49: Europe and the Americas
- HAVC courses 50-59: Mediterranean
- HAVC courses 60-69: Native Americas
- HAVC courses 70-79: Oceania and its Diaspora

HAVC 80 may be used to fulfill a lower-division requirement for one of the following geographic regions: 10s (Africa), 60s (Native Americas), or 70s (Oceania).

Upper-division HAVC courses may also be used to meet the major qualification criteria, as long as the lower- and upper-division courses cover two different geographic regions.

Appeal Process

The HAVC Department will make every effort to support students in declaring their major. Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair within 15 days from the date of the notification. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. Students should submit their appeal via email to havc@ucsc.edu.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Step 1: Log into MyUCSC and click the link to submit the Petition for Major/Minor.

- If you are not logged into MyUCSC prior to clicking the petition link, you will need to navigate to your Student Homepage and select the Undergraduate Student eForms tile > Petition for Major/Minor to access the form.

Step 2: Schedule an advising appointment with the undergraduate advisor to develop an academic plan and review important information. This step is required to successfully declare. Please schedule an appointment via Navigate Slug Success.

Letter Grade Policy

Only courses completed with grades of C or better (or Pass) may be used to satisfy major requirements. Courses in which students receive a grade of C-, D+, D, D- or F cannot be used to satisfy major requirements. The HAVC major does not impose any limits on selecting the Pass/No Pass grading option to fulfill major requirements, but the university has an overall limit on how many courses can be taken Pass/No Pass. Please consult with your college academic advising office or the Office of the Registrar regarding those limits.

[Optional Catchall]

Course Substitution Policy

For the major, a student may transfer up to three lower-division and up to two upper-division art history courses taken from other institutions. To petition for transfer credit, submit a comprehensive syllabus and any supporting documentation (reading lists, papers written, etc.) to the HAVC undergraduate advisor by email to havc@ucsc.edu and specify the requirement you are petitioning to satisfy.

Double Majors and Major/Minor Combinations Policy

Study Abroad

UC Santa Cruz Global Learning provides excellent opportunities to take courses related to history of art and visual culture in a range of locations. The department strongly encourages HAVC majors and minors to take advantage of these educational opportunities. Students who wish to petition for credit toward HAVC major requirements for courses taken abroad must petition for transfer credit upon their return (courses do not automatically satisfy major requirements). Petitions are evaluated on a case-by-case basis. We look for evidence that the course(s) provided critical analysis of the class material in its social and cultural context, as well as significant reading and writing requirements. Please retain all relevant documentation (syllabi, reading lists, papers written, etc.) to support your case, and consult with the HAVC undergraduate advisor to plan your courses in advance.

Honors

Honors and Highest Honors in the Major

Honors and highest honors are awarded in the history of art and visual culture major to students who have shown a consistently outstanding level of performance throughout their coursework and maintained a superior GPA in the major. These distinctions are earned by only a small percentage of each graduating class. This notation appears on the transcript as well as on the diploma.

- Honors in the major are awarded to students with a GPA of 3.7 and above in all HAVC courses and with HAVC Department approval.*
- Highest honors in the major are awarded to students with a GPA of 3.9 and above in all HAVC courses and with HAVC Department approval.*

* Department approval is guided by consideration of criteria such as overall performance in HAVC coursework and the number of courses taken for a letter grade.

Honors in the Senior Comprehensive Requirement

All seniors must complete one HAVC seminar (courses in the 190-191 series) as their "senior exit" course to satisfy the senior comprehensive requirement. Seminars can be taken for senior exit credit only by permission of the instructor. Within the context of this advanced seminar, students will work under the close supervision of their professor to produce a written project that demonstrates a high level of achievement in research, writing, and critical thinking. Students whose performance is outstanding are eligible for honors in the senior comprehensive requirement.

[Optional Catchall]

Careers

The preparation students receive from the bachelor of arts (B.A.) degree in HAVC can lead to successful careers in education, law, business, and social services, in addition to more disciplinary-specific careers in museum curating, art restoration, library and information science, heritage studies, design, criticism, arts education and administration, and advanced studies in architecture, visual culture, and art history.

General Major

Course Requirements

The HAVC major requires four lower-division and nine upper-division courses for a total of 13 courses, including the satisfactory completion of the senior comprehensive requirement. Students must take courses in each of the six different geographic regions listed below to ensure cultural, methodological, and disciplinary breadth.

- For course offerings that satisfy specific geographic regional requirements, please see the Course List by Geographic Region.
- For a tentative list of courses offered during the current academic year, please visit the Undergraduate Courses page of the HAVC website.
- For a comprehensive list of all HAVC courses, please see the 'Courses' section of the general catalog.

Lower-Division Courses

Take four lower-division courses, each from a different geographic region listed below:

- HAVC courses 10-19: Africa and its Diaspora
- HAVC courses 20-29: Asia and its Diaspora
- HAVC courses 30-49: Europe and the Americas
- HAVC courses 50-59: Mediterranean
- HAVC courses 60-69: Native Americas
- HAVC courses 70-79: Oceania and its Diaspora

HAVC 80 may be used to fulfill a lower-division requirement for one of the following geographic regions: 10s (Africa), 60s (Native Americas), or 70s (Oceania).

Upper-Division Courses

Take the following course:

HAVC 100A	Approaches to Visual Studies	5

Plus two upper-division geographic regional courses:

Take two upper-division geographic regional courses, one each from the two geographic regions **not** studied at the lower-division level. These are:

- HAVC courses 110-119: Africa and its Diaspora
- HAVC courses 120-129: Asia and its Diaspora
- HAVC courses 130-149: Europe and the Americas
- HAVC courses 150-159: Mediterranean
- HAVC courses 160-169: Native Americas
- HAVC courses 170-179: Oceania and its Diaspora

Plus five upper-division electives:

These are any HAVC courses numbered 110-191.

The department encourages students to take cross-regional and topical courses. These are HAVC courses numbered 180-189, which can fulfill upper-division major elective requirements but do not fulfill specific regional requirements.

Plus one senior exit seminar:

HAVC seminar courses are numbered 190-191. The senior exit seminar can be taken any quarter in which a student is in senior standing. Seminars can be taken for senior exit credit only by permission of the instructor.

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. Students in HAVC meet the DC requirement by completing:

HAVC 100A	Approaches to Visual Studies	5

Comprehensive Requirement

All seniors must complete one HAVC seminar (courses in the 190-191 series) as their "senior exit" course to satisfy the senior comprehensive requirement. Seminars can be taken for senior exit credit only by permission of the instructor. Within the context of this advanced seminar, students will work under the close supervision of their professor to produce a written project that demonstrates a high level of achievement in research, writing, and critical thinking. Students whose

performance is outstanding are eligible for honors in the senior comprehensive requirement.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information. Some general education requirements may be satisfied with HAVC courses.

Please note that LD = lower-division and UD = upper-division.

Four-Year Freshman Planner

	Fall	Winter	Spring	**Summer**
Entering				College 1A Summer Edge (optional)
Year 1 (Fr)	HAVC LD regional requirement	HAVC LD regional requirement WRIT 1/WRIT 1E (if needed)	HAVC LD regional requirement	
Year 2 (So)	HAVC LD regional requirement WRIT 2*	HAVC 100A	HAVC UD regional requirement	
Year 3 (Jr)	HAVC UD regional requirement	HAVC UD (any region)	HAVC UD (any region)	
Year 4 (Sr)	HAVC UD (any region)	HAVC UD (any region)	HAVC UD (any region) HAVC seminar	

*WRIT 2 must be taken before enrolling in HAVC 100A, and should always be taken in or before spring quarter of the second year.

In addition to the specific courses shown in this four-year planner, students must complete all general education requirements, some of which may be satisfied by HAVC courses.

Two-Year Transfer Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
Year 1 (Jr)	HAVC LD regional requirement	HAVC 100A	HAVC LD regional requirement	
	HAVC LD regional requirement	HAVC LD regional requirement	HAVC UD regional requirement	
			HAVC UD (any region)	
Year 2 (Sr)	HAVC UD regional requirement	HAVC UD (any region)	HAVC UD (any region)	
	HAVC seminar	HAVC UD (any region)	HAVC UD (any region)	

Concentration in Curation, Heritage, and Museums

This program is for HAVC majors who wish to pursue the study and practice of curation, heritage, and museums. Students will expand on the broad knowledge they gain through the major by means of a variety of historical, theoretical, and practical courses within the domains of

curation, museum studies, and critical cultural heritage studies. Students can use the concentration as a launching point toward internships or jobs in museums or cultural heritage institutions or to identify their interests for future graduate study.

Course Requirements

The HAVC major requires four lower-division and nine upper-division courses for a total of 13 courses, including the satisfactory completion of the senior comprehensive requirement. Students must take courses in each of the six different geographic regions listed below to ensure cultural, methodological, and disciplinary breadth.

- For course offerings that satisfy specific geographic regional requirements, please see the Course List by Geographic Region.
- For a tentative list of courses offered during the current academic year, please visit the Undergraduate Courses page of the HAVC website.
- For a comprehensive list of all HAVC courses, please see the 'Courses' section of the general catalog.

In fulfilling the major requirements, students in the concentration must successfully complete four courses from the “Approved Concentration Courses” list below. No more than one of the four courses can be lower-division and at least two of the four courses must be HAVC-sponsored courses. Upper-division concentration courses fulfill elective requirements for the major, or if appropriate, concentration courses can be used to fulfill geographic regional requirements. Students can petition to apply courses that are not on the approved list. Approval of petitions will be determined by the amount of relevant course content and assignments.

Lower-Division Courses

Take four lower-division courses, each from a different geographic region listed below:

- HAVC courses 10-19: Africa and its Diaspora
- HAVC courses 20-29: Asia and its Diaspora
- HAVC courses 30-49: Europe and the Americas
- HAVC courses 50-59: Mediterranean
- HAVC courses 60-69: Native Americas
- HAVC courses 70-79: Oceania and its Diaspora

HAVC 80 may be used to fulfill a lower-division requirement for one of the following geographic regions: 10s (Africa), 60s (Native Americas), or 70s (Oceania).

Upper-Division Courses

Take the following course:

HAVC 100A	Approaches to Visual Studies	5

Plus two upper-division geographic regional courses:

Take two upper-division geographic regional courses, one each from the two geographic regions **not** studied at the lower-division level. These are:

- HAVC courses 110-119: Africa and its Diaspora
- HAVC courses 120-129: Asia and its Diaspora
- HAVC courses 130-149: Europe and the Americas
- HAVC courses 150-159: Mediterranean
- HAVC courses 160-169: Native Americas
- HAVC courses 170-179: Oceania and its Diaspora

Plus five upper-division electives:

These are any HAVC courses numbered 110-191. Students in the concentration should note that courses from the "Approved Concentration Courses" list below will most likely be taken in the process of completing the five upper-division electives.

The department encourages students to take cross-regional and topical courses. These are HAVC courses numbered 180-189, which can fulfill upper-division major elective requirements but do not fulfill specific regional requirements.

Plus one senior exit seminar:

HAVC seminar courses are numbered 190-191. The senior exit seminar can be taken any quarter in which a student is in senior standing. Seminars can be taken for senior exit credit only by permission of the instructor.

Electives

Approved Concentration Courses List

HAVC 40	Museum Cultures: The Politics of Display	5
HAVC 141L	Museums in the Internet Era	5
HAVC 141M	Museum Practices	5
HAVC 141N	Data Cultures: Art, Technology, and the Politics of Visual Representation	5
HAVC 142M	Museum Exhibitions	5
HAVC 143F	Memory, Place, and Preservation in Modern Architecture	5
HAVC 178	Museums and Cultural Heritage in Oceania	5
HAVC 185	Community Engagement Through the Arts	5
HAVC 188A	Introduction to Curatorial Studies	5
HAVC 188B	Biennials and Mega-Exhibitions	5
HAVC 188C	Site-Specific Art, Installations, Artists and Institutional Practice	5
HAVC 188M	Visual Culture of Memory	5

ANTH 187	Cultural Heritage in Colonial Contexts	5
ANTH 187B	Cultural Resource Management	5
ANTH 196J	Imagining America	5
HIS 104D	Museums and the Representation of Native American History, Memory, and Culture	5

Students may petition for HAVC 199 or HIS 199 to count for a concentration course under certain circumstances. Students should consult the HAVC undergraduate advisor prior to enrolling.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. Students in HAVC meet the DC requirement by completing:

HAVC 100A	Approaches to Visual Studies	5

Comprehensive Requirement

All seniors must complete one HAVC seminar (courses in the 190-191 series) as their "senior exit" course to satisfy the senior comprehensive requirement. Seminars can be taken for senior exit credit only by permission of the instructor. Within the context of this advanced seminar, students will work under the close supervision of their professor to produce a written project that demonstrates a high level of achievement in research, writing, and critical thinking. Students whose performance is outstanding are eligible for honors in the senior comprehensive requirement.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information. Some general education requirements may be satisfied with HAVC courses.

Please note that LD = lower-division and UD = upper-division.

Four-Year Freshman Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
Year 1 (Fr)	HAVC LD regional requirement College 1	HAVC LD regional requirement WRIT 1/WRIT 1E (if needed)	HAVC LD regional requirement	
Year 2 (Soph)	HAVC LD regional requirement WRIT 2*	HAVC 100A	HAVC UD CHM course	
Year 3 (Jr)	HAVC UD regional requirement	HAVC UD regional requirement	HAVC UD CHM course	
Year 4 (Sr)	HAVC UD CHM course HAVC seminar	HAVC UD CHM course	HAVC UD (any region)	

*WRIT 2 must be taken before enrolling in HAVC 100A, and should always be taken in or before spring quarter of the second year.

In addition to the specific courses shown in this four-year planner, students must complete all general education requirements, some of which may be satisfied by HAVC courses.

Two-Year Transfer Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
Year 1 (Jr)	HAVC LD	HAVC 100A	HAVC LD	

	regional requirement		regional requirement
	HAVC LD regional requirement	HAVC LD regional requirement	HAVC UD regional requirement
			HAVC UD CHM course
Year 2 (Sr)	HAVC UD regional requirement	HAVC UD CHM course	HAVC UD CHM course
	HAVC UD CHM course	HAVC UD (any region)	HAVC seminar

HISTORY OF ART AND VISUAL CULTURE MINOR

The history of art and visual culture (HAVC) minor works well when combined with other programs offered at UC Santa Cruz. Many students choose to combine HAVC with other major/minor programs including but not limited to anthropology, art, business management economics, classical studies, critical race and ethnic studies, education, history, legal studies, literature, politics, psychology, and sociology.

For the minor, a student may transfer up to three lower-division art history courses taken from other institutions. Each course must satisfy a different geographic regional requirement. Refer to the articulation agreements at www.assist.org for approved lower-division courses offered at California community colleges. Transfer credit for courses from four-year institutions or for community college courses not included in the ASSIST system is evaluated on a case-by-case basis. To petition for transfer credit, submit a comprehensive syllabus and any supporting documentation (reading lists, papers written, etc.) to the HAVC undergraduate advisor by email to havc@ucsc.edu and specify the requirement you are petitioning to satisfy.

Students are eligible to declare the HAVC minor any time after declaring a major. Please visit the How To Declare page of the HAVC website for instructions.

Course Requirements

The HAVC minor requires three lower-division and six upper-division courses for a total of nine courses.

- For course offerings that satisfy specific geographic regional requirements, please see the Course List by Geographic Region.
- For a tentative list of courses offered during the current academic year, please visit the Undergraduate Courses page of the HAVC website.
- For a comprehensive list of all HAVC courses, please see the 'Courses' section of the general catalog.

Courses may be taken for a letter grade or pass/no pass.

Lower-Division Courses

Three lower-division courses, each from a different geographic region listed below:

- HAVC courses 10-19: Africa and its Diaspora
- HAVC courses 20-29: Asia and its Diaspora
- HAVC courses 30-49: Europe and the Americas
- HAVC courses 50-59: Mediterranean
- HAVC courses 60-69: Native Americas
- HAVC courses 70-79: Oceania and its Diaspora

HAVC 80 may be used to fulfill a lower-division requirement for one of the following geographic regions: 10s (Africa), 60s (Native Americas), or 70s (Oceania).

Upper-Division Courses

Six upper-division courses. These are HAVC courses numbered 110-191.

VISUAL STUDIES PH.D.

Introduction

The History of Art and Visual Culture Department offers a course of study leading to the Ph.D. in visual studies. Visual studies is an interdisciplinary program focused on visual-cultural scholarship, comprising specialized coursework and individual dissertation research in close coordination with faculty supervision. The expansive expertise of our diverse faculty addresses, and offers a broad scope of supervisory possibilities in researching, a variety of art forms and visual cultures with historical and contemporary perspectives and with global reach, including such regions as Sub-Saharan Africa, the Middle East, North America, Latin America, the Indigenous Americas (including pre-colonial California), Asia, Europe, the Mediterranean, and the Pacific Islands.

Our program provides students with unparalleled opportunities to consider the role of social, political, and cultural forces in both shaping and being shaped by assorted modes of visual experience and their relations as well to complex workings of multisensory perception. Areas of particular concern, both historical and current, include spatial and visual theories, environmental, social, and racial justice,

colonial and decolonial visual culture, Anthropocene and Indigenous studies.

Our graduates consider a range of theoretical approaches and significant methodologies for the study of visuality, including object-centered, ecocritical, de- and post-colonial, new materialist, and social-historical (feminist, antiracist, Indigenous, and Marxist) varieties. Students explore diverse cultural perspectives across time and space, and cultivate the necessary skills, knowledge, and expertise—including those of archival analysis, site-specific research, live interview and digital humanities techniques—in order to excel in academic, curatorial, publishing, and other related professional careers.

Focusing on a wide range of visual culture, our program is unconstrained by traditional mediums of art or conventional canons of art history. The capacious array of subjects examined in our courses and in the research of our faculty and students are as diverse as landscapes, ritual, performance, material culture, bodily adornment, popular entertainment, digital art and cybernetic data, photography, film, advertising, and design, as well as painting, sculpture, and architecture. Our Ph.D. program is particularly strong in comparative studies with historical and geographical expansiveness, examining significant differences in how disparate cultural groups engage, shape, and interpret their visual worlds.

Advancement to Candidacy

Course Requirements

Students take a minimum of 60 credits during their first two years of study, comprised of three core courses and nine electives.

Take the following three core courses:

HAVC 201A	Introduction to Visual Studies and Critical Theory	5
HAVC 202	Introduction to Visual Studies Methods	5
HAVC 204	Grant Writing, Pedagogy, and Professional Development	5

HAVC 201A: fall of the first year

HAVC 202: winter of the first year

HAVC 204: second year

Nine electives

Of the nine elective courses to be taken, at least five must have a visual studies designation (i.e., taught by core or affiliated faculty), and at least three must be drawn from departments outside of visual studies. Among the five visual studies electives, at least three must be from the HAVC courses numbered 212-282 and taught by core faculty, and at least one of the three must be a seminar course on a subject outside the student's disciplinary focus. Only two of the five visual studies electives may be independent study courses. Please review the visual studies website for a list of electives offered in the current year.

Field Clusters/Field Specialties

Appreciating that most of our graduates will be required to fit themselves back into traditional disciplinary structures once they enter the academic job market, the program is designed to provide students with both new means of interpreting visual evidence and suitable depth of understanding in older disciplinary traditions. While all graduates will acquire a shared foundation in different approaches to visuality (attained through our core course requirements), individual student programs vary considerably depending on the type of department or other intellectual and professional context in which the student hopes to secure employment after graduation. In addition to completion of the core courses required of all students, students will develop a cluster of individualized field courses in consultation with their advisor based on their particular professional goals.

To provide our students with the disciplinary background to facilitate employment within curatorial departments in museums and non-visual studies departments at colleges and universities, each student is required to take a minimum of four 5-credit courses in a disciplinary cluster (beyond the core course requirements). This requirement pertains both to students entering with a B.A. and an M.A. Acceptable field cluster courses might center on a medium (i.e., painting or architecture), a temporal/stylistic category (i.e., Early Modern or Postmodernism), a cultural, national, or social group (i.e., Pacific Islanders or China), or a disciplinary approach (i.e., cultural anthropology or gender studies). Field clusters are developed in consultation with the student's advisor based on the student's intellectual and professional goals. To count toward the degree, field clusters must receive prior approval from the director of graduate studies.

Foreign Language Requirements

Students must demonstrate reading knowledge of one foreign language prior to the start of their second year (either by attaining a score of 550 or higher on the Educational Testing Service Graduate Student Foreign Language Test or by passing a reading/translation examination administered by the department).

Students are encouraged to master a second foreign language. Based on a student's area of interest, and the joint assessment of the student's advisor and the director of graduate studies, proof of proficiency in an additional language or languages may be required prior to the student being admitted to candidacy for the Ph.D. Should proficiency in additional languages be required, it must be demonstrated prior to the close of the student's third year of study.

Teaching Requirement

Pre-Qualifying Requirements

Qualifying Examination

After completing all coursework and passing one language examination, students are required to pass a qualifying examination prior to the close of the winter quarter of their third year, unless a petition for an extension, demonstrating

reasonable cause, is approved by the visual studies director of graduate studies. The qualifying examination is divided into three topic areas, with each one including a written and an oral component. Each topic area should display historical breadth and variety of media. Two of the topic areas should ideally relate to the future dissertation topic, while one of the remaining must constitute an outside area, examining a topic that is chronologically, geographically, and/or methodologically distinct from the other two.

During their second year, a student should consult with their advisor to assemble a group of four faculty members who will serve as examiners and aid the student in assembling the necessary topic areas, compiling the needed reading lists, and preparing for the written and oral components of the examination in each area. The examination will have two parts. In part one, students will respond in writing to three general questions, posed by three of their examiners in the pre-arranged topic areas. In part two, students will gather together with their examiners to field questions probing and clarifying the previously submitted written component of the qualifying examination. In order to pass the qualifying examinations, students must receive the unanimous endorsement of the committee members.

Post-Qualifying Requirements

Dissertation Prospectus and Colloquium

After passing the qualifying examination, a student must complete an approved dissertation prospectus and a colloquium. The written dissertation prospectus is due no later than the end of the second quarter following the student's completion of the qualifying examination. The prospectus is a brief, concise essay of approximately 3000-5000 words (with bibliography) that defines the scope, methodology, and rationale for the proposed dissertation. It is prepared in consultation with the student's dissertation advisor, who must approve of the document prior to sending it to the colloquium committee. The prospectus must be sent to the colloquium committee at least one month before the colloquium.

The student and the dissertation advisor will invite three to four faculty members (including the advisor), in appropriate fields, to be on the colloquium committee, attend the colloquium, provide input on the prospectus, and assess the student's preparedness to begin researching and writing the dissertation. Faculty participating in the colloquium may or may not have been members of the qualifying examination committee, and should represent faculty whose expertise has bearing on the student's project. A student will pass the colloquium after having demonstrated to the satisfaction of all colloquium committee members adequate preparation to begin researching and writing the dissertation.

Advancement to Candidacy

Advancement to candidacy follows and is contingent upon passing the qualifying examination and all needed language examinations, completing an approved dissertation prospectus, passing the colloquium, and the subsequent appointment of a dissertation reading committee of at least three members. The requirements for advancement to candidacy must be completed no later than the end of the winter quarter of the fourth year.

MA En Route

Continuing Ph.D. students are eligible to apply for a non-terminal master of arts (M.A.) after fulfilling the following visual studies requirements:

- Complete the required Ph.D. coursework.
- Pass the language exam.
- Successfully complete the qualifying examination.

Dissertation

Dissertation

The dissertation must make a significant and original contribution to the field of visual studies, as judged by each dissertation committee member.

Dissertation Defense

An oral defense of the dissertation is the only final examination requirement, unless a petition to waive the oral defense, demonstrating reasonable cause, is approved by the student's primary advisor and the visual studies director of graduate studies. The student's dissertation committee, under the direction of an exam moderator, will conduct the examination. The moderator is selected in consultation with the faculty advisor and must be a visual studies core or affiliated tenured faculty who is not part of the dissertation reading committee.

Academic Progress

Applying for Graduation

Normative Time from Matriculation to Degree

The visual studies Ph.D. program at UCSC is designed to require six years of study. During the pre-candidacy period students will devote themselves to coursework, completion of the language examination, some teaching, preparation for and completion of qualifying examinations, completion of an approved version of their prospectus, passing their colloquium and selecting their dissertation committee. Requirements for advancing to candidacy must be completed by the end of winter quarter of the fourth year. Students will finish their dissertation and successfully defend it before the end of their sixth year.

[Optional Catchall]

VISUAL STUDIES DESIGNATED EMPHASIS

Introduction

UC Santa Cruz graduate students enrolled in doctoral programs may obtain a designated emphasis in visual studies as part of their Ph.D. degree.

Requirements

Graduate students enrolled in doctoral programs at UC Santa Cruz may obtain a Designated Emphasis in visual studies on their Ph.D. degree by meeting the following requirements:

Committee Composition and Departmental Approvals

Secure approval from a core member of the visual studies faculty to serve as an adviser for their designated emphasis.

Have at least one core member of the visual studies faculty serve on either their qualifying examination or dissertation committee.

Course Requirements

Successfully complete four graduate courses taught by either core or affiliated members of the Visual Studies program. The courses must form a coherent cluster in visual studies and be pre-approved by the student's designated emphasis adviser.

Writing, Research and/or Teaching Requirements

Submit a significant piece of writing that demonstrates competency in the field. The writing could take the form of a seminar paper or dissertation chapter. The essay must meet the approval of the student's visual studies adviser.

[Optional Catchall]

HISTORY OF ART AND VISUAL CULTURE COURSES BY GEOGRAPHIC REGION

Course List by Geographic Region

The courses listed herein fulfill geographic regional requirements for the history of art and visual culture (HAVC) major and minor. Please see the 'Courses' section of the general catalog for a comprehensive list of all HAVC course offerings, including cross-regional and topical courses (80s and 180s) and advanced seminars (190-191).

Note: Not all courses are offered each academic year.

Lower-Division Courses

HAVC 10 - HAVC 19: Africa and its Diaspora

HAVC 10	Introduction to African Visual Culture	5

HAVC 20 - HAVC 29: Asia and its Diaspora

HAVC 20	Visual Cultures of Asia	5
HAVC 22	Religion and Visual Culture in China	5
HAVC 24	Southeast Asia Visual Culture	5
HAVC 27	Image and Ideology in Indian Art	5
HAVC 28	Ghosts, Haunting, Memory, and Erasure in the Films of Asia	5

HAVC 30 - HAVC 49: Europe and the Americas

HAVC 30	Introduction to European Visual Culture	5
HAVC 35	European Visual Culture in a Global Context 1500-1900	5
HAVC 39	African-American Art	5
HAVC 40	Museum Cultures: The Politics of Display	5
HAVC 41	Introduction to Modern Art	5
HAVC 43	History of Modern Architecture	5
HAVC 44	Designing California: Architecture, Design, and Environment	5
HAVC 45	Photography Now	5
HAVC 46	Introduction to U.S. Art and Visual Culture	5
HAVC 47	Introduction To Contemporary Art	5
HAVC 48	Climate Justice Now! Art, Activism, Environment Today	5
HAVC 49	From Memes to Metadata: an Introduction to Digital Visual Culture	5

HAVC 50 - HAVC 59: Mediterranean

HAVC 50	Ancient Mediterranean Visual Cultures	5
HAVC 51	Greek Eyes: Visual Culture and Power in the Ancient Greek World	5
HAVC 55	Unclothed: The Naked Body from Antiquity to the Present	5
HAVC 58	Gardens of Delight: Fifteen Centuries of Islamic Visual Culture	5

HAVC 60 - HAVC 69: Native Americas

HAVC 60	Indigenous American Visual Culture	5
HAVC 64	Indigenous North American Materiality and Resistance	5
HAVC 65	Native American Art and the Environment	5

HAVC 70 - HAVC 79: Oceania and its Diaspora

HAVC 70	Visual Cultures of the Pacific Islands	5
HAVC 76	Oceanic Digital Arts	5

HAVC 80 may be used to fulfill a lower-division requirement for one of the following geographic regions: 10s (Africa), 60s (Native Americas), or 70s (Oceania).

Upper-Division Courses

HAVC 110 - HAVC 119: Africa and its Diaspora

HAVC 110	Visual Cultures of West Africa	5
HAVC 111	Visual Cultures of Central Africa	5
HAVC 115	Gender in African Visual Culture	5
HAVC 116	African Architecture	5
HAVC 117	Contemporary Art of Africa	5
HAVC 118	Art of the Contemporary African Diaspora	5
HAVC 119	Arts and Politics of African Urban Space	5

HAVC 120 - HAVC 129: Asia and its Diaspora

HAVC 122A	Sacred Geography of China	5
HAVC 122B	Constructing Lives in China: Biographies and Portraits	5
HAVC 122C	Writing in China	5
HAVC 122D	Chinese Landscape Painting	5
HAVC 122E	Art and Propaganda in China	5
HAVC 122F	Bodies in Chinese Culture	5
HAVC 123A	Modernity and the Arts of India	5
HAVC 123B	Religions and Visual Culture of South Asia	5
HAVC 124A	Arts of Ancient Southeast Asia	5
HAVC 124B	History of Photography in Southeast Asia	5
HAVC 124C	Arts and Politics in Theravada Traditions	5
HAVC 124D	Contemporary Art of Southeast Asia and its Diaspora	5
HAVC 124E	Southeast Asian-American and Diasporic Visual Culture	5
HAVC 127A	Buddhist Visual Worlds	5
HAVC 127B	Buddhist Pure Lands	5
HAVC 127C	Ritual in Asian Religious Art	5
HAVC 127D	Storytelling in Asian Art	5
HAVC 127E	Modern/Contemporary Architecture of the Asia Pacific	5
HAVC 127F	The Politics of Exclusion: Asian American Visual Culture	5

HAVC 130 - HAVC 149: Europe and the Americas

HAVC 133A	Themes in the Study of Medieval Visual Culture	5
HAVC 135B	German Art, 1905-1945	5
HAVC 135D	Art, Revolt, and Revolution in Europe 1750-1850	5
HAVC 135E	Jewish Identity and Visual Representation	5
HAVC 135F	Art of the Book in Western Europe 500-1600	5
HAVC 135G	Blood, Guts, and Gore: Representing War from Leonard da Vinci to Abu Ghraib	5
HAVC 135H	Topics in European and Euro-American Visual Culture	5
HAVC 135K	Art and Science in Europe 1500-1900	5
HAVC 135L	Nineteenth-Century Europe in Prints	5
HAVC 135P	Paris, Capital of the 19th Century	5
HAVC 137A	Northern Renaissance Art	5
HAVC 137E	Renaissance Prints	5
HAVC 140A	America in Art	5
HAVC 140B	Victorian America	5
HAVC 140C	Race and American Visual Arts	5
HAVC 140D	Chicano/Chicana Art: 1970-Present	5
HAVC 140E	Art and Science in America: Contact to circa 1900	5
HAVC 140F	Black Visual Culture	5
HAVC 140P	Pop Culture as High Art	5
HAVC 141A	Modern Art: Realism to Cubism	5
HAVC 141B	Death, Desire, and Modernity	5
HAVC 141C	Modern Art: Pop to Present	5
HAVC 141E	Histories of Photography	5
HAVC 141F	The Camera and the Body	5
HAVC 141H	Media History and Theory	5
HAVC 141I	Be Here Now: Art, Land, Space	5
HAVC 141J	Critical Issues in Contemporary Art and Visual Culture	5
HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HAVC 141L	Museums in the Internet Era	5
HAVC 141M	Museum Practices	5
HAVC 141N	Data Cultures: Art, Technology, and the Politics of Visual Representation	5
HAVC 141O	Sex, Lies, and Surveillance: Contemporary Documentary Arts	5
HAVC 141P	Networks and Natures: Art, Technology, and the Nonhuman	5
HAVC 142	Contemporary Art and Ecology	5
HAVC 142M	Museum Exhibitions	5
HAVC 143A	Contemporary Architecture and Critical Debates	5
HAVC 143B	History of Urban Design	5

HAVC 143C	Latin American Modern Architecture	5
HAVC 143D	Architecture and the City in Modern and Contemporary Visual Culture	5
HAVC 143E	History of Design: The Objects of Technology, 1850-The Present	5
HAVC 143F	Memory, Place, and Preservation in Modern Architecture	5
HAVC 143G	After Utopia: Architecture and the City, 1968-Present	5
HAVC 144A	Latin American Art and Visual Culture	5

HAVC 150 - HAVC 159: Mediterranean

HAVC 151	Greek Myths Antiquity to the Present	5
HAVC 152	Roman Eyes: Visual Culture and Power in the Ancient Roman World	5
HAVC 153	Neither Venus Nor Virgin: Women's Lives Beyond Men's Constructs in Late Antiquity and Byzantium	5
HAVC 154	Byzantine Visual Culture: Politics and Religion in the Empire of Constantinople, 330-1453 A. C	5
HAVC 155	Constructing Cleopatra: Power, Sexuality, and Femininity Across the Ages	5
HAVC 157B	Italian Renaissance: Art and Architecture	5
HAVC 157C	High Renaissance	5
HAVC 157D	Art of the Venetian Renaissance	5

HAVC 160 - HAVC 169: Native Americas

HAVC 160A	Indigenous American Visual Culture Before 1550: Mexico	5
HAVC 160B	Indigenous American Visual Culture Before 1550: The Andes	5
HAVC 162A	Special Studies in Early Indigenous American Visual Culture: The Ancient Maya	5
HAVC 162B	Special Studies in Early Indigenous American Visual Culture: The Inka	5
HAVC 163	The Native in Colonial Spanish America	5
HAVC 164A	Art and Visual Culture of Indigenous California	5
HAVC 165	Indigenous Artists and the Borderland Missions	5

HAVC 170 - HAVC 179: Oceania and its Diaspora

HAVC 170	Art of the Body in Oceania	5
HAVC 172	Textile Traditions of Oceania	5
HAVC 178	Museums and Cultural Heritage in Oceania	5
HAVC 179	Topics in Oceanic Visual Culture	5

Music

244 Music Center
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PROGRAMS OFFERED

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Western Music Minor (p. 109)

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UNDERGRADUATE PROGRAM

The Music Department at UC Santa Cruz offers two undergraduate degrees: a Bachelor of Arts (B.A.) and a Bachelor of Music (B.M.). The B.A. degree offers a uniquely diverse curriculum, with the option of completing a concentration in either “Compositional Practices,” “Global Musics,” or “Western Music.” The B.M. degree is designed for students who intend to pursue a career in music performance. The department also offers minors in “Electronic Music,” “Jazz, Spontaneous Composition and Improvisation,” and “Western Music,” making the study of music more accessible to undergraduates majoring in other disciplines. Both B.A. and B.M. degrees are distinctive in that they integrate elements of performance, theory, composition, literature, history, and culture in order to produce graduates that are accomplished scholar-performers. Students leave UC Santa Cruz prepared for graduate studies and music careers in performance, teaching, and the digital arts.

Through these curricular offerings, students will encounter an extraordinarily rich variety of performance opportunities. Specifically, our students engage with music:

- as a cultural practice in ensembles focusing on musical traditions from Europe, Central Asia, Latin America, North America, South Africa, South Asia, and Southeast Asia;

- temporally in ensembles based on Baroque, Classical, Romantic, and contemporary idioms to deepen their understanding of performance practices;

● technologically in electronic music ensembles and workshops where students experiment with innovative technologies to develop their own projects with the support of their advisors and peers;

● collaboratively in seminars geared toward student composition and improvisation.

Students at UC Santa Cruz have extraordinary performance, composition, and professionalization opportunities. All instrument and voice faculty are celebrated professional musicians who provide unparalleled guidance for students in performance and professional development. Ensemble courses culminate in an end-of-quarter performance, providing students with regular performance opportunities in a world-class recital hall. Student composers frequently collaborate with Arts Division faculty and peers to create and showcase their works. The electronic music minor provides hands-on opportunities for students to learn a variety of techniques related to electronic sound production, composition, and recording in a state-of-the-art studio facility. The Opera Program allows students to be involved in every step of a major production, from concept and design considerations to marketing and arts management. As performers, composers, artistic collaborators, and event organizers, these programs allow students to develop musically and professionally for diverse career paths and industries.

Our programs shape responsible, independent, and highly capable young artists that will push the frontiers of their fields. Graduates from the Music Department at UC Santa Cruz are musically-attuned and socially-engaged global citizens in the 21st century.

COURSES FOR NON-MAJORS

All music courses are open to non-majors, with many fulfilling general education requirements while offering exploration in the field of music. Courses in the MUSC 11, MUSC 80, and MUSC 81 series cover a wide array of topics that may interest students, and do not have prerequisites for enrollment. Non-majors are also able to enroll in all performing ensembles and performance practice workshops. Non-majors are also able to enroll in applied lessons on instruments or voice (pending enrollment availability; lesson space is limited and declared music majors and minors are prioritized). Certain upper-division music courses are also open to students who have taken the relevant lower-division courses (such as those in the MUSC 11/MUSC 80/MUSC 81 series, and/or preparatory music theory courses). Students should consult music.ucsc.edu for further information regarding preparation and auditions, and contact the Music Department if they have further questions.

GRADUATE PROGRAM

There are three graduate programs in music: the Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) degrees in music and the Doctor of Musical Arts (D.M.A.) degree in music composition. The M.A. degree in music has emphases in composition, musicology/ethnomusicology, or performance practice, and integrates studies in performance, composition/analysis, and research. The Ph.D. degree in music has an emphasis in cross-cultural studies, and aims to provide doctoral students with an integrative framework for music scholarship, emphasizing the ways in which musicology and ethnomusicology interact and complement one another. The D.M.A. degree in music composition allows doctoral students to pursue various and intersecting areas of emphasis such as algorithmic/computer-assisted composition, cross-cultural compositional practices, improvisation, collaborative composition, and other contemporary practices, to provide a broad awareness of the diverse styles, cultural influences, media, venues, and technical means available to them in the 21st century.

FACILITIES

The Music Center includes a 400-seat recital hall that has recording facilities, specially equipped classrooms, individual practice and teaching studios, a student computer laboratory, rehearsal space for ensembles, a gamelan studio, and studios for electronic and computer music. McHenry Library has a separate music section and listening rooms that have individual audio and video facilities. Recording and media equipment is available from the Learning Technologies center.

MUSIC B.A.

Information and Policies

Introduction

The Music Department supports an unusually diverse curriculum for a department of its size. By a choice of concentrations within the bachelor of arts (B.A.) degree, the student can emphasize different aspects of music. The “Compositional Practices” and “Global Musics” concentrations offer a variety of modules (groupings of courses with various focuses) that students will be required to select from in addition to core requirements designed specifically for each concentration. All students pursuing the B.A. degree must select one of the three concentrations.

The concentrations and corresponding modules relevant to each concentration are:

Compositional Practices Concentration. A concentration emphasizing composition and improvisation across multiple genres of music composition. Modules offered are:

- Global Art Musics
- Spontaneous Composition and Improvisation
- Experimental Contemporary Musics. This module offers a variety of electronic music studio courses.

All module offerings are based on availability within the curriculum plan. Students should visit the Music Department website for a list of when each module’s courses will be offered.

Global Musics Concentration. A concentration emphasizing global music research, performance, and writing. Modules offered are:

- Africa and the Americas
- Asia
- Contemporary/Experimental
- Europe
- Jazz
- Popular Music
- World Music

All module offerings are based on availability within the curriculum plan. Students should visit the Music Department website for a list of when each module's courses will be offered.

Western Music Concentration. A concentration emphasizing classical Western art music performance, theory and history. This concentration requires some performance ability on a standard orchestral instrument or voice in classical repertoire (or improvisational repertoire for drum set majors) upon entry to the concentration. This concentration does not have a set of modules, but rather has a set course list of requirements.

The list of course requirements and when the courses are offered can be found on the Music Department website.

Program Learning Outcomes

The Bachelor of Arts in Music program in music is designed to help students accomplish the following learning outcomes:

1. Demonstrate critical familiarity with differences and commonalities among musical practices and their material conditions, across a diverse range of genres, cultures, and histories.
2. Demonstrate familiarity with analytical tools arising in theories of music, including those in music theory, ethnomusicology, and sound studies, as they are applied to musical sounds, practices, and repertoires in diverse musical contexts.
3. Demonstrate skills in listening, interpretation, and collaboration as they pertain to music-making across diverse oral and notational repertoires.
4. Demonstrate performance proficiency on a specific instrument (including voice specializations) across a range of musical genres, periods, and/or practices.
5. Demonstrate skills in music composition, improvisation and/or production including skills in audio technologies.
6. Demonstrate working knowledge of social science, humanities, and/or arts approaches to research in music-relevant topics.This includes qualitative and quantitative research methods for, gathering or obtaining research data, finding/using primary sources, and other research approaches/methods.
7. Demonstrate effective writing and interpretive skills to participate in disciplinary and interdisciplinary dialogue about musical practices, traditions, genres, ideas, and music-making spaces.

Academic Advising for the Program

General information about the music degrees is available on the department website. Students are also strongly encouraged to consult early with the Music Department advisor to create an academic plan for the major or a minor far in advance of declaration, as early as the summer before beginning at the university.

Transfer students should consult the Transfer Information and Policy section.

Please contact the department advisor by emailing music@ucsc.edu or calling (831) 459-2292. Slug Success is also available to make an appointment.

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at the University of California, Santa Cruz. All students intending to major in music are strongly encouraged to email music@ucsc.edu to schedule a phone-advising appointment with the undergraduate advisor at some point during their first year.

The Theory Placement Exam is for placement of students, including transferring or re-entering students, into the appropriate Western music theory course (MUSC 14, or MUSC 30A). It includes written sections in the areas of theory and musicianship that emphasize aural recognition and identification of musical structures (intervals, chords, rhythms, meters, etc.). Students may prepare for the exam by honing skills in reading both bass and treble clef and in recognizing melodic and harmonic structures, and complex rhythmic patterns.

Students without any theory background, or weak aural skills, should plan to enroll in MUSC 20A in their first year in order to prepare for MUSC 14 and the placement exam. Admission to MUSC 30A is primarily based on the Theory Placement Exam scores, but students who get a final grade of "A" or "A+" in MUSC 14 are eligible to automatically place into MUSC 30A.

The Theory Placement Exam is held twice a year: on the Tuesday before instruction begins in fall quarter, from 10:00 a.m.-12:30 p.m., and right before the beginning of Winter quarter (schedule TBA). No signup is necessary. Students should bring a pencil. Students can visit the Music Department website to view the sample exam.

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply to UC Santa Cruz in this major are not required to complete specific courses for consideration of admission to UCSC.

Transfer students are strongly recommended to take some music theory courses before transfer to UC Santa Cruz, which generally enables them to test into one of MUSC 14 or MUSC 30A. They should also have completed most general education requirements, although some GE requirements may be fulfilled by lower-division courses in the major (such as courses in the MUSC 11, MUSC 80, and MUSC 81 series).

Getting Started in the Major: Transfer Students

Transfer students should plan to take the Theory Placement Exam before the start of fall quarter to place into MUSC 14 or MUSC 30A. It is an option for transfer students to take the examination prior to applying to UC Santa Cruz as a practice guide for future preparation, or in the spring quarter before their first fall quarter. Students can also visit the Music Department website to view the sample examination.

Transfer students can also take MUSC 14 when offered during Summer Session at UCSC prior to fall of their arrival. Taking MUSC 14 will help prepare students for the Theory Placement Exam and generally results in students placing into MUSC 30A. Admission to MUSC 30A is primarily based on the Theory Placement Exam scores, but students who get a final grade of “A” or "A+" in MUSC 14 are eligible to automatically place into MUSC 30A.

The Theory Placement Exam is held twice a year: on the Tuesday before instruction begins, from 10:00 a.m.-12:30 p.m. in the Music Center Recital Hall, and right before the beginning of winter quarter (schedule TBA). No signup is necessary. Students should bring a pencil.

All transfer students are strongly encouraged to email music@ucsc.edu to schedule a phone-advising appointment with the undergraduate advisor prior to application.

Major Qualification Policy and Declaration Process

Major Qualification

In order to qualify for the music major, students must successfully complete MUSC 14 or MUSC 30A (depending on major track) with a grade of "C" or better. A "Pass" grade is also acceptable since letter grades are not required for lower-division courses. Students in the Western Music concentration also need signature approval by the applied instrument instructor on the primary instrument authorization form.

Students approaching their major declaration deadline quarter (sixth quarter for four-year students, second quarter for transfer students), should reach out to the Music Department office as soon as possible to set up a declaration advising appointment.

Transfer students should also see the "Transfer Information and Policy" section below.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair within 15 days from the date the notification was mailed.

The appeal process can be started by emailing the undergraduate advisor in the music office.

Within 15 days of receipt of the appeal, the department will notify the student and college of the decision.

How to Declare a Major

All students should meet with the academic advisor to begin the major declaration process either by making an appointment (via Slug Success), by email to music@ucsc.edu, or by stopping by the department office, Music Center, Room 244 or 248. Students are also required to meet with a faculty advisor (assigned with help from the academic advisor) as part of the declaration process.

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first). The declaration deadline for four-year students is their sixth quarter, and the second quarter for transfer students.

Students petitioning when the campus declaration deadline is imminent, will either be approved, denied, or provided with conditions (e.g. completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

Letter Grade Policy

All upper-division courses applied toward the music majors must be taken for a letter grade, except MUSC 120 (Seminar in Composition) and upper-division workshops performing ensembles, which may be taken Pass/No Pass.

All lower-division courses, including those in the MUSC 30-series, may be taken Pass/No Pass.

Course Substitution Policy

Students who have taken introductory or topical large lecture music courses at other institutions may email the curriculum committee to propose course substitutions. To begin this process, email music@ucsc.edu.

Double Majors and Major/Minor Combinations Policy

Double majors **are** possible for the music major. A student can double major with a Music Bachelor of Arts (B.A.) Degree or a Bachelor of Music (B.M.) Degree, and a major

from another department. Students that plan to double major should meet with the music undergraduate advisor for course planning in fall quarter of their first year.

It is not possible to double major as a music B.A. and a music B.M. However, it is possible to pursue the B.M. and add the "Jazz, Spontaneous Composition and Improvisation Minor" or "Electronic Music minor." It is not possible to add the "Western Music Minor" to the Music B.A. or Music B.M. degrees.

Students are generally not able to add the "Western Music Minor" or "Jazz, Spontaneous Composition and Improvisation Minor" to the Music B.A. Compositional Practices or Global Musics concentrations in the Music B.A , due to potential overlap between these curricula. Similarly, the "Electronic Music Minor" cannot be added to the Compositional Practices concentration. **However, in rare cases, and with careful planning, these major/minor combinations can be possible**.

The "Jazz, Spontaneous Composition and Improvisation Minor" can be added to the Western Music concentration. The "Electronic Music Minor" can still be added to the Global Musics or Western Music concentration.

Study Abroad

The department encourages students to explore studying abroad while attending UC Santa Cruz. In particular, the UCSC Music Department has an exchange program agreement with the Music Department at the University of Sussex. University of Sussex offers many courses that can be substituted for music major or minor requirements.

For more information on approved course substitutions and the exchange program please visit the Global Learning website.

Honors

Honors in the major are conferred by vote of the music faculty. B.A. or B.M. students can be awarded honors for excellent work in individual areas, including coursework and a capstone course (research thesis or creative portfolio). Excellent work in any two of these areas normally results in honors in the major.

To be considered for highest honors in the major, B.A. students must also complete an additional senior project (not required for their concentration) and B.M. students must complete a capstone course (not required for the B.M. degree). Honors in all three areas—coursework, senior project, and capstone course—normally results in highest honors in the major.

How Music Majors Are Assessed

For students in the Western Music concentration:

1. Placement exams at the outset of studies assess students' musical competence, and determine their place in the required lower-division theory and harmony courses.
2. Admission to most performance ensembles is by audition. Assessment is based on successful public performances.
3. A juried "advisory audition" is required for students enrolled in MUSC 30A to give students feedback so that they can work toward meeting the requirements for the proficiency audition at the end of the next fall quarter.
4. A juried "proficiency audition" is required for students enrolled in MUSC 150H. All students must exhibit an upper-intermediate or higher level on their major instrument or voice.
5. Students will always declare as a music B.A. If you are interested in becoming a music B.M. student, auditions for admission to the B.M. program are held at the end of each fall quarter. Students accepted to the program are required to audition twice a year for continuing review and critique. Students in the B.M. program present a senior recital which is evaluated by faculty. See the music B.M. page for more information.
6. In required and elective seminars, critical thinking and writing are assessed when students present a major independent project at the end of term.
7. Compositional skills are assessed through the rehearsal and public performance of student works.

For students in the Global Musics concentration:

1. Placement exams at the outset of studies assess students' musical competence, and determine their place in the required lower-division theory and harmony courses.
2. Admission to most performance ensembles is by audition. Assessment is based on successful public performances.
3. In required and elective seminars, critical thinking and writing are assessed when students present a major independent project at the end of term.
4. Compositional skills are assessed through the rehearsal and public performance of student works, when applicable.

For students in the Compositional Practices concentration:

1. Placement exams at the outset of studies assess students' musical competence, and determine their place in the required lower-division theory and harmony courses.
2. Admission to most performance ensembles is by audition. Assessment is based on successful public performances.
3. Compositional skills are assessed through the rehearsal and public performance of student works, when applicable. Additionally, students will be expected to

present a senior composition recital at the end of their residency.

4. In required and elective seminars, critical thinking and writing are assessed when students present a project or paper at the end of term.

Compositional Practices Concentration

Course Requirements

In addition to the core course work and electives listed below, students pursuing the Compositional Practices concentration are required to complete three modules, relating to cross-cultural themes and genres:

- Experimental Contemporary Musics
- Global Art Musics
- Spontaneous Composition and Improvisation

The following course list outlines the general concentration requirements. See the list of approved courses relevant to each module.

Lower-Division Theory

MUSC 14 is meant for students with some experience with Western music theory. Students can bypass MUSC 14 by placing directly into MUSC 30A via the Theory Placement Exam. Students may also place into MUSC 30A by receiving a final grade of "A" or "A+" in MUSC 14.

The Theory Placement Exam is offered twice per year: in fall quarter, the Tuesday before classes start; and in the beginning of winter quarter. See the Music Department website for exam details.

MUSC 14	Beginning Western Theory and Musicianship	5
MUSC 20B	Theoretical Foundations of Music	5
MUSC 30A	Theory, Literature, and Musicianship I	5
MUSC 30B	Theory, Literature, and Musicianship II	5

Lower-division musicianship

The following course should be taken alongside MUSC 30-series classes

MUSC 31	Ear Training	2

Upper-Division Requirements

Upper-division Composition

Students must take MUSC 120 at least twice, with different instructors when possible.

MUSC 120	Seminar in Music Composition	5

Upper-division Composition/Analysis

Choose one of the courses below to take. If choosing MUSC 120, it must be taken with a different instructor as your previous two times, if possible.

MUSC 120	Seminar in Music Composition	5
MUSC 121A	Jazz Analysis	5
MUSC 121B	Orchestration	5

Upper-Division History

MUSC 101C	Western Music History (1910-present)	5

Modular Requirements

Each module consists of:

- a lower-division MUSC 11, MUSC 80, or MUSC 81-series course specific to each module (three total)
- an upper-division MUSC 150 or equivalent (theory/composition-based) course specific to each module (three total)
- two quarters of performing ensembles or performance practice workshops specific to each module (six total)

See the list of approved courses relevant to each module.

Electives

History/Culture Elective

Students must take one course from the MUSC 101, Foundational History/Culture, or MUSC 105, Topical History, series to fulfill their upper-division elective.

Courses **may not** be repeated for credit, and courses that cannot be repeated for credit cannot be double-counted toward major requirements.

Students may also elect to take a graduate-level seminar in place of their final elective. All graduate courses require instructor and/or department permission to add.

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 101H	Music of Insular Southeast Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5

MUSC 105E	Early Keyboard Music	5
MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 105L	The Music and Life of Prince	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105O	Opera from Peri to Pergolesi	5
MUSC 105P	The Piano	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105R	History of Russian Music	5
MUSC 105S	The Politics of Aesthetics and Spirituality	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 105V	Mexican Music and Conviviality	5

Elective Ensembles/Performance Practice Workshops

Take three quarters of any of the following courses. All courses except MUSC 74, MUSC 20C, MUSC 71, and MUSC 167R may be repeated for credit, and can count toward multiple elective requirements if repeated.

These courses **cannot** double-count with modular ensemble/workshop requirements. However, you can take repeatable courses enough times to count for **both** modular and elective requirements.

MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 10	Central Asian Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 12B	Mexican Folklorico Music and Dance	2
MUSC 20C	Beginning Jazz Theory	5
MUSC 53A	Beginning Ghanaian Ensemble	2
MUSC 54	North Indian Music Workshop	2
MUSC 55	Rhythms of North India	2
MUSC 55A	Intermediate Rhythms of North India	2
MUSC 58	Songwriting Craft and Practice	5
MUSC 61	Individual Lessons: Half Hour	2
MUSC 62	Individual Lessons: One Hour	3
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2
MUSC 73	Music and the Ocean	3
MUSC 74	Beginning Spontaneous Composition and Improvisation	5
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 71	Laptop Music	5
MUSC 102	University Orchestra	2
MUSC 103	University Concert Choir	2
MUSC 129	Live Electroacoustic Music Ensemble	2
MUSC 158	South African Music Ensemble	2
MUSC 161	Individual Lessons: One Hour	3
MUSC 161A	Individual Lessons: Half Hour	2
MUSC 163	Early Music Band	2
MUSC 164	Jazz Combos	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2
MUSC 167	Workshop in Electronic Music	2
MUSC 167R	Recording Workshop	2
MUSC 168	Experimental Music Ensemble	2

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement.

The DC requirement for the Compositional Practices concentration of the music B.A. degree is satisfied by completing **one** of the following courses. Some courses may already be core or elective requirements for the major track, meaning students would satisfy the DC requirement through the natural progression of their degree.

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105Q	The String Quartet from Haydn to the Present	5

MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 150D	Theory of Southeast Asia	5

Comprehensive Requirement

For their Senior Capstone project, students in the Compositional Practices concentration must present a senior composition recital or portfolio.

Students should consult their faculty advisor (chosen when you declare the major) and department advisor when planning their recital/portfolio.

MUSC 196A	Senior Recital Preparation (without individual lessons)	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

In addition to core curriculum requirements for the Compositional Practices Concentration, students must also complete three modules. Each module will consist of:

- a lower-division MUSC 11, MUSC 80, or MUSC 81-series course specific to each module (three total);
- an upper-division MUSC 150 or equivalent (theory/composition-based) course specific to each module (three total);
- two quarters of performing ensembles or performance practice workshops specific to each module (six total).

Please see sample two and four-year plans below.

Four-Year Plan for Incoming Frosh

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MUSC 14 (if necessary)	MUSC 20B	Module: Lower-div 1	Module: Lower-div 2 WRIT 1/WRIT 1E (if needed)
2nd (soph)	MUSC 30A/MUSC 31	MUSC 30B/MUSC 31	MUSC 101C (D.C.)	
	WRIT 2*		Module: Upper-div 1	
	Module: Ensemble 1	Module: Ensemble 1	Elective ensemble	
3rd (jr)	MUSC 121B	MUSC 120	Module: Upper-div 2	
		Elective upper-div history		
	Module: Ensemble 2	Module: Ensemble 2	Module: Ensemble 3	
4th (sr)		MUSC 120	MUSC 196A	
		Module: Upper-div 3		
	Module: Ensemble 3	Elective ensemble	Elective ensemble	

* WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Plan for Transfer Students

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T

			Summer Edge (optional)
1st (junior)	MUSC 30A/MUSC 31	MUSC 30B/MUSC 31	MUSC 101C (D.C.)
	Module: Lower-div 2	MUSC 20B	Module: Lower-div 3
	Module: Lower-div 1	Elective: Upper-div history	Module: Upper-div 1
Module: Ensemble 1	Module: Ensemble 1	Module: Ensemble 2	
2nd (sr)	MUSC 121B	MUSC 120	MUSC 120
		Module: Upper-div 2	MUSC 196A
	Module: Upper-div 3		
	Module: Ensemble 2	Module: Ensemble 3	Module: Ensemble 3
	Elective ensemble	Elective ensemble	Elective ensemble

General Education (GE) Codes

MUSC 11, MUSC 80, and MUSC 81 series courses will fulfill a variety of GE requirements including: IM, CC, ER, MF, PE-E, PE-H, PE-T, and PR-C.

MUSC 150C, MUSC 150P, MUSC 150T, MUSC 150X fulfill the IM GE requirement. MUSC 150I fulfills the CC GE.

Most, but not all, ensembles satisfy the PR-C or PR-E code GE requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes.

Students must complete all other general education requirements.

Transfer Student Progress

Some courses from the MUSC 11, MUSC 80, and MUSC 81 series, along with some performing ensembles, can be articulated from courses taken at other institutions. Please email music@ucsc.edu with any questions about course articulations/substitutions.

Global Musics Concentration

Course Requirements

In addition to the core course work and electives listed below, students pursuing the Global Musics concentration are required to complete three modules, relating to geographical areas, themes, and genres:

- Africa the Americas
- Asia
- Contemporary/Experimental Music
- Europe
- Jazz
- Popular Music
- World Musics

The following course list outlines the general concentration requirements. See the list of approved courses relevant to each module.

Lower-Division Theory

MUSC 14 is meant for students with some Western music theory experience. Students can bypass this requirement by placing directly into MUSC 30A via the Theory Placement Exam.

The Theory Placement Exam is offered twice per year: in fall quarter, the Tuesday before classes start; and in the beginning of winter quarter. See the Music Department website for exam details.

MUSC 14	Beginning Western Theory and Musicianship	5
MUSC 20A	Global Music Theory and Musicianship	5
MUSC 20B	Theoretical Foundations of Music	5

Upper-Division Courses

Modular Requirements

Each modules consists of:

- a lower-division MUSC 11, MUSC 80, or MUSC 81-series course specific to each module (three total)
- an upper-division MUSC 101, MUSC 105, or MUSC 150 course specific to each module (three total)
- two quarters of performing ensemble or performance practice workshop specific to each module (six total)

See the list of approved courses relevant to each module.

Electives

Take three (3) lectures or seminars from the upper-division music catalog. These elective courses **cannot** double count with modular courses, unless the course is repeatable for credit and is taken more than once with a different instructor.

Elective Upper-Division Lectures/Seminars

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 101H	Music of Insular Southeast Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105E	Early Keyboard Music	5
MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 105L	The Music and Life of Prince	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105O	Opera from Peri to Pergolesi	5
MUSC 105P	The Piano	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105R	History of Russian Music	5
MUSC 105S	The Politics of Aesthetics and Spirituality	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 105V	Mexican Music and Conviviality	5
MUSC 120	Seminar in Music Composition	5
MUSC 121A	Jazz Analysis	5
MUSC 121B	Orchestration	5
MUSC 122	Conducting	2
MUSC 150A	Music Analysis for Performers	5
MUSC 150B	Music Analysis and Composition	5
MUSC 150C	Tonal Counterpoint	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150H	Harmony & Form in 19th-century Western Art Music	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 150K	Intermediate Jazz Theory	5
MUSC 150N	Noise, Music, Politics	5
MUSC 150P	20th-Century Popular Song	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150T	Post Tonal Analysis	5
MUSC 150X	Theoretical Practices of American Music	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5

Elective Ensembles/Performance Practice Workshops

Take three quarters of any of the following courses. All courses except MUSC 74, MUSC 20C, MUSC 71, and MUSC 167R may be repeated for credit, and can count toward multiple elective requirements if repeated.

These courses **cannot** double-count with modular ensemble/workshop requirements. However, you can take repeatable courses enough times to count for **both** modular and elective requirements.

MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 10	Central Asian Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 12B	Mexican Folklorico Music and Dance	2
MUSC 20C	Beginning Jazz Theory	5
MUSC 53A	Beginning Ghanaian Ensemble	2

MUSC 54	North Indian Music Workshop	2
MUSC 55	Rhythms of North India	2
MUSC 55A	Intermediate Rhythms of North India	2
MUSC 58	Songwriting Craft and Practice	5
MUSC 61	Individual Lessons: Half Hour	2
MUSC 62	Individual Lessons: One Hour	3
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2
MUSC 71	Laptop Music	5
MUSC 72	Fundamentals of Music Technology	2
MUSC 73	Music and the Ocean	3
MUSC 74	Beginning Spontaneous Composition and Improvisation	5
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 102	University Orchestra	2
MUSC 103	University Concert Choir	2
MUSC 129	Live Electroacoustic Music Ensemble	2
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 158	South African Music Ensemble	2
MUSC 161	Individual Lessons: One Hour	3
MUSC 161A	Individual Lessons: Half Hour	2
MUSC 163	Early Music Band	2
MUSC 164	Jazz Combos	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2
MUSC 167	Workshop in Electronic Music	2
MUSC 167R	Recording Workshop	2
MUSC 168	Experimental Music Ensemble	2
MUSC 203H	Area Studies in Performance Practice	5
MUSC 267	Workshop in Computer Music and Visualization	2

Graduate-Level Research Requirement

Students in the Global Musics concentration are also required to take **one** graduate-level course. Students may select from a range of courses focused on developing research skills, or seminars providing cross-cultural foundations in social and music theory.

MUSC 200 **cannot** be double counted if taken to satisfy the Research Project option within the Comprehensive Requirement.

MUSC 200	Introduction to Research Methods	5
MUSC 203G	Concepts, Issues, and the Practice of Ethnomusicology	5
MUSC 253A	Historical Perspectives in Musicology and Ethnomusicology	5
MUSC 253B	Rhythm, Time, and Form	5
MUSC 253C	Music and Discourse	5
MUSC 253D	Issues in the Ethnography of Music	5
MUSC 253S	The Politics of Aesthetics and Spirituality	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement.

The DC requirement for the global musics concentration of the music B.A. degree is satisfied by completing **one** of the following courses. Some courses may already be core or elective requirements for the major track, meaning students would satisfy the DC requirement through the natural progression of their degree.

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 150D	Theory of Southeast Asia	5

Comprehensive Requirement

The senior comprehensive requirement (capstone) is a two-part requirement that is satisfied by 1) enrollment in one of the course listed below, and 2) an independent study course with your faculty advisor. The options for senior capstones focus in two areas: A) **research project** or B) **creative portfolio project**.

A) The research project option requires a 15-25 page research paper, which is accomplished by taking the independent study course MUSC 195A (Senior Thesis) with their faculty advisor, concurrently with one of the listed research courses.

B) The creative portfolio option typically requires either a senior composition project or composition recital, both accompanied by a 7-10 page short thesis. If a student chooses to do the creative portfolio options, they must concurrently enroll in the independent study course MUSC 196A (Global Musics Capstone) with their faculty advisor.

Research Project

Choose one of the following courses. Cannot double count with modular or upper-division electives.

MUSC 200 **cannot** be double counted if taken to satisfy the Graduate-Level Research Requirement.

MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 101H	Music of Insular Southeast Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105E	Early Keyboard Music	5
MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 105L	The Music and Life of Prince	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105O	Opera from Peri to Pergolesi	5
MUSC 105P	The Piano	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105R	History of Russian Music	5
MUSC 105S	The Politics of Aesthetics and Spirituality	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 105V	Mexican Music and Conviviality	5
MUSC 199	Tutorial	5
MUSC 200	Introduction to Research Methods	5

Take concurrently with selected course above

Students that select the research option for their capstone must also enroll in:

MUSC 195A	Senior Thesis	5

Creative Portfolio Project

Choose one of the following courses. This course **cannot** double count with modular electives, unless the course is repeatable for credit and is taken more than once.

MUSC 120	Seminar in Music Composition	5
MUSC 150A	Music Analysis for Performers	5
MUSC 150B	Music Analysis and Composition	5
MUSC 150C	Tonal Counterpoint	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150N	Noise, Music, Politics	5
MUSC 150P	20th-Century Popular Song	5
MUSC 150R	Field Recording: Mapping and Composing Sound, Identity, and Place	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150T	Post Tonal Analysis	5
MUSC 150X	Theoretical Practices of American Music	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5
MUSC 199	Tutorial	5
MUSC 203H	Area Studies in Performance Practice	5

Take concurrently with selected course above

Students that select the creative portfolio option for their capstone must also enroll in:

MUSC 196A	Senior Recital Preparation (without individual lessons)	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

In addition to core curriculum requirements for the Global Musics Concentration, students must also complete three modules. Each module will consist of:

- a lower-division MUSC 11, MUSC 80, or MUSC 81-series course specific to each module (three total)
- an upper-division MUSC 101, MUSC 105, MUSC 150, or MUSC 180 course specific to each module (three total)
- two quarters of performing ensemble or performance practice workshop specific to each module (six total)

Four-Year Plan for Incoming Frosh

Year	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge

				(optional)
1st (frosh)	MUSC 20A	MUSC 20B	Module: Lower-div 1	
	Module: Ensemble 1	Module: Ensemble 1	Elective ensemble	
		WRIT 1/WRIT 1E (if needed)		
2nd (soph)	MUSC 14 (if necessary)	Module: Upper-div 1 (D.C. possible)	Elective: Upper-div (D.C. poss.)	
	Module: Ensemble 2	Module: Lower-div 2		
	WRIT 2*	Module: Ensemble 2	Elective ensemble	
3rd (jr)	Module: Lower-div 3	Module: Upper-div 2(D.C. poss.)	Module: Upper-div 3 (D.C. poss.)	
	Elective: Upper-div (D.C. poss.)			
	Module: Ensemble 3	Module: Ensemble 3	Elective ensemble	
4th (sr)	Research Foundations	Elective: Upper-div (D.C. poss.)	Capstone: Upper-div (D.C. poss.)	Capstone: MUSC 195A or MUSC 196A

* WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Plan for Transfer Students

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (jr)	MUSC 20A	MUSC 20B	Module: Upper-div 1 (D.C. possible)	
	Module: Lower-div 1	Module: Lower-div 2	Module: Upper-div 2 (D.C. poss.)	
	Module: Lower-div 1	Module: Ensemble 1	Elective ensemble	
	Elective ensemble	Module: Ensemble 2	Module: Ensemble 2	
2nd (sr)	MUSC 14 (if necessary)	Elective: Upper-div (D.C. poss.)	Capstone: MUSC 195A/MUSC 196A	
	Module: Lower-	Elective:	Capstone: Upper-	

div 3	Upper-div (D.C. poss.)	div (D.C. poss.)
Research Foundations	Module: Upper-div 3 (D.C. poss.)	Elective: Upper-div (D.C. poss.)
Module: Ensemble 3	Module: Ensemble 3	Elective ensemble

General Education (GE) Codes

MUSC 11, MUSC 80 and MUSC 81 series courses will fulfill a variety of GE requirements including: IM, CC, ER, MF, PE-E, PE-H, PE-T, and PR-C.

MUSC 150C, MUSC 150P, MUSC 150T, MUSC 150X fulfill the IM GE requirement. MUSC 150I fulfills the CC GE.

Most, but not all, ensembles satisfy the PR-C or PR-E code GE requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes.

Students must complete all other general education requirements.

Transfer Student Progress

Some courses from the MUSC 11, MUSC 80, and MUSC 81 series, along with some performing ensembles, can be articulated from courses taken at other institutions. Please email music@ucsc.edu with any questions about course articulations/substitutions.

Western Music Concentration

Course Requirements

Lower-Division Courses

Lower-Division Theory

Take all of the following courses. Students are accepted to MUSC 30A if they have taken MUSC 14 at UCSC and received an "A" or "A+", or have tested in via the Theory Placement Exam. See the music department for more information on the TPE: https://music.ucsc.edu/programs/theory-placement-exam

MUSC 30A	Theory, Literature, and Musicianship I	5
MUSC 30B	Theory, Literature, and Musicianship II	5
MUSC 30C	Theory, Literature, and Musicianship III	5

Lower-Division Keyboard and Musicianship

The following courses should be taken alongside MUSC 30-series classes.

MUSC 31	Ear Training	2
MUSC 60	Fundamental Keyboard Skills	2

MUSC 60 enrollment may be waived by instructor approval, or if the student is taking piano lessons from a UC Santa Cruz instructor.

Upper-Division Courses

Core Upper-Division History/Culture

Take two of these courses

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5

Plus two of these courses

Students **may not** double count courses between the MUSC 101A-C list and MUSC 101A-H list.

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 101H	Music of Insular Southeast Asia	5

Elective Upper-Division History

Take one of these courses

MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105E	Early Keyboard Music	5
MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 105L	The Music and Life of Prince	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105O	Opera from Peri to Pergolesi	5
MUSC 105P	The Piano	5
MUSC 105Q	The String Quartet from Haydn to the Present	5

MUSC 105R	History of Russian Music	5
MUSC 105S	The Politics of Aesthetics and Spirituality	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 105V	Mexican Music and Conviviality	5

Upper-Division Theory

Core Upper-Division Theory

Take the following course

MUSC 150H	Harmony & Form in 19th-century Western Art Music	5

Elective Upper-Division Theory

Take one of the following courses

MUSC 150A	Music Analysis for Performers	5
MUSC 150B	Music Analysis and Composition	5
MUSC 150C	Tonal Counterpoint	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 150K	Intermediate Jazz Theory	5
MUSC 150N	Noise, Music, Politics	5
MUSC 150P	20th-Century Popular Song	5
MUSC 150R	Field Recording: Mapping and Composing Sound, Identity, and Place	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150T	Post Tonal Analysis	5
MUSC 150X	Theoretical Practices of American Music	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5

Final Upper-Division Elective

Students can fulfill their final upper-division elective by taking:

- One additional class from the MUSC 150 series, not already taken;
- One additional class from the MUSC 101 series, not already taken; or
- One of the courses listed below:

MUSC 121B	Orchestration	5
MUSC 122	Conducting	2
MUSC 123B	Electronic Music: Synthesis & Composition II	5

Performing Ensembles

Music B.A. (Western Music) students are expected to complete six quarters of performing ensembles on their primary instrument or voice.

All ensembles are 2 credits each and may be repeated for credit.

A maximum of one ensemble per quarter can be counted toward fulfillment of the total six quarter requirement. If two ensembles in one quarter need to be taken to meet time to degree plans approval can be requested to the department Curriculum Committee by email to music@ucsc.edu.

MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 10	Central Asian Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 102	University Orchestra	2
MUSC 103	University Concert Choir	2
MUSC 158	South African Music Ensemble	2
MUSC 160	University Opera Theater	5
MUSC 163	Early Music Band	2
MUSC 164	Jazz Combos	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2
MUSC 168	Experimental Music Ensemble	2

Individual Applied Lessons

Music B.A. (Western Music) students are expected to complete six quarters of applied lessons on their primary instrument or voice.

Students can contact the applied instrument instructor of their primary instrument to arrange an audition prior to the start of the quarter. Applied instrument instructor emails are listed on the Music Department website.

Students should work with the applied instructor of their primary instrument to determine which of the courses listed would be appropriate.

The lessons carry an additional course fee. Concurrent enrollment in an appropriate ensemble is required. Consult the Music Student Handbook for more details.

MUSC 61	Individual Lessons: Half Hour	2
MUSC 62	Individual Lessons: One Hour	3

MUSC 161	Individual Lessons: One Hour	3
MUSC 161A	Individual Lessons: Half Hour	2
MUSC 162	Advanced Individual Lessons: One Hour	5
MUSC 196B	Senior Recital Preparation (with individual lessons)	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement.

The DC requirement for the western art music concentration of the music B.A. degree is satisfied by completing **one** of the following courses. Some courses may already be core or elective requirements for the major track, meaning students would satisfy the DC requirement through the natural progression of their degree.

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 150D	Theory of Southeast Asia	5

Comprehensive Requirement

To fulfill the the comprehensive requirement, students may either take an additional MUSC 105-series course, not already taken, or the following course:

MUSC 120	Seminar in Music Composition	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Plan for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MUSC 11A (recommended) College 1	MUSC 14 WRIT 1/WRIT 1E (if needed)		
2nd (soph)	MUSC 30A*/MUSC 31 MUSC 60 WRIT 2*** Individual Lessons[1] Ensemble[2]	MUSC 30B/MUSC 31 MUSC 60 MUSC 101A Individual Lessons Ensemble[2]	MUSC 30C/MUSC 31 MUSC 60 MUSC 101B Individual Lessons Ensemble[2]
3rd (junior)	MUSC 150H* MUSC 101C Individual Lessons Ensemble[2]	MUSC 105 Individual Lessons Ensemble[2]	MUSC 150 Individual Lessons Ensemble[2]
4th (senior)	MUSC 121B**	MUSC 120	MUSC 101E	

* Indicates a performance jury requirement at the end of the quarter.

** Select from the following list of options to fulfill this requirement: one additional class from the MUSC 150 or MUSC 180 series, MUSC 121, MUSC 122, or MUSC 123A.

*** WRIT 2 should be taken in or before spring quarter of the second year.

[1]Students fulfill the individual lessons requirement by taking one of the following courses: MUSC 61, MUSC 62, or MUSC 161.

General Education (GE) Codes

MUSC 11A will fulfill the IM GE requirement.

[2]Most, but not all, ensembles satisfy the PR-C or PR-E code GE requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes.

MUSC 150H will fulfill the MF GE requirement.

Students must complete all other general education requirements.

Two-Year Plan for Transfer Students

The following two-year plan assumes that the student places into MUSC 30A and has completed most GE requirements.

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (jr)	MUSC 30A*/MUSC 31 MUSC 60 Individual Lessons[1] Ensemble[2]	MUSC 30B/MUSC 31 MUSC 60 MUSC 101A Individual Lessons[1] Ensemble[2]	MUSC 30C/MUSC 31 MUSC 60 MUSC 101B Individual Lessons[1] Ensemble[2]	
2nd (sr)	MUSC 150H* MUSC 101C MUSC 121B Individual Lessons[1] Ensemble[2]	MUSC 105 MUSC 120 Individual Lessons[1] Ensemble[2]	MUSC 150 MUSC 101G Individual Lessons[1] Ensemble[2]	

* Indicates a performance jury requirement at the end of the quarter.

[1]Students fulfill the individual lessons requirement by taking one of the following courses: MUSC 61, MUSC 62, or MUSC 161.

General Education Codes

MUSC 11A will fulfill the IM GE requirement.

[2]Most, but not all, ensembles satisfy the PR-C or PR-E GE requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes. .

Students must complete all other GE requirements.

MUSIC B.M.

Information and Policies

The Music Department at University of California, Santa Cruz, offers two undergraduate degrees: a Bachelor of Arts (B.A.) and a Bachelor of Music (B.M.). The B.A. degree offers a uniquely diverse curriculum, with the option of completing a concentration in either “Compositional Practices,” “Global Musics,” or “Western Music.” The B.M. degree is designed for students who intend to pursue a career in music performance. The department also offers minors in “Electronic Music,” “Jazz, Spontaneous Composition, and Improvisation,” and “Western Music,” making the study of music more accessible to undergraduates majoring in other disciplines. Both B.A. and B.M. degrees are distinctive in that they integrate elements of performance, theory, composition, literature, history, and culture in order to produce graduates that are accomplished scholar-performers. Students leave UC Santa Cruz prepared for graduate studies and music careers in performance, teaching, and the digital arts.

Through these curricular offerings, students will encounter an extraordinarily rich variety of performance opportunities. Specifically, our students engage with music:

● as a cultural practice in ensembles focusing on musical traditions from Europe, Central Asia, Latin America, North America, South Africa, South Asia, and Southeast Asia;

● temporally in ensembles based on Baroque, Classical, Romantic, and contemporary idioms to deepen their understanding of performance practices;

● technologically in electronic music ensembles and workshops where students experiment with innovative technologies to develop their own projects with the support of their advisors and peers;

● collaboratively in seminars geared toward student composition and improvisation.

Students at UC Santa Cruz have extraordinary performance, composition, and professionalization opportunities. All instrument and voice faculty are celebrated professional musicians who provide unparalleled guidance for students in performance and professional development. Ensemble courses culminate in an end-of-quarter performance, providing students with regular performance opportunities in a world-class recital hall. Student composers frequently collaborate with Arts Division faculty and peers to create and showcase their works. The Electronic Music Minor provides hands-on opportunities for students to learn a variety of techniques related to electronic sound production, composition, and recording in a state-of-the-art studio facility. The Opera Program allows students to be involved in every step of a major production, from concept and design considerations to marketing and arts management. As performers, composers, artistic collaborators, and event organizers, these programs allow students to develop musically and professionally for diverse career paths and industries.

Our programs shape responsible, independent, and highly capable young artists that will push the frontiers of their fields. Graduates from the Music Department at UC Santa Cruz are musically-attuned and socially-engaged global citizens in the 21st century.

Introduction

The B.M. degree is for students who aspire to academic excellence and an advanced performance level. The B.M. degree is designed for exceptionally talented performers. It requires considerably more performance credits and slightly fewer courses in theoretical disciplines. B.M. students will major in an instrument or voice.

Once accepted to the B.M. program, students must take two juries per academic year: at the end of both fall and spring quarter, for continuing review and criticism of proficiency at their primary instrument.

If a student fails to participate in continuing B.M. juries, or does not attain, or maintain, an advanced level, and fails to maintain academic excellence, the Bachelor of Music Committee will re-examine the student's continued participation in the B.M. degree in consultation with the applied instructor. In cases in which the B.M. Committee finds the student did not meet these requirements the students will be dismissed from the B.M. program with an option to switch to the B.A. degree.

Time to degree: The determination of a dismissal can be made by the committee as long as a student has three remaining quarters before their expected graduation date. This will ensure enough time to make course changes from a B.M. to B.A. degree.

Students may appeal a dismissal of the B.M. degree by petition to the chair of the Music Department. A letter to the department chair must be submitted within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision.

Program Learning Outcomes

The Bachelor of Music program in music is designed to help students accomplish the following learning outcomes:

1. Demonstrate critical familiarity with differences and commonalities among musical practices and their material conditions, across a diverse range of genres, cultures, and histories.
2. Demonstrate familiarity with analytical tools arising in theories of music, including those in music theory, ethnomusicology, and sound studies, as they are applied to musical sounds, practices, and repertoires in diverse musical contexts.
3. Demonstrate musicianship skills across diverse oral and notational repertoires.
4. Demonstrate performance proficiency on a specific instrument (including voice specializations) across a range of musical genres, periods, and/or practices.
5. Demonstrate skills in music composition, improvisation and/or production including skills in audio technologies.
6. Demonstrate working knowledge of social science, humanities, and/or arts approaches to research in music-relevant topics.This includes qualitative and quantitative research methods for, gathering or obtaining research data, finding/using primary sources, and other research approaches/methods.
7. Demonstrate effective writing and interpretive skills to participate in disciplinary and interdisciplinary dialogue about musical practices, traditions, genres, ideas, and music-making spaces.
8. Demonstrate familiarity with multiple languages associated with music performance, scholarship, and composition.

Academic Advising for the Program

General information about the music degrees is available on the department website. Students are also strongly encouraged to consult early with the Music Department advisor to create an academic plan for the major or a minor far in advance of declaration, as early as the summer before beginning at the university.

Transfer students should consult the Transfer Information and Policy section.

Please contact the department advisor by emailing music@ucsc.edu or calling (831) 459-2292. You may also use Slug Success to make an appointment.

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz.

The Theory Placement Exam is for placement of students, including transferring or re-entering students, into the appropriate Western music theory course (MUSC 14, or MUSC 30A). It includes written sections in the areas of theory and musicianship that emphasize aural recognition and identification of musical structures (intervals, chords, rhythms, meters, etc.). Students may prepare for the exam by honing skills in reading both bass and treble clef and in recognizing melodic and harmonic structures, and complex rhythmic patterns.

Students with some theory background should plan to take the Theory Placement Exam to place into MUSC 14 or MUSC 30A. Students without any theory background, or weak aural skills, should enroll in MUSC 20A in their first year in order to prepare for the placement exam. Admission to MUSC 30A is primarily based on the Theory Placement Exam scores, but students who get a final grade of “A” or "A+" in MUSC 14 are eligible to automatically place into MUSC 30A.

The Theory Placement Exam is held twice a year: on the Tuesday before instruction begins in fall quarter, from 10:00 a.m.-12:30 p.m., and right before the beginning of winter quarter (schedule TBA), both in the Music Center Recital Hall. No signup is necessary. Students should bring a pencil. Students can visit the Music Department website to view the sample exam.

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific courses for consideration of admission to UC Santa Cruz.

Transfer students are strongly recommended to take some music theory courses before transfer to UC Santa Cruz, which generally enables them to test into MUSC 30A in their first quarter. They should also have completed most general education requirements. Voice students should have completed one introductory college-level language course each in Italian, French, and German.

Getting Started in the Major: Transfer Students

Transfer students should plan to take the Theory Placement Exam to place into MUSC 14 or MUSC 30A. All transfer students should take the Theory Placement Exam in the fall of their first quarter. It is an option for transfer students to take the examination prior to applying to UC Santa Cruz as a practice guide for future preparation, or in the spring quarter before their first fall quarter. Students can also visit the Music Department website to view the sample examination.

Transfer students can also take MUSC 14 when offered during Summer Session at UCSC prior to fall of their arrival. Taking MUSC 14 will help prepare students for the Theory Placement Exam and generally results in students placing into MUSC 30A. Admission to MUSC 30A is primarily based on the Theory Placement Exam scores, but students who get a final grade of “A” or "A+" in MUSC 14 are eligible to automatically place into MUSC 30A.

The Theory Placement Exam is held twice a year: on the Tuesday before instruction begins, from 10:00 a.m.-12:30 p.m. in the Music Center Recital Hall, and right before the beginning of winter quarter (schedule TBA). No signup is necessary. Students should bring a pencil.

All transfer students are strongly encouraged to email music@ucsc.edu to schedule a phone or zoom advising appointment with the undergraduate advisor prior to application.

Major Qualification Policy and Declaration Process

Major Qualification

In order to qualify for the music major, students must successfully complete MUSC 30A with a grade of "C" or better. A "Pass" grade is also acceptable since letter grades are not required for lower-division courses.

Bachelor of music students must also audition in the fall or spring juries as a "B.M. Audition." Applied instructor approval is required to sign-up for this audition. If the B.M. committee determines that the performance level demonstrated is appropriate for the B.M. program, the student can then declare the B.M. major (in addition to passing MUSC 30A). Students can consult with their applied instrument instructor about this potential. If faculty supports this option they can sign up with the undergraduate advisor for the next available jury.

Students approaching their major declaration deadline quarter (sixth quarter for four-year students, second quarter for transfer students), should reach out to the Music office as soon as possible to set up a declaration advising appointment.

Transfer students should also see the "Transfer Information and Policy" section below.

Appeal Process

Students may appeal a dismissal of the B.M. degree by petition to the chair of the Music Department. A letter to the department chair must be submitted within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision. Appeals should be submitted in person at Music Center 244, or sent to music@ucsc.edu care of the undergraduate advisor.

If a student is not accepted into the B.M. program via the results of their B.M. audition, they can sign up for the next available jury. Students may audition for the B.M. program a maximum of two times. The latest that they can audition for the B.M. program is in spring quarter of their junior year.

How to Declare a Major

All students should meet with the academic advisor to begin the major declaration process either by making an appointment (via Slug Success), by email to music@ucsc.edu, or by stopping by the department office, Music Center, Room 244 or 248. Students are also required to meet with a faculty advisor (assigned with help from the academic advisor) as part of the declaration process.

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first). The declaration deadline for four-year students is their sixth quarter, and the second quarter for transfer students.

Students petitioning when the campus declaration deadline is imminent, will either be approved, denied, or provided with conditions (e.g. completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

Letter Grade Policy

All upper-division courses applied toward the Music B.M. must be taken for a letter grade, except for upper-division performing ensembles, which may be taken Pass/No Pass.

All lower-division courses, including those in the MUSC 30 series, may be taken Pass/No Pass.

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Double majors **are** possible for the music major. A student can double major with a Music Bachelor of Arts (B.A.) Degree or a Bachelor of Music (B.M.) Degree, and a major from another department. Students that plan to double major should meet with the music undergraduate advisor for course planning in fall quarter of their first year.

It is not possible to double major as a music B.A. and a music B.M. However, it is possible to pursue the B.M. and add the "Jazz, Spontaneous Composition and Improvisation Minor" or "Electronic Music minor." It is not possible to add the "Western Music Minor" to the music B.A. or music B.M. degrees.

Students are not able to add the "Western Music Minor" or "Jazz, Spontaneous Composition and Improvisation Minor" to the music B.A. Compositional Practices or Global Musics concentrations in the music B.A , due to potential overlap between these curricula. Similarly, the "Electronic Music Minor" cannot be added to the compositional practices concentration.

The "Jazz, Spontaneous Composition and Improvisation Minor" can be added to the Western Music concentration. The "Electronic Music Minor" can still be added to the Global Musics or Western Music concentration.

Study Abroad

The department encourages students to explore studying abroad while attending UC Santa Cruz. In particular, the UC Santa Cruz Music Department has an exchange program agreement with the Music Department at the University of Sussex. University of Sussex offers many courses that can be substituted for music major or minor requirements.

However, due to the intense nature of the Music B.M. program, students are encouraged to plan potential study abroad far in advance to ensure they are able to maintain their UC Santa Cruz studies.

For more information on approved course substitutions and the exchange program please visit the Global Learning website.

Honors

Honors in the major are conferred by vote of the music faculty. B.A. or B.M. students can be awarded honors for excellent work in individual areas, including coursework, senior project (thesis or recital), or a capstone course. Excellent work in any two of these areas normally results in honors in the major.

To be considered for highest honors in the major, B.A. students must complete a senior project (not required for the B.A. degree) and B.M. students must complete a capstone course (not required for the B.M. degree). Honors in all three areas—coursework, senior project, and capstone course—normally results in highest honors in the major.

How Music Majors are Assessed

1. Placement exams at the outset of studies assess students' musical competence, and determine their place in the required lower-division theory and harmony courses.
2. Admission to most performance ensembles is by audition. Assessment is based on successful public performances.
3. A juried "advisory audition" is required for students enrolled in MUSC 30A to give students feedback so that they can work toward meeting the requirements for the proficiency audition at the end of the next fall quarter.
4. A juried "proficiency audition" is required for students enrolled in MUSC 150H. All students must exhibit an upper-intermediate or higher level on their major instrument or voice.
5. Auditions for admission to the B.M. program are held at the end of each fall quarter. Students accepted to the program are required to audition twice a year for continuing review and critique. Students in the B.M. program present a Senior Recital which is evaluated by faculty.

6. In required and elective seminars, critical thinking and writing are assessed when students present a major independent project at the end of term.
7. Compositional skills are assessed through the rehearsal and public performance of student works.

Requirements and Planners

Course Requirements

Lower-Division Courses

Lower-Division Theory

Take all of the following courses. Students are accepted to MUSC 30A if they have taken MUSC 14 at UCSC and received an "A" or "A+", or have tested in via the Theory Placement Exam. See the Music Department website for more information on the TPE.

MUSC 30A	Theory, Literature, and Musicianship I	5
MUSC 30B	Theory, Literature, and Musicianship II	5
MUSC 30C	Theory, Literature, and Musicianship III	5

Lower-Division Keyboard and Musicianship

The following courses should be taken alongside MUSC 30 series classes.

MUSC 31	Ear Training	2
MUSC 60	Fundamental Keyboard Skills	2

MUSC 60 enrollment may be waived by instructor approval, or if the student is taking piano lessons from a UC Santa Cruz instructor.

Foreign Language Requirement

FREN 1, GERM 1, and ITAL 1 are required for B.M. voice students. High school transcripts or Advanced Placement (AP) examination scores may satisfy this requirement. The quarter varies for when each class is offered. Students should check with the departments offering these courses to determine when they are regularly offered. Students may also take these courses during Summer Session at UC Santa Cruz, or at another institution.

There are no foreign language requirements for other students in the B.A. or B.M. programs; however, students who are planning to apply for graduate school are strongly advised to study a language pertinent to their research area.

Please see the Language and Applied Linguistics Department page for further information on language courses.

Upper-Division Courses

Core History/Culture

Take all of the following courses

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5

Elective History/Culture

Take one of these courses

MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 101H	Music of Insular Southeast Asia	5

Elective History/Culture

Take one of these courses

MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105E	Early Keyboard Music	5
MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 105L	The Music and Life of Prince	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105O	Opera from Peri to Pergolesi	5
MUSC 105P	The Piano	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105R	History of Russian Music	5
MUSC 105S	The Politics of Aesthetics and Spirituality	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 105V	Mexican Music and Conviviality	5

Core Theory

Take the following course

MUSC 150H	Harmony & Form in 19th-century Western Art Music	5

Elective Theory

Take one of the following courses

MUSC 150A	Music Analysis for Performers	5

MUSC 150B	Music Analysis and Composition	5
MUSC 150C	Tonal Counterpoint	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 150K	Intermediate Jazz Theory	5
MUSC 150N	Noise, Music, Politics	5
MUSC 150P	20th-Century Popular Song	5
MUSC 150R	Field Recording: Mapping and Composing Sound, Identity, and Place	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150T	Post Tonal Analysis	5
MUSC 150X	Theoretical Practices of American Music	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5

Performing Ensembles

Students must participate in performing ensembles for every quarter they are in the B.M. program, for a minimum of six (6) quarters (for transfer students), and nine (9) quarters (for frosh students).

All ensembles are 2 credits each and may be repeated for credit.

A maximum of one ensemble per quarter can be counted toward fulfillment of the total requirement. If two ensembles in one quarter need to be taken to meet time to degree plans approval can be requested to the department Curriculum Committee by email to music@ucsc.edu.

MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 102	University Orchestra	2
MUSC 103	University Concert Choir	2
MUSC 158	South African Music Ensemble	2
MUSC 160	University Opera Theater	5
MUSC 163	Early Music Band	2
MUSC 164	Jazz Combos	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2
MUSC 168	Experimental Music Ensemble	2

Individual Applied Lessons

Students must take applied lessons with UCSC faculty for every quarter they are in the B.M. program, for a minimum of six (6) quarters (for transfer students), and nine (9) quarters (for frosh students).

Students can contact the applied instrument instructor of their primary instrument to arrange an audition prior to the start of the quarter. Applied instrument instructor emails are listed on the department website.

Students should work with the applied instructor of their primary instrument to determine which of the courses listed would be appropriate.

The lessons carry an additional course fee. Concurrent enrollment in an appropriate ensemble is required. Consult the Music Student Handbook for more details.

MUSC 61	Individual Lessons: Half Hour	2
MUSC 62	Individual Lessons: One Hour	3
MUSC 161	Individual Lessons: One Hour	3
MUSC 161A	Individual Lessons: Half Hour	2
MUSC 162	Advanced Individual Lessons: One Hour	5

Continuing B.M. Juries

Demonstration of an advanced level at Continuing B.M. juries each fall and spring quarter.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement.

The DC requirement for the Music B.M. degree is satisfied by completing **one** of the following courses. Some courses may already be core or elective requirements for the major track, meaning students would satisfy the DC requirement through the natural progression of their degree.

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5

MUSC 150D	Theory of Southeast Asia	5

Comprehensive Requirement

Students fulfill the comprehensive requirement for the Music B.M. degree by completing MUSC 196B: Senior Recital Preparation (w/ lessons). Enrollment in MUSC 196B will replace applied lessons for the quarter.

MUSC 196B	Senior Recital Preparation (with individual lessons)	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

B.M.—Four-Year Plan for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MUSC 11A (recommended) Individual Lessons[2] Ensemble[3] College 1	MUSC 14 (if necessary) Individual Lessons[2] Ensemble[3] WRIT 1/WRIT 1E (if needed)	Language[1] Individual Lessons[2] Ensemble[3]	
2nd (soph)	MUSC 30A*/MUSC 31 WRIT 2***	MUSC 30B/MUSC 31 MUSC 101A	MUSC 30C**/MUSC 31 MUSC 101B	
3rd (junior)	MUSC 150H** MUSC 101C Individual Lessons[2] Ensemble[3]	MUSC 105 Individual Lessons[2] Ensemble[3]	MUSC 150** Individual Lessons[2] Ensemble[3]	
4th (senior)	Language[1] Individual Lessons[2] Ensemble[3]	Language[1] Individual Lessons[2] Ensemble[3]	MUSC 101E MUSC 196B Ensemble[3]	

* Indicates a performance jury requirement at the end of the quarter.

**Following acceptance to the B.M. program via audition (can be done anytime up to the end of the third year), continuing B.M. students complete "Continuing B.M." juries at the end of each fall and spring quarter.

***WRIT 2 should be taken in or before spring quarter of the second year.

[1]Bachelor of music voice majors are required to take FREN 1, GERM 1, and ITAL 1. High school transcripts or AP scores may satisfy this requirement. The quarter varies for when each class is offered. Students should check with the departments offering these courses to determine when they are regularly offered. Students may also take these courses during Summer Session at UC Santa Cruz, or at another institution.

[2]Students fulfill the individual lessons requirement by taking one of the following courses: MUSC 61, MUSC 62, or MUSC 161.

General Education (GE) Codes

MUSC 11A will fulfill the IM general education requirement.

[3]Most, but not all, ensembles satisfy the PR-C or PR-E general education requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes.

Students must complete all other GE requirements.

B.M.—Two-Year Plan for Incoming Transfer Students

The two-year plan assumes that the student places into MUSC 30A before their first fall quarter, and has previously completed most GE requirements. Voice students are assumed to have completed introductory language courses prior to transfer. Transfer students are required to take six quarters of lessons and ensembles at UC Santa Cruz.

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	MUSC 30A*/MUSC 31	MUSC 30B/MUSC 31	MUSC 30C**/MUSC 31	
	Language[1]	MUSC 101A	MUSIC 101B	
	Individual Lessons[2]	Individual Lessons[2]	Individual Lessons[2]	
	Ensemble[3]	Ensemble[3]	Ensemble[3]	
2nd (senior)	MUSC 150H*	MUSC 105	MUSC 196B	
	MUSC 101C	MUSC 150	MUSC 101H	
	Individual Lessons[2]	Individual Lessons[2]	Individual Lessons[2]	
	Ensemble[3] Language[1]	Ensemble[2]	Ensemble[3] Language[1]	

* Indicates a performance jury requirement at the end of the quarter.

**Following acceptance to the B.M. program via audition (can be done anytime up to the end of the third year), continuing B.M. students complete "Continuing B.M." juries at the end of each fall and spring quarter.

[1]Bachelor of music voice majors are required to take FREN 1, GERM 1, and ITAL 1. High school transcripts or AP scores may satisfy this requirement. The quarter varies for when each class is offered. Students should check with the departments offering these courses to determine when they are regularly offered. Students may also take these courses during Summer Session at UC Santa Cruz, or at another institution.

[2]Students fulfill the individual lessons requirement by taking one of the following courses: MUSC 61, MUSC 62, or MUSC 161.

General Education Codes

[3]Most, but not all, ensembles satisfy the PR-C or PR-E general education requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes.

WESTERN MUSIC MINOR

The goal of the Western music minor is to provide a focus for musicmaking activities, as well as provide a background in music theory and history.

Course Requirements

Complete the following requirements. All upper-division courses attempted toward the minor must be taken for a letter grade. Lower-division courses can be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Lower-Division History

Take one of the following courses

MUSC 11A	Introduction to Western Classical Music	5
MUSC 11B	Introduction to Jazz	5
MUSC 11D	Introduction to World Music	5

Lower-Division Theory

Take all of the following courses. Students are accepted to MUSC 30A if they have taken MUSC 14 at UCSC and received an "A" or "A+", or have tested in via the Theory Placement Exam. See the Music Department website for more information on the TPE.

MUSC 30A	Theory, Literature, and Musicianship I	5
MUSC 30B	Theory, Literature, and Musicianship II	5
MUSC 30C	Theory, Literature, and Musicianship III	5

Lower-Division Keyboard and Musicianship

The following courses should be taken alongside MUSC 30 series classes.

MUSC 31	Ear Training	2
MUSC 60	Fundamental Keyboard Skills	2

MUSC 60 enrollment may be waived by instructor approval, or if the student is taking piano lessons from a UC Santa Cruz instructor.

Lower-Division Applied Lessons

Take three quarters of applied lessons from any course type on this list, on your primary instrument or voice.

MUSC 61	Individual Lessons: Half Hour	2
MUSC 62	Individual Lessons: One Hour	3
MUSC 63	Group Instrumental and Vocal Lessons	2

Lower-Division Performing Ensembles

Take three quarters of performing ensembles from any course on this list, on your primary instrument or voice. All courses may be repeated for credit.

Students who are taking applied piano lessons with UCSC faculty members can participate in ensembles on an instrument other than piano.

MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 12	Mariachi Ensemble	2

Upper-Division Courses

Upper-Division Performing Ensembles

Take three quarters of performing ensembles from any course on this list, on your primary instrument or voice. All courses may be repeated for credit.

Students who are taking applied piano lessons with UCSC faculty members can participate in ensembles on an instrument other than piano.

If no upper-division ensembles are available for your instrument/voice type, you can petition additional quarters of lower-division ensembles. Contact the Music Department for more information.

MUSC 102	University Orchestra	2
MUSC 103	University Concert Choir	2
MUSC 158	South African Music Ensemble	2
MUSC 160	University Opera Theater	5
MUSC 163	Early Music Band	2
MUSC 164	Jazz Combos	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2
MUSC 168	Experimental Music Ensemble	2

Students can petition to take additional lower-division ensembles, if there are no upper-division ensembles available for their instrument/voice. Petitions can be sent to music@ucsc.edu.

Upper-Division Applied Lessons

Take three quarters of applied lessons from any course type on this list, on your primary instrument or voice.

MUSC 161	Individual Lessons: One Hour	3
MUSC 161A	Individual Lessons: Half Hour	2
MUSC 161B	Group Instrumental & Vocal Lessons	2
MUSC 162	Advanced Individual Lessons: One Hour	5

Upper-Division Electives

Take two (2) courses from the following list

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 101H	Music of Insular Southeast Asia	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105E	Early Keyboard Music	5
MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105O	Opera from Peri to Pergolesi	5
MUSC 105P	The Piano	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105R	History of Russian Music	5

MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 150A	Music Analysis for Performers	5
MUSC 150B	Music Analysis and Composition	5
MUSC 150C	Tonal Counterpoint	5
MUSC 150H	Harmony & Form in 19th-century Western Art Music	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150T	Post Tonal Analysis	5
MUSC 150X	Theoretical Practices of American Music	5

Planner

The table below is for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Two-Year Western Music Minor Plan

	Fall	Winter	Spring
1st	MUSC 11A*		
	MUSC 61, MUSC 62 or MUSC 63	MUSC 61, MUSC 62 or MUSC 63	MUSC 61, MUSC 62, or MUSC 63
	Performing ensemble	Performing ensemble	
2nd	MUSC 30A; MUSC 31 60	MUSC 30B; MUSC 31 60	MUSC 30C; MUSC 31 60
		MUSC 101B^	MUSC 105R^
	MUSC 161A, MUSC 161B or MUSC 161	MUSC 161A, MUSC 161B or MUSC 161	MUSC 161A, MUSC 161B or MUSC 161
	Performing ensemble	Performing ensemble	Performing ensemble

*Satisfies the lower-division history requirement; can be replaced with MUSC 11B or MUSC 11D.

^Satisfies upper-division elective requirement; can be replaced with other courses from the elective list.

General Education (GE) Codes

MUSC 11A satisfies the IM GE code, MUSC 11B satisfies the ER GE code, and MUSC 11D satisfies the CC GE code.

Most, but not all, ensembles satisfy the PR-C or PR-E code GE requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes.

ELECTRONIC MUSIC MINOR

The electronic music minor focuses on the study of creating music using the tools of modern technology. It is designed to complement the music major or programs in other media by providing instruction in advanced skills of audio production, sound synthesis, and computer-assisted composition.

Course Requirements

Complete the following requirements. All upper-division courses attempted toward the minor must be taken for a letter grade. Lower-division courses can be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Electronic Music History Requirement

Take the following course.

MUSC 80C	History, Literature, and Technology of Electronic Music	5

Lower-Division Music History Elective

Take one course from the following list. A similar music survey/history course taken here or at another institution may be approved by the department. Email music@ucsc.edu if you have questions regarding a possible substitution.

MUSC 11A	Introduction to Western Classical Music	5
MUSC 11B	Introduction to Jazz	5
MUSC 11C	Popular Music in the United States	5
MUSC 11D	Introduction to World Music	5
MUSC 11E	Global Popular Music	5

Lower-Division Music Theory Requirement

Students must take the Theory Placement Exam in order to test into the appropriate western music theory course (MUSC 14, or MUSC 30A). If a student places into MUSC 30A via the exam, they will automatically satisfy the minor's theory requirement. Students who place into MUSC 14 must pass the course to satisfy the minor's theory requirement.

MUSC 14	Beginning Western Theory and Musicianship	5

Technical Sound Elective

Take one course from the following list. A similar music course that has a technical focus may be approved by the department. Email music@ucsc.edu if you have questions regarding a possible substitution.

MUSC 71	Laptop Music	5
MUSC 72	Fundamentals of Music Technology	2
MUSC 80K	Listening to the Environment	5
MUSC 80L	Artificial Intelligence and Music	5
PHYS 80U	Physics and Psychophysics of Music	5
FILM 171A	Sound	5
THEA 114	Sound Design and Engineering for the Theater	5

Introductory Programming Elective

Take one of the following courses. A similar programming course taken here or at another institution may be approved by the department. Email music@ucsc.edu if you have questions regarding a possible substitution. A test-out option is available for CSE 20. If a student tests out of CSE 20 via the exam, they will automatically satisfy the minor's programming requirement. Students who place into CSE 20 must pass the course, or another from the list, to satisfy the minor's programming requirement.

CSE 5J	Introduction to Programming in Java	5
CSE 20	Beginning Programming in Python	5
ECE 101	Introduction to Electronic Circuits	5
ECE 153	Digital Signal Processing	5
ECE 171	Analog Electronics	5
PHYS 160	Practical Electronics	5

Upper-Division Courses

Upper-Division Lecture/Seminar Electives

Take four (4) of the following courses. Testing out of MUSC 123A (formerly MUSC 123) is possible via technical assessment. If a student tests out of MUSC 123A via assessment, they should plan to take another course from this list, outside the 123 series, to fulfill their last elective.

MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 123A	Electronic Music: Synthesis & Composition I	5
MUSC 123B	Electronic Music: Synthesis & Composition II	5
MUSC 123C	Electronic Music: Synthesis & Composition III	5
MUSC 150N	Noise, Music, Politics	5
MUSC 150P	20th-Century Popular Song	5
MUSC 150R	Field Recording: Mapping and Composing Sound, Identity, and Place	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5
MUSC 206B	Computer-Assisted Composition	5
MUSC 206C	Composing for Instruments and Live Electronics	5

Upper-Division Workshop/Ensemble Electives

Take three (3) of the following courses. All courses in list, except MUSC 167R, can be repeated for credit.

MUSC 73	Music and the Ocean	3
MUSC 129	Live Electroacoustic Music Ensemble	2
MUSC 167	Workshop in Electronic Music	2
MUSC 167R	Recording Workshop	2
MUSC 267	Workshop in Computer Music and Visualization	2

Planner

The table below is for informational purposes and does not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Two-Year Electronic Music Minor Plan

Fall	**Winter**	**Spring**	**1st**	MUSC 80C	MUSC 12C	MUSC 12C

			%	%
	CSE 20 ^	MUSC 14 ~		
2nd	MUSC 15 0Z %	MUSC 16 7R +	MUSC 16 7+	
		MUSC 80 L#	MUSC 11 B*	

^Satisfies programming elective; can be replaced with CSE 5J, or other classes from list

~Satisfies music theory requirement; can be fulfilled by placing directly into MUSC 30A via the Theory Placement Exam

#Satisfies technical sound elective; can be replaced with MUSC 71, MUSC 72, MUSC 80K, MUSC 80R, MUSC 80U, or other classes

*Satisfies the music history requirement; can be replaced with MUSC 11A, 11C 11D, or 11E

%Satisfies an upper-division elective requirement; can be replaced with other courses from the list

+Satisfies an upper-division workshop/ensemble requirement; can be replaced with other courses from the list

General Education (GE) Codes

The MUSC 11 requirement can satisfy one of the following GE codes: MUSC 11A - IM; MUSC 11B - ER, MUSC 11C - ER, MUSC 11D - CC; MUSC 11E - ER.

All workshops/ensembles listed satisfy the PR-C GE, except MUSC 167.

The technical sound elective can satisfy one of the following GE codes: MUSC 71 - PR-C; MUSC 80K - PE-E; MUSC 80L - MF; MUSC 80R - PE-T; MUSC 80U - MF.

The programming requirement can satisfy one of the following GE codes: CSE 5J - MF; and CSE 20 - MF.

JAZZ SPONTANEOUS COMPOSITION AND IMPROVISATION MINOR

The Jazz, Spontaneous Composition, and Improvisation minor focuses on the study of the history, theory, and performance of jazz and other improvised musics.

Course Requirements

The Jazz, Spontaneous Composition, and Improvisation minor focuses on the study of the history, theory, and performance of jazz and other improvised musics. In addition, students may be introduced to musical styles that have had profound influences on the uniquely American art form of jazz: folk and popular musics of Africa, Europe, South Asia and the United States and Western classical music.

The Jazz, Spontaneous Composition, and Improvisation minor is limited to students who have sufficient performance proficiency to pass auditions for entry into the jazz ensembles, MUSC 3 and MUSC 164.

All upper-division courses attempted toward the minor must be taken for a letter grade. Lower-division courses can be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Lower-Division History

Take one of the following courses

MUSC 11B	Introduction to Jazz	5
MUSC 11C	Popular Music in the United States	5
MUSC 11E	Global Popular Music	5

Lower-Division Theory

While MUSC 14, Beginning Western Theory and Musicianship, is the recommended starting place for students with only some prior music theory experience, students may test out of MUSC 14 by placing directly into MUSC 30A, Theory, Literature and Musicianship I, via the Music Theory Placement Exam. The Theory Placement Exam is offered twice per year—in fall quarter, the Tuesday before classes start; and in the beginning of either winter or spring quarter. See the Music Department website for exam details. If a student places into MUSC 30A via the exam, they are not required to take MUSC 14.

MUSC 60, Fundamental Keyboard Skills, is recommended to be taken alongside Western theory courses.

MUSC 14	Beginning Western Theory and Musicianship	5

MUSC 30A	Theory, Literature, and Musicianship I	5

Lower-Division Musicianship

The following course alongside MUSC 30A

MUSC 31	Ear Training	2

Lower-Division Theory and Improvisation

Take one of the following courses

MUSC 20C	Beginning Jazz Theory	5
MUSC 74	Beginning Spontaneous Composition and Improvisation	5

Or two quarters of the following course

MUSC 3	Large Jazz Ensemble	2

Upper-Division Courses

Upper-Division Theory and Improvisation

Take one of the following courses

MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 150K	Intermediate Jazz Theory	5

Upper-Division Electives

Take three (3) of the courses from the following list.

MUSC 101C	Western Music History (1910-present)	5
MUSC 105A	Music of the United States	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 105V	Mexican Music and Conviviality	5
MUSC 121A	Jazz Analysis	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 150K	Intermediate Jazz Theory	5
MUSC 150P	20th-Century Popular Song	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5
MUSC 203B	Performance Practice in the Renaissance	5
MUSC 203F	Performance Practice in the 20th Century	5
MUSC 203H	Area Studies in Performance Practice	5

Performing Ensembles

Students in the Jazz, Spontaneous Composition, and Improvisation minor are required to take six quarters of performing ensembles: at least three quarters of a jazz-focused ensemble (MUSC 3 or MUSC 164), and three completely elective ensembles. Both MUSC 3 and MUSC 164 can be repeated for credit.

Jazz Ensembles

Take three quarters of MUSC 3 and/or MUSC 164. If a student elects to take two quarters of MUSC 3 instead of MUSC 74 or MUSC 20C, they are only required to do one additional quarter of a jazz ensemble, plus the three quarters of elective ensembles.

Contact the instructors of these ensembles directly for audition information.

MUSC 3	Large Jazz Ensemble	2
MUSC 164	Jazz Combos	2

Elective Ensembles

In addition to the three quarters of a jazz-focused ensemble, students pursuing this minor must take three elective ensembles. Students may repeat any of the ensembles listed below for credit.

MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 10	Central Asian Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 53A	Beginning Ghanaian Ensemble	2
MUSC 54	North Indian Music Workshop	2
MUSC 55	Rhythms of North India	2
MUSC 55A	Intermediate Rhythms of North India	2
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 102	University Orchestra	2
MUSC 103	University Concert Choir	2
MUSC 129	Live Electroacoustic Music Ensemble	2
MUSC 158	South African Music Ensemble	2
MUSC 163	Early Music Band	2
MUSC 164	Jazz Combos	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2

MUSC 168	Experimental Music Ensemble	2

Planner

The table below is for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Two-Year Jazz Minor Plan

	Fall	Winter	Spring
1st	MUSC 11B~	MUSC 14*	MUSC 150Z^
	MUSC 74 or MUSC 20C	MUSC 150J or MUSC 150K	
	MUSC 3 or MUSC 164	MUSC 3 or MUSC164	MUSC 3 or MUSC 164
2nd	MUSC 30A/MUSC 31	MUSC 105C^	MUSC 121A^
	Elective ensemble	Elective ensemble	Elective ensemble

~Satisfies lower-division history requirement; can be replaced with other courses from this list (see above).

* May be satisfied by placing directly into MUSC 30A via the Theory Placement Exam.

^Satisfies upper-division elective requirement; can be replaced with other courses from this list (see above).

General Education (GE) Codes

MUSC 11B, MUSC 11C, and MUSC 11E all satisfy the ER GE code.

Most, but not all, ensembles satisfy the PR-C or PR-E code GE requirement. Students should check to confirm which courses from the ensembles course list satisfy GE codes.

MUSIC M.A.

Introduction

The Master of Arts (MA) degree program in music has emphases in composition, musicology/ethnomusicology, or performance practice, and integrates studies in performance, composition/analysis, and research. In consultation with a faculty advisor, the student pursues a two-year course of studies culminating in a final project that combines an original composition, written thesis, or essay with a related public performance or lecture recital.

Requirements

Course Requirements

A minimum of 60 course credits completed at UC Santa Cruz is required for the degree. All MA students are required to complete the following core courses:

MUSC 200	Introduction to Research Methods	5
MUSC 201	History of Music Theory from the Greeks Through Rameau	5
MUSC 202	Tonal and Posttonal Analysis	5
MUSC 252	Current Issues Colloquium	

Students entering the program Fall 2007 and later take MUSC 252 each quarter they are in residence.

Students with an emphasis in composition also complete:

MUSC 219	Techniques in Composition	5
MUSC 220	Graduate Seminar in Music Composition	5

Plus one course in the MUSC 203 Performance Practice series

MUSC 203A	Performance Practice in the Middle Ages	5
MUSC 203B	Performance Practice in the Renaissance	5
MUSC 203C	Performance Practice in the Baroque	5
MUSC 203D	Performance Practice in the Classic Period	5
MUSC 203E	Performance Practice in the Romantic Period	5
MUSC 203F	Performance Practice in the 20th Century	5
MUSC 203G	Concepts, Issues, and the Practice of Ethnomusicology	5
MUSC 203H	Area Studies in Performance Practice	5

Students with an emphasis in musicology/ethnomusicology or performance practice also complete:

Three courses from the Music 203 Performance Practice series

MUSC 203A	Performance Practice in the Middle Ages	5
MUSC 203B	Performance Practice in the Renaissance	5
MUSC 203C	Performance Practice in the Baroque	5
MUSC 203D	Performance Practice in the Classic Period	5
MUSC 203E	Performance Practice in the Romantic Period	5
MUSC 203F	Performance Practice in the 20th Century	5
MUSC 203G	Concepts, Issues, and the Practice of Ethnomusicology	5

MUSC 203H	Area Studies in Performance Practice	5

MUSC 206D: Music Perception and Cognition meets the requirement for one MUSC 203 course. It is possible, in some cases, to substitute a course from the MUSC 253 or MUSC 254 series for one MUSC 203 course. Students should contact the graduate advisor for more information on petitioning the Graduate Committee for course substitutions.

Language Proficiency Requirement

All M.A. students are required to demonstrate reading knowledge equivalent to at least one year of coursework for one language other than English. To complete this requirement, current skill in reading and comprehension of a language other than English, to be determined in consultation with your primary advisor, must be demonstrated in one of the following ways:

1. Native speakers of a language other than English will satisfy this requirement (no test is necessary).
2. Satisfactory completion of “level 3” (the third quarter) language instruction at UCSC, preferably in the first year of the program. These courses may be taken Satisfactory/Unsatisfactory. Submission of an official transcript documenting successful completion of one year of university-level language instruction at another institution (equivalent to level 3 at UCSC).
3. Passing a proficiency examination administered by the Music Department in French, Spanish, German, Italian, or Russian. (This test requires translation of a passage of at least 600 words with no resources other than a dictionary to be completed in 1.5 hours.) If a student does not pass this test, enrollment in the appropriate language at UCSC will be required. The proficiency examination may be taken only once.
4. For languages other than French, Spanish, German, Italian, or Russian, the department may accept completion of an online course as fulfilling the requirement if the student can demonstrate that the course builds skills equivalent to those gained in a “level 3” (third-quarter) language course at UCSC. The Graduate Committee will determine whether or not to accept any such course.

Other Requirements

The final project for the degree includes both performing and scholarly components, which vary according to the degree emphasis.

Two types of master’s degrees are offered: “A Thesis Plan I master's requires a research thesis, while a Capstone Plan II master's has a capstone requirement, which may be a comprehensive exam, an individual project, or a group project.”

Students with a composition emphasis will complete a Thesis Plan I masters. Students with this emphasis submit a thesis composition together with an essay that addresses historical, technical, and/or interpretive issues of the music (MUSC 299); and they complete a full-length recital (MUSC 298) of their compositional work.

Students with a musicology/ethnomusicology emphasis will complete a Thesis Plan I master's, regardless of whether or not they complete a performance or lecture-recital. Students with this emphasis will complete a thesis (MUSC 299) and may choose to give a short performance or lecture-recital related to the thesis (MUSC 298).

Students with a performance practice emphasis will usually complete a Capstone Plan II master's and write a short essay to accompany a recital, but may have the option to choose a Thesis Plan I master's instead. Students in this emphasis complete a full-length recital (MUSC 298) and an accompanying short essay that addresses historical, technical, and/or interpretive aspects of the music performed in the recital. Students in this emphasis whose main area is conducting complete a full-length recital (MUSC 298) and one of the following: a shorter lecture-recital, a short analytical or contextual essay on a different topic, or a collaboration with a graduate student composer or faculty composer on a premiere public performance. Students are encouraged to create a program involving corollary studies such as computer studies, area cultural studies, linguistics, anthropology, theater arts, and visual arts.

Letter Grade Policy

Graduate students must take all core courses for a letter grade. These courses include the following: MUSC 200, MUSC 201, MUSC 202, MUSC 203A-H, MUSC 206A-D, MUSC 219, MUSC 220, MUSC 253A-D, and MUSC 254A-X. Grades of C or D do not satisfy any course requirement for a music graduate degree.

The colloquium course (MUSC 252) must be taken with the Satisfactory/Unsatisfactory grade option.

Independent study courses (MUSC 261, MUSC 265, MUSC 295, MUSC 297, MUSC 298, and MUSC 299) may be taken with the Satisfactory/Unsatisfactory grade option.

[Optional Catchall]

Applying for Graduation

Students should contact the graduate advisor to confirm that all requirements for the MA degree have been met and to complete the Graduate Division "Application for the M.A. Degree" form.

MUSIC D.M.A.

Introduction

The Doctor of Musical Arts (D.M.A.) degree program in music composition allows for the development of broad and diverse compositional practices. The D.M.A. program seeks to develop accomplished, active, and articulate composers who have a broad awareness of the diverse practices, cultural influences, media, venues, and technical means available to them in the 21st century. Students participate in a range of

composition-focused seminars, including seminars in cross-cultural approaches to composition and performance—with emphases on indigenous, Asian, and African-diasporic musics—and computer-assisted composition, which focus on algorithmic approaches, constraint-based generation of musical materials and structures, digital synthesis, intermedia work, and real-time sound processing.

Advancement to Candidacy

Course Requirements

For students entering with the bachelor's degree, a minimum of 102 credits in coursework at UC Santa Cruz will be required. All students must be in residence for a minimum of nine quarters. Students must enroll in a minimum of 10 credits each quarter until they advance to candidacy. After advancing to candidacy, students remaining in residence must take a minimum of one 5-credit course each quarter.

For students entering with a master's degree from another institution, a minimum of 72 credits in coursework at UC Santa Cruz will be required. All students must be in residence for a minimum of six quarters. Students must enroll in a minimum of 10 credits each quarter until they advance to candidacy. After advancing to candidacy, students remaining in residence must take a minimum of one 5-credit course each quarter. D.M.A. students are expected to complete the degree within a maximum of six calendar years from entrance to the program (leaves of absence are not excluded from this count).

Students entering the D.M.A. program with a bachelor's degree must take the following course:

MUSC 200	Introduction to Research Methods	5

Students entering the D.M.A. with an MA degree in a field other than music should consult their adviser about taking MUSC 200, Research Methods.

All students entering the D.M.A. program must take the following courses:

MUSC 200	Introduction to Research Methods	5
MUSC 202	Tonal and Posttonal Analysis	5
MUSC 219	Techniques in Composition	5
MUSC 220	Graduate Seminar in Music Composition	5
MUSC 206A	Global Music Composition	5

Plus one of the following:

MUSC 206B	Computer-Assisted Composition	5
MUSC 206C	Composing for Instruments and Live Electronics	5

Current Issues Colloquium

Before advancing to candidacy, all D.M.A. students must enroll in MUSC 252, Current Issues Colloquium, each quarter in residence.

Five quarters of independent study:

MUSC 297	Independent Study	5
MUSC 298	Graduate Recital	5
MUSC 299	Thesis Research	5

D.M.A. students must take at least five quarters of independent study.

MUSC 297 is typically taken in preparation for the Qualifying Exams.

MUSC 298 is typically taken the quarter of the Qualifying Recital.

MUSC 299 is usually taken after advancing to candidacy, in preparation for the dissertation.

Elective Requirements

D.M.A. students must take at least two of the following elective courses.

Note that if students elect to take MUSC 267, Workshop in Computer Music and Visualization, to satisfy one elective requirement, two quarters of the course are required.

MUSC 201	History of Music Theory from the Greeks Through Rameau	5
MUSC 203G	Concepts, Issues, and the Practice of Ethnomusicology	5
MUSC 203H	Area Studies in Performance Practice	5
MUSC 267	Workshop in Computer Music and Visualization	2

Language Proficiency Requirements

All D.M.A. students are required to demonstrate reading knowledge equivalent to at least one year of coursework for one language other than English. This requirement must be met before taking the Qualifying Exams (see below).

To complete this requirement, current skill in reading and comprehension of a language other than English, to be determined in consultation with your primary advisor, must be demonstrated in one of the following ways:

1. Native speakers of a language other than English will satisfy this requirement (no test is necessary).

2. Satisfactory completion of the third quarter of instruction in a language other than English, at UCSC, preferably in the first year of the program. These courses may be taken satisfactory/unsatisfactory. Submission of an official transcript documenting successful completion of one year of university-level language instruction at another institution (equivalent to level 3 at UCSC).

3. Passing a proficiency examination administered by the Music Department in French, Spanish, German, Italian, or Russian. (This test requires translation of a passage of at least 600 words, with no resources other than a dictionary, to be completed in 1.5 hours.) If a student does not pass this test, enrollment in the appropriate

language at UCSC will be required. The proficiency examination may be taken only once.

4. For languages other than French, Spanish, German, Italian, or Russian, the department may accept completion of an online course as fulfilling the requirement if the student can demonstrate that the course builds skills equivalent to those gained in a "level 3" (third-quarter) language course at UCSC. The Graduate Committee will determine whether or not to accept any such course.

Graduate Division policy states that the language requirement must be completed prior to taking the Qualifying Exam. In order to advance to candidacy, a Report on Language Requirement form must be submitted to Graduate Division.

Teaching Requirement

Qualifying Examination

Advancement to candidacy is contingent upon the passing of a written examination and an oral examination normally administered at the end of year three for students entering with a bachelor's degree, and the end of year two or the beginning of year three for students entering with a master's degree from another institution. For the written portion of the examination, the qualifying examination committee provides questions on the three topics assigned as areas of emphasis. The oral examination is administered by the student's qualifying examination committee and may concern any aspect of the assigned topics with an emphasis on those issues addressed in the written portion of the examination. Advancement to candidacy will be granted after successful completion of the written and oral examinations, acceptance of the dissertation reading committee form, satisfactory completion of coursework and the foreign language requirement, and the payment of the necessary fees.

Post-Qualifying Requirements

After advancing to candidacy, students must enroll in at least two quarters of MUSC 297, Independent Study, and one quarter of MUSC 299, Thesis Research, in preparation for the dissertation. Students may substitute additional quarters of MUSC 299 for MUSC 297.

Letter Grade Policy

Graduate students must take all core courses for a letter grade. These courses include the following: MUSC 200, MUSC 201, MUSC 202, MUSC 203A-MUSC 203H, MUSC 206A-MUSC 206D, MUSC 219, MUSC 220, MUSC 253A-MUSC 253D, and MUSC 254A-MUSC 254X. Grades of C or D do not satisfy any course requirement for a music graduate degree.

The colloquium course (MUSC 252) must be taken with the satisfactory/unsatisfactory grade option.

Independent study courses (MUSC 261, MUSC 265, MUSC 295, MUSC 297, MUSC 298, and MUSC 299) may be taken with the satisfactory/unsatisfactory grade option.

Non-Terminal Master's Degree

Students who entered the D.M.A. program with a bachelor's degree may apply for the Non-Terminal M.A. degree after completion of a minimum of five quarters in residence, evidence of the completion of the equivalent of one year of a language other than English at UC Santa Cruz, and the courses listed in the chart below. After completion of the required courses, students should take MUSC 297 in connection with their primary advisor in order to complete a capstone composition project, ideally stemming from foundations of technique and/or critical studies developed in one of the seminars. In consultation with the primary advisor, the capstone composition project should have a secondary reader, whose signature in combination with that of the primary advisor, and confirmation (by the department chair) of other requirements above fulfilled constitutes nomination for the conferral of the master's of arts degree.

MUSC 200	Introduction to Research Methods	5
MUSC 202	Tonal and Posttonal Analysis	5
MUSC 206A	Global Music Composition	5
MUSC 206B	Computer-Assisted Composition	5
MUSC 219	Techniques in Composition	5
MUSC 220	Graduate Seminar in Music Composition	5
MUSC 252	Current Issues Colloquium	

Two elective seminars from the following list:

MUSC 201	History of Music Theory from the Greeks Through Rameau	5
MUSC 203G	Concepts, Issues, and the Practice of Ethnomusicology	5
MUSC 203H	Area Studies in Performance Practice	5
MUSC 267	Workshop in Computer Music and Visualization	2

Students must enroll in MUSC 267 for two quarters should they choose to use it as an elective seminar as it is a 2-credit class.

Dissertation

Dissertation

D.M.A. students must complete a dissertation consisting of a substantial musical composition accompanied by an essay. One to two years of work beyond the qualifying examinations should be sufficient for the completion of the dissertation, except in cases where extended fieldwork is required.

Dissertation Defense

The final examination will be a public oral defense of the dissertation. After an oral presentation by the candidate, the candidate will be questioned by the dissertation committee.

Academic Progress

For more information about maintaining academic good standing, students should consult the Academic Requirements and Standards section of the Division of Graduate Studies Handbook.

Applying for Graduation

For more information on applying for graduation, students should make an appointment with the Graduate Program adviser and consult UCSC's Graduate Division Handbook.

[Optional Catchall]

MUSIC PH.D.

Introduction

The Doctor of Philosophy (Ph.D.) degree in music has an emphasis in cross-cultural studies, and aims to provide doctoral students with an integrative framework for music scholarship, emphasizing the ways in which musicology and ethnomusicology interact and complement one another.

In addition to cultural approaches to musical style, the program also encourages the integration of scholarly research with musical performance, emphasizing the manner in which performance serves both rhetorical and symbolic ends within various cultural settings. To this end the concept of "performance practice" plays a significant role in this program, given that the concept of historically or culturally informed performance is applicable to music from the earliest times to the present day in all geographical and cultural regions, and can encompass research activities as diverse as fieldwork, historical editing, and recording, as well as publishing of books and articles on the traditions of composition and performance.

Advancement to Candidacy

Course Requirements

Students entering the Ph.D. program with a bachelor's degree are required to complete the following:

This course

MUSC 200	Introduction to Research Methods	5

Plus three courses from the MUSC 203 Performance Practice series:

MUSC 203A	Performance Practice in the Middle Ages	5
MUSC 203B	Performance Practice in the Renaissance	5
MUSC 203C	Performance Practice in the Baroque	5
MUSC 203D	Performance Practice in the Classic Period	5
MUSC 203E	Performance Practice in the Romantic Period	5
MUSC 203F	Performance Practice in the 20th Century	5
MUSC 203G	Concepts, Issues, and the Practice of Ethnomusicology	5
MUSC 203H	Area Studies in Performance Practice	5

MUSC 206D or a course in the MUSC 254 series may each substitute for one 203 course.

Plus two courses from the MUSC 253 series:

MUSC 253A	Historical Perspectives in Musicology and Ethnomusicology	5
MUSC 253B	Rhythm, Time, and Form	5
MUSC 253C	Music and Discourse	5
MUSC 253D	Issues in the Ethnography of Music	5

Plus three courses from the MUSC 254 series:

MUSC 254C	Performativity and Music	5
MUSC 254D	Organology and Acoustics	5
MUSC 254E	Asian Resonances in 20th-Century American and European Music	5
MUSC 254F	Beethoven	5
MUSC 254J	Jazz Historiography	5
MUSC 254K	Music, Gender, and Sexuality	5
MUSC 254L	John Cage: Innovation, Collaboration, and Performance Technologies	5
MUSC 254M	Music in San Francisco, 1850-1950	5
MUSC 254N	Cruising the Postcolony	5
MUSC 254O	Historiography of American Music	5
MUSC 254R	Research Design and Grant Writing for Music Scholars	5
MUSC 254X	Minimalism	5
MUSC 254Z	Issues in Contemporary and Experimental Music	5

Plus the following course during each quarter of residence:

MUSC 252	Current Issues Colloquium

Students must enroll in MUSC 252, Current Issues Colloquium, until advancing to candidacy.

Elective Requirements

Students entering the Ph.D. program with a bachelor's degree must take three elective graduate seminars, one of which must be outside of the Music Department. Elective seminars should be selected in consultation with the student's faculty adviser.

Electives in the Music Department might include an additional course from the MUSC 203 Performance Practice series, an additional course from the MUSC 253 series, or an additional course from the MUSC 254 series.

Elective course options also include the following seminars:

MUSC 201	History of Music Theory from the Greeks Through Rameau	5
MUSC 202	Tonal and Posttonal Analysis	5
MUSC 253S	The Politics of Aesthetics and Spirituality	5

Second Year Research Paper

Ph.D. students entering the program with a bachelor's degree are required to submit a research paper by the end of their second year in residence (sixth quarter), which will be revised under the supervision of the student's faculty adviser, and will be evaluated at the end of the year by the adviser and an additional faculty member.

Students entering the Ph.D. program with a master's degree are required to complete following courses:

Three courses from the MUSC 203 Performance Practice series:

MUSC 203A	Performance Practice in the Middle Ages	5
MUSC 203B	Performance Practice in the Renaissance	5
MUSC 203C	Performance Practice in the Baroque	5
MUSC 203D	Performance Practice in the Classic Period	5
MUSC 203E	Performance Practice in the Romantic Period	5
MUSC 203F	Performance Practice in the 20th Century	5
MUSC 203G	Concepts, Issues, and the Practice of Ethnomusicology	5
MUSC 203H	Area Studies in Performance Practice	5

Two courses from the MUSC 253 series

MUSC 253A	Historical Perspectives in Musicology and Ethnomusicology	5
MUSC 253B	Rhythm, Time, and Form	5
MUSC 253C	Music and Discourse	5
MUSC 253D	Issues in the Ethnography of Music	5

Three courses from the MUSC 254 series

MUSC 254C	Performativity and Music	5
MUSC 254D	Organology and Acoustics	5
MUSC 254E	Asian Resonances in 20th-Century American and European Music	5
MUSC 254F	Beethoven	5
MUSC 254J	Jazz Historiography	5
MUSC 254K	Music, Gender, and Sexuality	5
MUSC 254L	John Cage: Innovation, Collaboration, and Performance Technologies	5
MUSC 254M	Music in San Francisco, 1850-1950	5
MUSC 254N	Cruising the Postcolony	5
MUSC 254O	Historiography of American Music	5
MUSC 254R	Research Design and Grant Writing for Music Scholars	5
MUSC 254X	Minimalism	5
MUSC 254Z	Issues in Contemporary and Experimental Music	5

Plus the following course during each quarter of residence:

MUSC 252	Current Issues Colloquium	

Students must enroll in MUSC 252, Current Issues Colloquium, until advancing to candidacy.

Plus the following course:

MUSC 299	Thesis Research	5

Elective Requirement

Students entering the Ph.D. program with a master's degree must take one elective graduate seminar from outside the Music Department. This seminar should be selected in consultation with the student's faculty adviser.

Language Proficiency Requirement

All Ph.D. students are required to demonstrate reading knowledge equivalent to at least one year of coursework for two languages other than English. One of these two languages must be relevant to their area of interest. This requirement must be met before taking your program's Qualifying Exams (see below).

To complete this requirement, current skill in reading and comprehension of a language other than English must be demonstrated in one of the following ways:

1. Native speakers of a language other than English will satisfy this requirement.
2. Satisfactory completion of the third quarter of a language other than English at UCSC, or a year equivalent of a summer intensive language course at an accredited university, preferably in the first year of the program. These courses may be taken with a satisfactory/unsatisfactory grading status.
3. Submission of an official transcript documenting successful completion of one year of university-level language instruction at another institution (equivalent to level 3 at UCSC).
4. Passing a language proficiency examination administered by the Music Department in French, Spanish, German, Italian, or Russian. This test requires translation of a passage of at least 600 words with no resources other than a dictionary, to be completed in 1.5 hours. If a student does not pass this test, enrollment in the appropriate language at UCSC will be required. You may only attempt this proficiency examination once.

5. For languages other than French, Spanish, German, Italian, or Russian, the department may accept completion of an online course as fulfilling the requirement, if the student can demonstrate that the course builds skills equivalent to those gained in a "level 3" (third-quarter) language course at UCSC. The Graduate Committee will determine whether or not to accept any such course.

Graduate Division policy states that the language requirement must be completed prior to taking the Qualifying Exam. In order to advance to candidacy, a Report on Language Requirement form must be submitted to Graduate Division.

Teaching Requirements

Qualifying Examination

Advancement to candidacy is contingent upon passing both written and oral examinations. The written qualifying examination will test knowledge absorbed through the two years of coursework as well as material in the student's field of concentration. The oral examination will focus on the previously completed written examinations well as the student's developed expertise in her/his chosen specialization. Students must be registered in the quarter in which they take their qualifying examination.

The examinations will normally be administered in year 4 for students entering with a bachelor's degree, and in year 3 for students entering with a master's degree.

Advancement to candidacy will be granted after successful completion of the written and oral examinations, acceptance of the dissertation reading committee form, satisfactory completion of coursework and the foreign language requirement, and the payment of the necessary fees.

Letter Grade Policy

Graduate students must take all core courses for a letter grade. These courses include the following: MUSC 200, MUSC 201, MUSC 202, MUSC 203A-MUSC 203H, MUSC 206A-MUSC 206D, MUSC 219, MUSC 220, MUSC 253A-MUSC 253D, and MUSC 254A-MUSC 254X. Grades of C or D do not satisfy any course requirement for a music graduate degree.

The colloquium course (MUSC 252) must be taken with the Satisfactory/Unsatisfactory grade option.

Independent study courses (MUSC 261, MUSC 265, MUSC 295, MUSC 297, MUSC 298, and MUSC 299) may be taken with the Satisfactory/Unsatisfactory grade option.

Non-Terminal Master's Degree

Students who entered the Ph.D. program with a bachelor's degree may apply for the MA degree after completion of a minimum of five quarters in residence, evidence of the completion of the equivalent of one year of a foreign language at UC Santa Cruz, the second year research paper, and the following courses: MUSC 200, one course from the MUSC 203 series, MUSC 252 each quarter in residence, one course each from the MUSC 253 and MUSC 254 seminar series, two elective graduate seminars (one of which may be outside of the Music Department), and MUSC 297.

Optional Catchall

Dissertation

Dissertation

To satisfy requirements for the Ph.D. degree, students must complete a dissertation and are strongly encouraged to present a related formal lecture or lecture-recital. The student will develop a dissertation prospectus, which will be due six months after advancement to candidacy. Guidelines for the format and content of the prospectus can be found on the Music Department web site. The dissertation must embody substantial and original scholarly work based on a clearly distinguishable contemporary or historical music-cultural tradition, in any music-culture(s) of the world in which the UCSC program offers expertise. The public lecture or performance must demonstrate the student's grasp of the pertinent music-cultural performance tradition or music-cultural and/or music-historical concepts.

Dissertation Preparation Course Requirements

Students preparing for the dissertation should complete at least one quarter of MUSC 299, Thesis Research, with the faculty adviser.

Dissertation Defense

The final examination will be an oral defense of the dissertation open to the university faculty.

Successful completion of this examination will be determined by a majority vote of the dissertation reading committee.

Additional information about the program, including application and admission, is available from the Division of Graduate Studies and on the department website.

Academic Progress

For more information about maintaining academic good standing, students should consult the Academic Requirements and Standards section of the Division of Graduate Studies Handbook.

Applying for Graduation

For more information on applying for graduation, students should make an appointment with the Graduate Program adviser and consult UCSC's Graduate Division Handbook.

CONTEMPORARY PRACTICES CONCENTRATION MODULE COURSE LIST

Courses by Module

Compositional Practices Modules

In addition to the core course requirements for the Music Bachelor of Arts degree, students in the Compositional Practices concentration must complete three modules, relating to cross-cultural themes and genres.

Each module consists of:

- a lower-division MUSC 11, MUSC 80, or MUSC 81-series course specific to each module (three total)
- an upper-division MUSC 150 or equivalent (theory/composition-based) course specific to each module (three total)
- two quarters of performing ensembles or performance practice workshops specific to each module (six total). Most ensemble/performance practice courses may be repeated for credit.

Global Art Musics

Lower-Division History/Culture

Take one of the following courses. **Cannot** double count with other modular or elective requirements.

MUSC 11A	Introduction to Western Classical Music	5
MUSC 11B	Introduction to Jazz	5
MUSC 80B	Music of Asia	5
MUSC 80I	Music of Modern Israel	5
MUSC 80S	Women in Music	5
MUSC 80T	Mizrach: Jewish Music in the Lands of Islam	5
MUSC 80X	Musics of South Asia	5
MUSC 80Y	Music, Anti-Semitism, and the Holocaust	5
MUSC 81D	Music and Empire	3
MUSC 81G	A Cultural History of the Guitar	5
MUSC 81P	History of Jewish Music	5

Upper-Division Theory

Take one of the following courses. **Cannot** double count with other modular or elective requirements.

MUSC 150A	Music Analysis for Performers	5
MUSC 150B	Music Analysis and Composition	5
MUSC 150C	Tonal Counterpoint	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150H	Harmony & Form in 19th-century Western Art Music	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150T	Post Tonal Analysis	5

Ensembles/Performance Practice

Take two of the following courses. **Cannot** double count with other modular or elective requirements, but if a course is repeated for credit, it can be used to count toward multiple requirements.

MUSC 1C	University Concert Choir	2
MUSC 103	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 102	University Orchestra	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 54	North Indian Music Workshop	2
MUSC 55	Rhythms of North India	2
MUSC 55A	Intermediate Rhythms of North India	2
MUSC 158	South African Music Ensemble	2
MUSC 163	Early Music Band	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2
MUSC 168	Experimental Music Ensemble	2

Experimental and Contemporary Musics

Lower-Division History/Culture

Take one of the following courses. **Cannot** double count with other modular or elective requirements.

MUSC 11C	Popular Music in the United States	5
MUSC 11E	Global Popular Music	5
MUSC 80C	History, Literature, and Technology of Electronic Music	5
MUSC 80E	Race and American Music	5
MUSC 80G	American Musical Theater	5
MUSC 80H	The Hollywood Musical	5
MUSC 80I	Music of Modern Israel	5
MUSC 80J	American Folk Music	5
MUSC 80K	Listening to the Environment	5
MUSC 80L	Artificial Intelligence and Music	5
MUSC 80M	Film Music	5
MUSC 80N	Music of the Grateful Dead	5
MUSC 80O	Music, Politics, and Protest	5
MUSC 80R	Music in the Digital Age	5
MUSC 80S	Women in Music	5
PHYS 80U	Physics and Psychophysics of Music	5
MUSC 80V	The Music of the Beatles	5
MUSC 80W	Music Business	5
MUSC 80Y	Music, Anti-Semitism, and the Holocaust	5
MUSC 81A	Survey of Rap and Hip Hop Music	5
MUSC 81F	Music, Mass Media, and Marketing	5

MUSC 81G	A Cultural History of the Guitar	5
MUSC 81H	The Golden Age of Hip Hop	3
MUSC 81K	Scenes and Subcultures	5
MUSC 81L	Music in Animated Film	5
MUSC 81P	History of Jewish Music	5
MUSC 81R	The 1970s: A Decade in Rock	3
MUSC 81S	Music and Science Fiction	3

Upper-Division Theory

Take one of the following courses. **Cannot** double count with other modular or elective requirements.

MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 121A	Jazz Analysis	5
MUSC 123A	Electronic Music: Synthesis & Composition I	5
MUSC 123B	Electronic Music: Synthesis & Composition II	5
MUSC 123C	Electronic Music: Synthesis & Composition III	5
MUSC 150N	Noise, Music, Politics	5
MUSC 150P	20th-Century Popular Song	5
MUSC 150R	Field Recording: Mapping and Composing Sound, Identity, and Place	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150T	Post Tonal Analysis	5
MUSC 150X	Theoretical Practices of American Music	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5
MUSC 203F	Performance Practice in the 20th Century	5

Ensembles/Performance Practice

Take two of the following courses. **Cannot** double count with other modular or elective requirements, but if a course is repeated for credit, it can be used to count toward multiple requirements.

MUSC 3	Large Jazz Ensemble	2
MUSC 58	Songwriting Craft and Practice	5
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2
MUSC 71	Laptop Music	5
MUSC 72	Fundamentals of Music Technology	2
MUSC 73	Music and the Ocean	3
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 129	Live Electroacoustic Music Ensemble	2
MUSC 164	Jazz Combos	2
MUSC 165	Chamber Music Workshop	2
MUSC 167	Workshop in Electronic Music	2
MUSC 167R	Recording Workshop	2
MUSC 168	Experimental Music Ensemble	2
MUSC 267	Workshop in Computer Music and Visualization	2

Spontaneous Composition and Improvisation

Lower-Division History/Culture

Take one of the following courses. **Cannot** double count with other modular or elective requirements.

MUSC 11B	Introduction to Jazz	5
MUSC 11D	Introduction to World Music	5
MUSC 80A	Music of the Silk Road	5
MUSC 80B	Music of Asia	5
MUSC 80E	Race and American Music	5
MUSC 80F	Music in Latin American Culture: Regional Traditions	5
MUSC 80I	Music of Modern Israel	5
MUSC 80J	American Folk Music	5
MUSC 80Q	A Survey of African Music	5
MUSC 80S	Women in Music	5
MUSC 80T	Mizrach: Jewish Music in the Lands of Islam	5
MUSC 80X	Musics of South Asia	5
MUSC 81A	Survey of Rap and Hip Hop Music	5
MUSC 81E	Music and Resilience in Latin America	5
MUSC 81G	A Cultural History of the Guitar	5
MUSC 81H	The Golden Age of Hip Hop	3
MUSC 81I	Music of Indonesia	5
MUSC 81J	Jazz Mirror of Global Interconnection	5
MUSC 81M	Chicano/Latino Music in the United States	5

Upper-Division Theory

Take one of the following courses. **Cannot** double count with other modular or elective requirements.

MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 121A	Jazz Analysis	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150I	Hindustani Music Theory	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 150K	Intermediate Jazz Theory	5

MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150Z	Interdisciplinary Arts Production Lab	5
MUSC 203B	Performance Practice in the Renaissance	5
MUSC 203F	Performance Practice in the 20th Century	5
MUSC 203H	Area Studies in Performance Practice	5

Ensembles/Performance Practice

Take two of the following courses. **Cannot** double count with other modular or elective requirements, but if a course is repeated for credit, it can be used to count toward multiple requirements.

MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 10	Central Asian Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 12B	Mexican Folklorico Music and Dance	2
MUSC 20C	Beginning Jazz Theory	5
MUSC 53A	Beginning Ghanaian Ensemble	2
MUSC 55	Rhythms of North India	2
MUSC 54	North Indian Music Workshop	2
MUSC 55A	Intermediate Rhythms of North India	2
MUSC 57	Survey of Jazz Guitar Styles	2
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2
MUSC 74	Beginning Spontaneous Composition and Improvisation	5
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 164	Jazz Combos	2

GLOBAL MUSICS CONCENTRATION MODULE COURSE LIST

Courses by Module

Global Musics Modules

In addition to the core course requirements for the Music Bachelor of Arts degree, students in the Global Musics concentration complete three modules, relating to geographical areas, themes, and genres.

Each module consists of:

- a lower-division MUSC 11, MUSC 80, or MUSC 81-series course specific to each module (three total)
- an upper-division MUSC 101, MUSC 105, or MUSC 150 course specific to each module (three total)
- two quarters of performing ensemble or performance practice workshop specific to each module (six total). Courses may be repeated.

Africa and the Americas

Lower-Division History and Culture

MUSC 11B	Introduction to Jazz	5
MUSC 80E	Race and American Music	5
MUSC 80F	Music in Latin American Culture: Regional Traditions	5
MUSC 80G	American Musical Theater	5
MUSC 80J	American Folk Music	5
MUSC 80Q	A Survey of African Music	5
MUSC 81E	Music and Resilience in Latin America	5
MUSC 81G	A Cultural History of the Guitar	5
MUSC 81J	Jazz Mirror of Global Interconnection	5
MUSC 81M	Chicano/Latino Music in the United States	5

Upper-Division History and Culture or Theory

MUSC 101F	Musics of Africa and the Americas	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105V	Mexican Music and Conviviality	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5

Performance Practice

MUSC 12	Mariachi Ensemble	2
MUSC 12B	Mexican Folklorico Music and Dance	2
MUSC 53A	Beginning Ghanaian Ensemble	2
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2

MUSC 74	Beginning Spontaneous Composition and Improvisation	5
MUSC 158	South African Music Ensemble	2
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 203H	Area Studies in Performance Practice	5

Asia

Lower-Division History and Culture

MUSC 11D	Introduction to World Music	5
MUSC 80A	Music of the Silk Road	5
MUSC 80S	Women in Music	5
MUSC 80X	Musics of South Asia	5
MUSC 81I	Music of Indonesia	5

Upper-Division History and Culture or Theory

MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101G	Musics of Central Asia	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150I	Hindustani Music Theory	5

Performance Practice

MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 10	Central Asian Ensemble	2
MUSC 54	North Indian Music Workshop	2
MUSC 55	Rhythms of North India	2
MUSC 55A	Intermediate Rhythms of North India	2
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 203H	Area Studies in Performance Practice	5

Contemporary/Experimental Music

Lower-Division History and Culture

MUSC 11C	Popular Music in the United States	5
MUSC 80C	History, Literature, and Technology of Electronic Music	5
MUSC 80E	Race and American Music	5
MUSC 80K	Listening to the Environment	5
MUSC 80L	Artificial Intelligence and Music	5
MUSC 80R	Music in the Digital Age	5
MUSC 80S	Women in Music	5
PHYS 80U	Physics and Psychophysics of Music	5
MUSC 81A	Survey of Rap and Hip Hop Music	5
MUSC 81H	The Golden Age of Hip Hop	3

Upper-Division History and Culture or Theory

MUSC 101C	Western Music History (1910-present)	5
MUSC 105A	Music of the United States	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 105P	The Piano	5
MUSC 105T	Tuning and Acoustics Through Monophony, Heterophony, and Polyphony	5
MUSC 150N	Noise, Music, Politics	5
MUSC 150R	Field Recording: Mapping and Composing Sound, Identity, and Place	5
MUSC 150X	Theoretical Practices of American Music	5

Performance Practice

MUSC 73	Music and the Ocean	3
MUSC 71	Laptop Music	5
MUSC 72	Fundamentals of Music Technology	2
MUSC 129	Live Electroacoustic Music Ensemble	2
MUSC 165	Chamber Music Workshop	2
MUSC 167	Workshop in Electronic Music	2
MUSC 167R	Recording Workshop	2
MUSC 168	Experimental Music Ensemble	2
MUSC 267	Workshop in Computer Music and Visualization	2

Europe

Lower-Division History and Culture

MUSC 11A	Introduction to Western Classical Music	5
MUSC 80Y	Music, Anti-Semitism, and the Holocaust	5
MUSC 81D	Music and Empire	3
MUSC 81G	A Cultural History of the Guitar	5
MUSC 81P	History of Jewish Music	5

Upper-Division History and Culture or Theory

MUSC 101A	Western Music History (c. 1150 - 1750)	5
MUSC 101B	Western Music History (1750-1910)	5
MUSC 101C	Western Music History (1910-present)	5
MUSC 105E	Early Keyboard Music	5

MUSC 105M	Solo Song: from Monophony to Monody	5
MUSC 105O	Opera from Peri to Pergolesi	5
MUSC 105P	The Piano	5
MUSC 105Q	The String Quartet from Haydn to the Present	5
MUSC 105R	History of Russian Music	5
MUSC 150A	Music Analysis for Performers	5
MUSC 150B	Music Analysis and Composition	5

Performance Practice

MUSC 1C	University Concert Choir	2
MUSC 103	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 102	University Orchestra	2
MUSC 9	Wind Ensemble	2
MUSC 163	Early Music Band	2
MUSC 165	Chamber Music Workshop	2
MUSC 166	Chamber Singers	2
MUSC 168	Experimental Music Ensemble	2

Jazz

Lower-Division History and Culture

MUSC 11B	Introduction to Jazz	5
MUSC 80E	Race and American Music	5
MUSC 80G	American Musical Theater	5
MUSC 81J	Jazz Mirror of Global Interconnection	5

Upper-Division History and Culture or Theory

MUSC 105A	Music of the United States	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 121A	Jazz Analysis	5
MUSC 150S	Focus on Spontaneous Composition	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 150K	Intermediate Jazz Theory	5
MUSC 203F	Performance Practice in the 20th Century	5

Performance Practice

MUSC 3	Large Jazz Ensemble	2
MUSC 74	Beginning Spontaneous Composition and Improvisation	5
MUSC 20C	Beginning Jazz Theory	5
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 150J	Intermediate Spontaneous Composition and Improvisation	5
MUSC 164	Jazz Combos	2

Popular Music

Lower-Division History and Culture

MUSC 11B	Introduction to Jazz	5
MUSC 11C	Popular Music in the United States	5
MUSC 11E	Global Popular Music	5
MUSC 80E	Race and American Music	5
MUSC 80G	American Musical Theater	5
MUSC 80H	The Hollywood Musical	5
MUSC 80I	Music of Modern Israel	5
MUSC 80J	American Folk Music	5
MUSC 80M	Film Music	5
MUSC 80N	Music of the Grateful Dead	5
MUSC 80O	Music, Politics, and Protest	5
MUSC 80S	Women in Music	5
MUSC 80V	The Music of the Beatles	5
MUSC 80W	Music Business	5
MUSC 81A	Survey of Rap and Hip Hop Music	5
MUSC 81F	Music, Mass Media, and Marketing	5
MUSC 81G	A Cultural History of the Guitar	5
MUSC 81H	The Golden Age of Hip Hop	3
MUSC 81J	Jazz Mirror of Global Interconnection	5
MUSC 81K	Scenes and Subcultures	5
MUSC 81L	Music in Animated Film	5
MUSC 81R	The 1970s: A Decade in Rock	3
MUSC 81S	Music and Science Fiction	3

Upper-Division History and Culture or Theory

MUSC 105H	Hip Hop Music and Culture in the 20th Century	5
MUSC 105I	Improvisation and Collaborative Practices in the 20th Century	5
MUSC 121A	Jazz Analysis	5
MUSC 123A	Electronic Music: Synthesis & Composition I	5
MUSC 123B	Electronic Music: Synthesis & Composition II	5
MUSC 123C	Electronic Music: Synthesis & Composition III	5
MUSC 150P	20th-Century Popular Song	5

Performance Practice

MUSC 3	Large Jazz Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 58	Songwriting Craft and Practice	5
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 71	Laptop Music	5
MUSC 164	Jazz Combos	2
MUSC 167R	Recording Workshop	2
MUSC 203H	Area Studies in Performance Practice	5

World Musics

Lower-Division History and Culture

MUSC 11B	Introduction to Jazz	5
MUSC 11D	Introduction to World Music	5
MUSC 11E	Global Popular Music	5
MUSC 80A	Music of the Silk Road	5
MUSC 80F	Music in Latin American Culture: Regional Traditions	5
MUSC 80Q	A Survey of African Music	5
MUSC 80S	Women in Music	5
MUSC 80T	Mizrach: Jewish Music in the Lands of Islam	5
MUSC 80X	Musics of South Asia	5
MUSC 80Y	Music, Anti-Semitism, and the Holocaust	5
MUSC 81E	Music and Resilience in Latin America	5
MUSC 81F	Music, Mass Media, and Marketing	5
MUSC 81G	A Cultural History of the Guitar	5
MUSC 81I	Music of Indonesia	5
MUSC 81J	Jazz Mirror of Global Interconnection	5
MUSC 81M	Chicano/Latino Music in the United States	5
MUSC 81P	History of Jewish Music	5

Upper-Division History and Culture or Theory

MUSC 101E	Musics of South and Southeast Asia	5
MUSC 101F	Musics of Africa and the Americas	5
MUSC 101G	Musics of Central Asia	5
MUSC 105C	Folk and Traditional Music in California	5
MUSC 105V	Mexican Music and Conviviality	5
MUSC 121A	Jazz Analysis	5
MUSC 150D	Theory of Southeast Asia	5
MUSC 150I	Hindustani Music Theory	5

Performance Practice

MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 10	Central Asian Ensemble	2
MUSC 12	Mariachi Ensemble	2
MUSC 12B	Mexican Folklorico Music and Dance	2
MUSC 53A	Beginning Ghanaian Ensemble	2
MUSC 54	North Indian Music Workshop	2
MUSC 55	Rhythms of North India	2
MUSC 55A	Intermediate Rhythms of North India	2
MUSC 70	Hip Hop's Global Inclusiveness & African Roots	2
MUSC 77	Raga Jazz: Application of Indian Music to Western Instruments	5
MUSC 78	Popular and Raga-Based Songs of South Asia	2
MUSC 158	South African Music Ensemble	2
MUSC 163	Early Music Band	2
MUSC 164	Jazz Combos	2
MUSC 203H	Area Studies in Performance Practice	5

Performance, Play & Design

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PROGRAMS OFFERED

Art & Design: Games + Playable Media B.A. (p. 128)

Theater Arts B.A. (p. 134)

Theater Arts Minor (p. 142)

Dance Minor (p. 144)

Theater Arts M.A. (p. 145)

OTHER PROGRAMS OF INTEREST

Computer Science: Computer Game Design B.S. (p. 547)

The Department of Performance, Play & Design (PPD) collectively embodies a process of rigorous experimentation and socially conscious analysis to create equitable, accessible, and interdisciplinary works of art and scholarship. We are deeply committed to practices, research, and teaching that speak to the current moment, disrupting oppressive narratives of the past and present, and re-centering historically marginalized communities through narratives, structures, aesthetics, ritual, engagement, and play. We strive in our department to put our performance practice at the forefront of the evolving cultures and identities of our society by immersing students in design, production, history, theory, writing, directing, and technical craft. We integrate these aspects with intersectional feminist, decolonial, and new media strategies and principles to help shape the performance-makers of the future. PPD students are a combined cohort that blends interest in traditional methods with new technologies, defying traditional categorization: experimenting with digital and physical game design, exploring theory on our multiple stages, learning their craft in our labs, studios and shops, and

bringing activism, artistry, and agency to their work on campus, online, and beyond.

ART & DESIGN: GAMES + PLAYABLE MEDIA B.A.

Information and Policies

Introduction

Art & Design: Games + Playable Media (AGPM) values a joyful and rigorous critical discourse in order to build new imaginaries of climate, gender, racial, and disability justice.

Our program is a community of artists that believe in the power of games as an artistic medium for transforming how we experience agency in a world fragmented by capitalism, colonialism, and systemic oppression. We critique art and games that capitalize on systemically toxic player culture, industrial standards that homogenize our approach to storytelling, and exploitative technologies that continue to oppress. Students build toward a multidisciplinary arts practice situated within the broader landscape of contemporary art, media art, performance, and/or social practice.

Our approach to games as a contemporary art practice foregrounds the importance of designing more thoughtful, nuanced, and radical systems for participation that cross medium, positionality, and forms of cultural expression. We support work that self-reflexively acknowledges its context, community, and the ethics that underlie its intention. We work to co-create spaces for thoughtful and transformative play to cultivate the embodied experience of connection, collectivity, and co-liberation in action. Students learn to create projects that are accountable to communities beyond the institution and are guided by a decolonial, intersectional and antiracist framework.

The AGPM major focuses on the following areas of study—students interested in the major should expect courses and curriculum centered around these topics:

- Digital and non-digital games as art, activism and social practice
- Feminist, anti-racist, LGBTQ games, art and media
- Participatory or performance-based games such as role playing games, urban/site-specific games and theater games
- Interactive art, performance art, and new media art
- Exhibition methods for games in traditional art spaces and public spaces

The Art & Design: Games + Playable Media (AGPM) Bachelor of Arts (B.A.) degree at the University of California, Santa Cruz, focuses on the creation of novel game systems, spaces, and configurations that can produce broad ranges of player experiences, for a wide variety of purposes.

Students in the AGPM major learn to understand game design as an art in and of itself, positioned within the context of a number of more disciplinary approaches. Furthermore, students understand game design as a practice of creation, within a much larger and deeper social and historical context.

Program Learning Outcomes

1. **Aesthetics.** Students demonstrate understanding of aesthetic fundamentals through sustained and intentional application of a range of visual arts and design practices, both physical and digital.
2. **Designing Experiences.** Students critically engage with audience feedback to iterate and revise an interactive project in a way that preserves the artist's creative and political goals.
3. **Games as Art.** With a foundation in existing artworks, students design, develop, and create a series of interactive artworks.
4. **Games as Activism.** Students develop a creative practice, and critical study, of games and interactive media by generating critiques of game systems through a lens of power and oppression, and utilizing these critiques in their artwork.
5. **Play as a Radical Endeavor.** Students explore and create a series of playful experiments towards expressive goals that embrace risk and build upon failure. Students analyze play as a vehicle for disruption, resistance, and joy.
6. **Sense of Self As Artist.** Students begin to establish and explore their unique sense of artistic identity and areas of intention and interest, demonstrated via a portfolio of artwork and written work, exhibition, or performance, that expands definitions of games, interactive art, and play.

Academic Advising for the Program

Please refer to the department website for the most up-to-date information on drop-in hours and appointments.

You can reach the AGPM office by emailing agpmadv@ucsc.edu or by calling (831)502-0051 during regular business hours.

Students are encouraged to consult early with the AGPM advisor to create an academic plan for the major far in advance of declaration. Transfer students, please see the "How to Declare a Major" and the "Transfer Information and Policy" sections below.

Getting Started in the Major: Frosh

Students are admitted to UC Santa Cruz with a "proposed major" in most cases, and later petition to declare the major. Admission to UCSC does not guarantee acceptance into a particular major. Students must be declared in a major by the end of their second year (or equivalent), so learning about and preparing for a major is a primary goal for first-year students.

Students interested in entering the Art Design: Games + Playable Media (AGPM) program as frosh can do so as long as they are admitted into UC Santa Cruz. Incoming frosh do not need to satisfy any programming or art requirements prior to arriving at UCSC. However, students interested in entering the program as frosh are urged to make interactive artwork—from paper game prototypes to text-based choose-your-own adventure stories. Developing an arts practice in any medium is also helpful, including theater, drawing, writing, music, sculpture, filmmaking, and others.

Students who enter as frosh should meet with their advising team as early as possible, or by the end of their first year, to gain a clear understanding of the degree requirements and to create a customized academic plan that demonstrates a path to graduation.

Transfer Information and Policy

Transfer Admission Screening Policy

In preparation for transfer to AGPM, students are required to demonstrate proficiency in design and visual art topics. Broadly this includes courses in 2D and 3D concepts, forms, or production; and specific art and design topics such as color theory, typography, interaction design, motion graphics, and performance.

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in fall. Check assist.org for a list of courses at your community college that fulfill these areas.

Complete one courses or its equivalent from each of the following areas:

Intro to 2D Concepts

ART 10D	2D Foundation	5
ART 20G	Introduction to Print Media and Drawing	5
ART 20L	Introduction to Drawing	5
ART 80T	Digital Tools for Contemporary Art Practice	5
ARTG 80G	Visual Communication and Interaction Design	5
ARTG 91	Introduction to Game Art Production	5

Intro to 3D Concepts

ART 10E	3D Foundation	5
ART 20H	Introduction to Sculpture and Public Art	5
ARTG 118	Character Creation for Video Games	5
ARTG 131	3D Game Art Production	5
ARTG 132	3D Character Rigging and Animation for Video Games	5
CMPM 25	Introduction to 3D Modeling	5
CMPM 26	Introduction to 3D Animation	5

Art and Design Topics

ART 10F	4D Foundation	5
ART 20I	Introduction to Photography	5
ART 20K	Introduction to New Media and Digital Artmaking	5
CMPM 80K	Foundations of Video Game Design	5
FILM 20P	Introduction to Production Technique	5
MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2
MUSC 3	Large Jazz Ensemble	2
MUSC 6	Classical Guitar Ensemble	2
MUSC 9	Wind Ensemble	2
MUSC 14	Beginning Western Theory and Musicianship	5
MUSC 15	Preparatory Musicianship	5
MUSC 20A	Global Music Theory and Musicianship	5
MUSC 30A	Theory, Literature, and Musicianship I	5
THEA 10	Introduction to Theater Design and Technology	5
THEA 20	Introductory Studies in Acting	5
THEA 30	Introduction to Dance Theory and Technique	5

Additional Suggested Courses

In addition, the following courses are recommended prior to transfer to ensure timely graduation:

- Community college courses that are articulated for credit with courses in the Foundational Courses and Lower-Division Arts Requirements and Electives courses listed in the Requirements and Planners tab.
- One community college course that is articulated to courses or geographic region requirements in the History of Art and Visual Culture B.A.
- Transfer students who meet the requirements above and complete general education requirements will be able to complete the major in two years as shown in the academic plan in the Planners section of the Requirements and Planners tab on this page. Because of the number of credits required by the B.A., transfer students who have general education requirements remaining may need to take summer session courses and/or additional courses over the academic year to allow graduation in two years.
- Prospective students are encouraged to prioritize required and recommended major preparation, and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

Getting Started in the Major: Transfer Students

Students are admitted to UC Santa Cruz with a "proposed major" in most cases, and later petition to declare the major. Admission does not guarantee acceptance into a particular major, although transfer students' records are screened for

preparation for many majors at the time of admission. Junior transfer students must be formally declared by the deadline in their second quarter of enrollment.

Transfer students are strongly advised to attend a UC Santa Cruz summer orientation session for transfer students. Students are encouraged to meet with AGPM advising in the summer prior to starting at UCSC or in the beginning of their first quarter to gain a clear understanding of the degree requirements and to create a customized academic plan that demonstrates a path to graduation. AGPM Transfers who have gone through screening will receive permission numbers to enroll in their major declaration courses in the fall and winter of their first year at UCSC. Students should consult with an AGPM academic advisor prior to enrolling in classes to determine their status and to begin the declaration of major process as soon as possible.

Please see a recommended academic plan for junior transfer students in the "Planners" section of the "Requirements and Planners" tab on this page.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify for the AGPM major, students must complete the following major qualification courses:

The following course

ARTG 10	Aesthetic Designs	5

Plus one of these courses

ARTG 20	Games as Art	5
ARTG 25	Games as Art & Activism	5
ARTG 30	Games as Activism	5

Plus one of these courses

ARTG 40	Designing Experiences	5
ARTG 50	Play as a Radical Endeavor	5

Appeal Process

Denials of admission to the major may be appealed by submitting a letter to the AGPM advising staff, addressed to the chair of Performance, Play & Design within 15 days from the date the notification was sent. The appeal letter must describe why the prior performance is not an accurate reflection of the student's potential. Within 15 days of receipt of the appeal, the AGPM advising staff will notify the student and their college of the decision.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter. Log into MyUCSC and click the link to submit the Petition for Major/Minor.

Students petitioning when the campus declaration deadline is imminent, will either be approved, denied, or provided with conditions (e.g. completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification (MQ) courses.

Letter Grade Policy

All courses used to satisfy any of the Art Design: Games + Playable Media major requirements can be taken for a letter grade or as Pass/No Pass. This includes both introductory lower-division and advanced upper-division requirements. Please note campus policy holds that no more than 25 percent of the UCSC credits applied toward graduation may be graded on a Pass/No Pass basis.

Course Substitution Policy

Students are able to petition a course to count as a substitute for any given elective requirement via the AGPM Course Substitution Petition form. Once submitted, requests are reviewed by the department chair. The AGPM advisor will reach out to the student and let them know whether their petition was approved or denied.

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

Foundational Courses

Complete the following three courses:

ARTG 10	Aesthetic Designs	5
ARTG 40	Designing Experiences	5
ARTG 50	Play as a Radical Endeavor	5

Plus one of the following three courses

ARTG 20	Games as Art	5
ARTG 25	Games as Art & Activism	5
ARTG 30	Games as Activism	5

Lower-Division Arts Elective

Complete one lower-division course from the following:

ART 10D	2D Foundation	5
ART 10E	3D Foundation	5
ART 10F	4D Foundation	5
ART 20L	Introduction to Drawing	5
ART 80T	Digital Tools for Contemporary Art Practice	5
ARTG 91	Introduction to Game Art Production	5
CMPM 25	Introduction to 3D Modeling	5
CMPM 26	Introduction to 3D Animation	5
CMPM 80K	Foundations of Video Game Design	5
FILM 80V	Video Games as Visual Culture	5
MUSC 1C	University Concert Choir	2
MUSC 2	University Orchestra	2

MUSC 3	Large Jazz Ensemble	2
MUSC 5A	Beginning Sundanese Gamelan	2
MUSC 5B	Intermediate Sundanese Gamelan	2
MUSC 5C	Advanced Sundanese Gamelan	2
MUSC 6	Classical Guitar Ensemble	2
MUSC 8A	Beginning Balinese Gamelan	2
MUSC 8B	Advanced Balinese Gamelan	2
MUSC 9	Wind Ensemble	2
MUSC 10	Central Asian Ensemble	2
MUSC 80L	Artificial Intelligence and Music	5
THEA 10	Introduction to Theater Design and Technology	5
THEA 14	Drawing	5
THEA 15	Special Topics in Textiles	5
THEA 17	Costume Construction	5
THEA 18C	Drafting-Computer Aided	5
THEA 19	Design Studio: Lighting Studio A	5
THEA 20	Introductory Studies in Acting	5
THEA 21	Acting Studio I: Psychological Realism	5
THEA 22	Indonesian Dance and Drama	5
THEA 30	Introduction to Dance Theory and Technique	5
THEA 31C	Dance Studio I: Contemporary Dance Theory and Technique	5
THEA 33C	Dance Studio I	5
THEA 36	Introduction to Dance Making	5
THEA 37	African Dance	5
THEA 40	Introduction to Directing	5
THEA 50	Fundamentals of Theater Production	2
THEA 80Z	Indian Dance	5

History of Art and Visual Culture Requirement

Complete any one 5-credit History of Art and Visual Culture (HAVC) course. This can be either a lower- or upper-division course.

Upper-Division Courses

The upper-division coursework for the AGPM major consists of a minimum of eight total upper-division courses of 5 credits or more. Students take one course from each of the three topic areas: Craft Refinement; Social Interventions; and Performance, Portfolio + Exhibition, plus one additional course from the Disciplinary Communication (DC) list. The remaining four upper-division courses may be chosen from ARTG courses 100-189, the three topic areas, and the upper-division electives list. All courses must be at least 5 credits and upper-division.

Craft Refinement

Complete at least one course from the following list:

ARTG 118	Character Creation for Video Games	5
ARTG 120	Game Design Experience	5
ARTG 131	3D Game Art Production	5
ARTG 132	3D Character Rigging and Animation for Video Games	5
ARTG 136	Digital Sculpting for Video Games	5
ARTG 137	Experimental Tabletop RPG Design	5
ARTG 140	Writing for Interactive Narrative	5
THEA 113	The History of Design for Theater	5
THEA 115A	Design Studio: Scenic Design	5
THEA 116A	History of Clothing and Costume	5
THEA 117	Design Studio: Costume	5
THEA 124	Movement for Performers	5
THEA 126	Acting Studio III	5
THEA 139	Random: With a Purpose	5
THEA 145R	From Hamlet to Hamilton: Performing Rhythm and Rhyme in the Twenty-first Century	5
THEA 151	Studies in Performance (Drama)	5
THEA 151A	Studies in Performance: African American Theater Arts Troupe	5
THEA 157	Playwriting	5

Social Interventions

Complete at least one course from the following list:

ARTG 138	Feminist Games	5
ARTG 139	Queer and Trans Art and Games	5
ARTG 142	Black Aesthetics: Interventions in Digital Media	5
THEA 100W	Black/African Diasporic World Theater	5
THEA 104	Multimedia Authoring	5
THEA 113	The History of Design for Theater	5
THEA 116A	History of Clothing and Costume	5
THEA 161M	Sexuality, Gender, Drama, and Performance	5
THEA 161P	Theater in the Chicano Power Movement	5
THEA 161Q	Queer Theatricks: Representations and Sensibilities	5
THEA 161R	Theatre of American Cultures: Fighting Oppression	5
THEA 164	Issues in Dance History and Theory	5
THEA 165	Dance Modernism	5
THEA 166	Ballet: A History	5

THEA 167	Africanist Aesthetics: Live Dialogues in the Americas and Africa	5
THEA 168	Disability and Performance	5

Performance/Portfolio/Exhibition

Complete at least one course from the following list:

ARTG 134	Spectacular Play: Performance, Ritual, and Making a Scene IRL	5
ARTG 143	Ecofutures	5
ARTG 170A	Game Design Studio I	5
ARTG 170B	Design Studio I: Individual Track	5
ARTG 171	Game Design Studio II	7
ARTG 172	Game Design Studio III	7
ARTG 180	Personal Narrative in Play	5
ARTG 181	Portfolio	5
THEA 139	Random: With a Purpose	5
THEA 151	Studies in Performance (Drama)	5
THEA 151A	Studies in Performance: African American Theater Arts Troupe	5
THEA 145R	From Hamlet to Hamilton: Performing Rhythm and Rhyme in the Twenty-first Century	5

ARTG 170A and ARTG 170B are equivalent courses; students cannot receive credit for both.

Disciplinary Communication and Senior Comprehensive Requirements

The course used to satisfy the Disciplinary Communication (DC) requirement may not also be used to satisfy a topic area above. The course used to satisfy the Performance/Portfolio/Exhibition topic area will also satisfy the senior comprehensive requirement.

Disciplinary Communication (DC) Requirement

Students satisfy the DC requirement by completing one additional course from the list below:

ARTG 170A	Game Design Studio I	5
ARTG 170B	Design Studio I: Individual Track	5
ARTG 180	Personal Narrative in Play	5
ARTG 181	Portfolio	5

ARTG 170A and ARTG 170B are equivalent courses; students cannot receive credit for both.

Senior Comprehensive Requirement

Students satisfy the senior comprehensive requirement by completing the Performance/Portfolio/Exhibition requirement above.

Upper-Division Electives

ART 101	Introduction to Computer Programming for the Arts	5
ART 104	Digital Video	5
ART 106A	2D Animation	5
ART 106E	3D Modeling and Animation	5
ART 106G	Immersive Nonfiction	5
ART 106O	2D Animation	5
ART 108	Art, Design, and Social Practice	5
ART 135	Digital Painting	5
CMPM 125	Game Technologies	5
CMPM 131	User Experience for Interactive Media	5
CMPM 146	Game AI	5
CMPM 147	Generative Design	5
CMPM 148	Interactive Storytelling	5
CMPM 150	Creating Digital Audio	5
CMPM 151	Algorithmic Music for Games	5
CMPM 152	Musical Data	5
CMPM 163	Game Graphics and Real-Time Rendering	5
CMPM 169	Creative Coding	5
CMPM 176	Game Systems	5
CMPM 177	Creative Strategies for Designing Interactive Media	5
CMPM 178	Human-Centered Design Research	5
CMPM 179	Game Design Practicum	5
CSE 118	Mobile Applications	5
CSE 183	Web Applications	5
DANM 140	Introduction to 3D Printing, Laser Cutting, and More	5
DANM 146	Game Design in Participatory Performance	5
DANM 148	Introduction to Game Prototyping	5
DANM 219	Introduction to Electronics for Artmaking	5
DANM 220	Introduction to Programming for the Arts	5
GAME 231	Game Technologies	5
GAME 280A	Games Proseminar	2
FILM 170A	Fundamentals of Digital Media Production	5
FILM 171D	Social Information Spaces	5
FILM 173	Narrative Digital Media Workshop	5
FILM 177	Digital Media Workshop: Computer as Medium	5
FILM 179A	Special Topics in Animation	5
FILM 179B	Documentary Animation Workshop	5
FILM 189	Advanced Topics in Digital and Electronic Media Studies	5
MUSC 123A	Electronic Music: Synthesis & Composition I	5
MUSC 123B	Electronic Music: Synthesis & Composition II	5
MUSC 123C	Electronic Music: Synthesis & Composition III	5

MUSC 167	Workshop in Electronic Music	2
THEA 100W	Black/African Diasporic World Theater	5
THEA 104	Multimedia Authoring	5
THEA 113	The History of Design for Theater	5
THEA 114	Sound Design and Engineering for the Theater	5
THEA 115A	Design Studio: Scenic Design	5
THEA 116A	History of Clothing and Costume	5
THEA 117	Design Studio: Costume	5
THEA 124	Movement for Performers	5
THEA 126	Acting Studio III	5
THEA 131B	Dance Studio II: Ballet	5
THEA 131C	Dance Studio II: Advanced Contemporary Forms and Practices	5
THEA 135	Choreography I	5
THEA 136	Choreography II	5
THEA 139	Random: With a Purpose	5
THEA 141	Play Direction Studio I	5
THEA 145R	From Hamlet to Hamilton: Performing Rhythm and Rhyme in the Twenty-first Century	5
THEA 151	Studies in Performance (Drama)	5
THEA 151A	Studies in Performance: African American Theater Arts Troupe	5
THEA 157	Playwriting	5
THEA 159	Advanced Playwriting	5
THEA 161M	Sexuality, Gender, Drama, and Performance	5
THEA 161P	Theater in the Chicano Power Movement	5
THEA 161Q	Queer Theatricks: Representations and Sensibilities	5
THEA 161R	Theatre of American Cultures: Fighting Oppression	5
THEA 164	Issues in Dance History and Theory	5
THEA 165	Dance Modernism	5
THEA 166	Ballet: A History	5
THEA 167	Africanist Aesthetics: Live Dialogues in the Americas and Africa	5
THEA 168	Disability and Performance	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Art and Design: Games and Playable Media B.A. Planner

	Fall	Winter	Spri ng	Sum mer
Ent erin g				Coll ege 1A Sum mer Edg e (opt iona l)
1st (fro sh)	ARTG 10	ARTG 20 or ARTG 25 or ARTG 30	AR TG 40 or AR TG 50	
	College 1	HAVC elective	Low er-divis ion arts elect ive**	
		WRIT 1/WRIT 1E (if needed)		
2nd (so ph)	ARTG 40 or ARTG 50 WRIT 2			
3rd (ju nio r)	Upper-div: Craft Refinement	Upper-div: Social Interventio ns	Upp er-div: elect ive 2	
	Upper-div: elective 1		Upp er-div: elect ive 3	

4th (senior)	Upper-div: DisciplinaryCommunication (DC/SC)	Upper-div: Performance,Portfolio and Exhibition	Upper-div: elective 4

** WRIT 2 should be taken in or before spring quarter of the second year.

In addition to the specific courses shown in the four-year planner, a student must complete courses satisfying the ER, MF, SI, SR, TA, PR and C (WRIT 2) general education requirements.

*Students must make sure they complete one course that satisfies the DC requirement and one course that satisfies their senior comprehensive requirement.

Transfer Students Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	ARTG 10	ARTG 40 or ARTG 50	Upper-div: Craft Refinement	
	ARTG 20 or ARTG 25 or ARTG 30	Upper-div: elective 1	Upper-div: elective 2	
	ARTG 40 or ARTG 50		HAV C Elective	
2nd (senior)	Upper-div: DisciplinaryCommunication (DC/SC)	Upper-div: Performance,Portfolio and Exhibition	Upper-div: elective 4	
	Upper-div: elective 3	Upper-div: Social Interventions		

The two-year planner assumes that a student has completed all general education requirements before transferring to UC Santa Cruz.

*Students must make sure they complete one course that satisfies the DC requirement and one course that satisfies the senior comprehensive requirement.

THEATER ARTS B.A.

Information and Policies

Introduction

The Theater Arts B.A. combines drama, dance, critical studies, and theater design/technology to offer students an intensive program of theater as a unified field. The program stresses the interrelation of all disciplines as essential to the successful practice of the theater arts in the 21st century. Graduates of the University of California, Santa Cruz program typically pursue careers in professional theater and dance companies, in film and television, and in teaching at all levels—from university to high school to grade school. Many students go on to higher degrees at prestigious national programs. Others engage in careers in arts administration, dramatic writing, and related fields.

The lower-division curriculum requires a range of practical work in various areas and an interdisciplinary exposure to critical and historical studies. At the upper-division level, students are given the opportunity to focus on one or more areas of interest in limited-enrollment studios. At the same time, they are asked to expand their historical and theoretical perspectives through confrontation with performance theory and focused coursework in critical studies. The impact of

digital and new media on theater is also integrated into the curriculum.

In addition to classroom work, a wealth of hands-on production opportunities is available to students. This includes major productions directed by faculty or distinguished visiting artists each quarter, productions directed or choreographed by students, and faculty-directed workshops. The opportunity for undergraduate students to see their own writing, choreography, or developing concepts staged in department-sponsored productions is particularly valuable and unusual among university theater programs and is especially prominent in our department. Although majors are given preference in studio courses, most courses and productions welcome non-majors. Opportunities to study and perform non-Western as well as Euro-American traditions are also a significant part of the program.

The stage and studio spaces available to students in the department allow for a breadth of training and performance opportunities. The Theater Arts Center contains a 500-seat thrust stage; a 60' x 60' flexible black box theater; a 200-seat proscenium theater and a 48-seat studio theater dedicated to student productions; acting, directing, design and dance studios; costume, scene, and properties shops; a sound recording room; and a state-of-the-art computer lab. Located at the entrance of campus is our 150-seat Barn Theater which is currently closed, awaiting funding for a seismic retrofit.

Library holdings in theater literature and history are extensive, including journals in current theater, design/technology, and dance and a large image, audio, and video collection.

Program Learning Outcomes

Our program stresses dance, design, and drama as essential disciplines in the successful practice of theater arts in the contemporary world.

Graduates from the Theater Arts B.A. program should demonstrate the following:

1. Foundations of Performance. Students should be able to identify and apply basic theatrical techniques in dance, design, and drama.
2. Theatrical histories and theories. Students should be able to recognize and analyze performance works within the general culture and historical period that produced them.
3. Performance experience. Students should be able to translate theater arts concepts into performance, participating in any theatrical endeavor with the rigor, discipline, and imagination necessary to make a meaningful contribution.
4. Research proficiency. Students should be able to formulate personal research questions that expand their knowledge of theater arts, conducting independent research into the history and theory of at least one area of interest.
5. Creative practice. Students should be able to use theatrical practices and performance experiences to conceive, design, realize, and reflect on new performance projects.
6. Appreciation of diversity. Students should be able to recognize and appreciate a wide variety of approaches, cultures, and styles in both past and contemporary performance practice.
7. Communication and critical thinking. Students should be able to use critical vocabularies to communicate clearly about theater arts in written and oral forms.
8. Collaborative skills. Students should be able to work confidently and effectively in groups on a common project.

Academic Advising for the Program

General information about the theater arts major and minor and the dance minor is available on the Theater Arts program website. Students are strongly encouraged to consult early with the theater arts advisor to create an academic plan for the major or a minor far in advance of declaration, as early as the summer before beginning at the university. An academic plan is required as part of the declaration process. Please use Navigate Slug Success to make an advising appointment. You may also contact the theater arts academic advisor via email, theater-ugradadv@ucsc.edu (preferred), or by calling (831) 459-2974 during regular business hours.

Getting Started in the Major: Frosh

Students who start at UC Santa Cruz as frosh may begin taking courses toward the major in their first year, and are encouraged to do so, but it is not required. This major is not highly course intensive or highly sequential; however, students who enter as frosh should meet with the program's academic advisor as early as possible, by the beginning of their second year, to gain a clear understanding of the degree requirements, the non-standard enrollment procedures for certain required courses, and to create a customized academic plan that demonstrates a path to a timely graduation.

Students who start at UC Santa Cruz as frosh are encouraged to complete the three declaration qualification courses as early in their studies as possible so that they may declare the major no later than their sixth quarter, as required by the university. Because all of the steps to declare may require a significant amount of time to coordinate, students should start this process at the beginning of the quarter in which they plan to declare, or earlier. Review Major Qualification Requirements in the General Catalog.

Students who have taken college-level transferable classes that may apply to the requirements of this major should email unofficial transcripts as early as possible to theater-ugradadv@ucsc.edu, the program's academic advisor, for review.

Advising appointments are made through Navigate Slug Success once students are matriculated, or by email before that time.

Transfer Information and Policy

Transfer Admission Screening Policy

Students are not required to audition, submit a portfolio, or complete specific preparation courses to be considered for admission to UC Santa Cruz or to the theater or dance degree programs.

While not required for admission, it is highly recommended that transfer students complete as many general education requirements as possible before coming to UC Santa Cruz in order to ensure timely graduation. Students may also complete courses that are articulated specifically to UC Santa Cruz lower-division courses before coming to UCSC. Please consult with the theater arts academic advisor for more information.

Getting Started in the Major: Transfer Students

Transfer students are strongly advised to meet with the theater arts academic advisor prior to enrolling in classes their first quarter to create an academic plan and discuss course selection. Advising appointments may be made through Navigate Slug Success once students are matriculated, or by email (theater-ugradadv@ucsc.edu) before that time.

Transfer students may petition to have equivalent lower-division courses taken at other schools count toward lower-division major or minor requirements and should consult with the theater arts academic advisor about this possibility before enrolling in order to avoid repeating coursework unnecessarily.

As stated in the How to Declare a Major section below, transfer students may declare the major upon entering UC Santa Cruz and are encouraged to do so as soon as possible, even if they have not completed any theater arts courses prior to transferring to UC Santa Cruz. Transfer students entering as juniors must declare a major by the deadline in their second quarter, as required by the university.

Major Qualification Policy and Declaration Process

Major Qualification and Declaration

Students Admitted as Frosh/Four-Year Students

Students who begin UC Santa Cruz as frosh/four-year students must pass three classes as part of the declaration process (Transfer Students skip this section).

One course from:

THEA 61A	Ancient and Medieval Drama	5
THEA 61B	Drama from the Renaissance to the Modern Age	5
THEA 61C	The Birth of the Modern: Drama and Performance After the Renaissance	5

Plus two additional courses chosen from two of the following three categories:

Theater design and technology

THEA 10	Introduction to Theater Design and Technology	5

Acting

THEA 20	Introductory Studies in Acting	5
THEA 21	Acting Studio I: Psychological Realism	5

THEA 20 is a non-audition course designed for students with little or no experience in acting. THEA 21 is appropriate for students with some acting experience and is admission-by-audition (audition requirements are listed when classes are published in the Schedule of Classes). Please ask the theater arts advisor for more information.

Practice-based dance

THEA 30	Introduction to Dance Theory and Technique	5
THEA 31A	Dance Studio I: Asian or Asian Diasporic Practice	5
THEA 31B	Dance Studio I: Ballet	5
THEA 31C	Dance Studio I: Contemporary Dance Theory and Technique	5
THEA 31L	Dance Studio I: Introduction to Latin American Social Dances	5
THEA 31M	Introduction to Aikido	5
THEA 36	Introduction to Dance Making	5
THEA 37	African Dance	5
THEA 80Z	Indian Dance	5

Transfer Students

Transfer students are eligible to declare as early as their first quarter even if they have not completed any theater arts courses prior to transferring to UC Santa Cruz.

All Students

If non-course requirements remain incomplete by the campus deadline (in their sixth quarter for students admitted as frosh, and in their second quarter for transfer students), the student must be allowed to declare the major by the declaration deadline in their next academic term (excluding summer) without appeal.

How to Declare a Major

Transfer Students

Transfer students entering as juniors are required by the university to declare a major no later than the major declaration deadline in their second quarter on campus and are encouraged to do so as soon as possible. Transfer students entering as juniors may declare the theater arts major as early as their first quarter on campus, even if they have not completed any theater arts courses prior to transferring to UC Santa Cruz, by completing these steps:

1. Meet with the theater arts academic advisor to make an academic plan (advising appointments are scheduled through Navigate Slug Success).
2. Meet with a theater arts faculty mentor (assigned by the academic advisor during an advising meeting).
3. Submit a Petition for Major/Minor form by the deadline in your second quarter (or earlier if you have completed the above steps before your deadline quarter).

To access the declaration petition form, log into MyUCSC, go to your Student Homepage and select the Undergraduate Student eForms tile > Petition for Major/Minor. If using a mobile device, be sure to select Full Site Login when logging into MyUCSC.

Transfer students should also read the notes in the Transfer Information and Policy section.

Students Admitted as Frosh/Four-Year Students

Students who enter UC Santa Cruz as frosh are required by the university to declare the major no later than the major declaration deadline in their sixth term by completing these steps:

1. Meet with the theater arts academic advisor to make an academic plan (advising appointments are scheduled through Navigate Slug Success.
2. Meet with a theater arts faculty mentor (assigned by the academic advisor during an advising meeting).
3. Successfully complete three lower-division courses from the list specified above (students may begin taking these classes before completing steps 1 and 2 above).
4. Submit a Petition for Major/Minor form by the deadline in your sixth quarter (or earlier if you have completed the above steps before your deadline quarter).

To access the declaration petition form, log into MyUCSC, go to your Student Homepage and select the Undergraduate Student eForms tile > Petition for Major/Minor. If using a mobile device, be sure to select Full Site Login when logging into MyUCSC.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the chair of the Department of Performance, Play Design within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. Students should submit their appeal via email to theater-ugradadv@ucsc.edu.

Letter Grade Policy

This program does not have a letter grade policy aside from the university's Pass/No Pass limit and minimum grade requirement (more information is available on the university's Pass/No Pass web page).

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Double counting upper-division courses between the theater arts major and another major or minor may be possible if the non-theater arts major/minor requires more than the minimum credits required by the university. It may be possible to double count the credits above the minimum with the permission of advisors in both programs.

Study Abroad

There are many opportunities for students to study abroad, potentially fulfilling major or minor requirements. Credits earned through study abroad programs or off-campus programs are considered on a case-by-case basis by the department faculty. Please consult with the theater arts academic advisor about this process.

It is important to learn about requirements and deadlines as early as possible from the Study Abroad/Global Learning office and then to carefully plan with major/minor and college advisors. Some required courses at UC Santa Cruz are only offered in certain quarters, for example; therefore, careful planning is essential.

Please read more about study abroad opportunities on the Global Learning website.

Honors

[Optional Catchall]

Requirements and Planners

Course Requirements

The theater arts major requires 41 lower-division credits comprised of eight courses, including six credits of course THEA 50. The major also requires 40 upper-division credits comprised of eight courses (inclusive of a senior seminar course, THEA 185). One course must be taken to fulfill the Production Requirement. Majors may organize their studies around areas of interest in accordance with the requirements outlined below.

Credits earned via the UC Education Abroad Program (EAP), or other off-campus programs are considered on a case-by-case basis by the department chair. Students should consult with their major/minor and college advisors as early as possible before planning studies outside of UC Santa Cruz. Please read more about study abroad opportunities on the Global Learning website.

Lower-Division Courses

One of the following courses:

THEA 20	Introductory Studies in Acting	5
THEA 21	Acting Studio I: Psychological Realism	5

Plus all of the following courses:

THEA 10	Introduction to Theater Design and Technology	5
THEA 61A	Ancient and Medieval Drama	5
THEA 61B	Drama from the Renaissance to the Modern Age	5
THEA 61C	The Birth of the Modern: Drama and Performance After the Renaissance	5

One of the following practice-based dance courses:

THEA 30	Introduction to Dance Theory and Technique	5
THEA 31A	Dance Studio I: Asian or Asian Diasporic Practice	5
THEA 31B	Dance Studio I: Ballet	5
THEA 31C	Dance Studio I: Contemporary Dance Theory and Technique	5
THEA 31L	Dance Studio I: Introduction to Latin American Social Dances	5
THEA 31M	Introduction to Aikido	5
THEA 37	African Dance	5
THEA 36	Introduction to Dance Making	5
THEA 80Z	Indian Dance	5

Plus the following production fundamentals course (three times):

THEA 50	Fundamentals of Theater Production	2

Note: This 2-credit course must be taken three times for a total of six credits. Students are highly encouraged to complete all six required credits of THEA 50 before their last two quarters, and to contact the theater arts advisor early to learn about the unique enrollment process for the class. This requirement is separate from the major's Production Requirement.

Plus one lower-division elective course

Students take one additional 5-credit THEA course numbered 1-99. One of the two lower-division production courses, THEA 55A or THEA 56R, may be used to satisfy both this requirement and the Production Requirement.

Upper-Division Courses

Eight upper-division courses must be taken as part of the major, as specified here:

The following course:

THEA 160	Dramatic Theories	5

Plus two studio courses chosen from:

THEA 103	Design Concept Development	5
THEA 106	Digital Illustration	5
THEA 114	Sound Design and Engineering for the Theater	5
THEA 115A	Design Studio: Scenic Design	5
THEA 115B	Design Studio: Scenic Design B	5
THEA 117	Design Studio: Costume	5
THEA 117A	Advanced Costume Construction	5
THEA 118	Design Studio: Scene Painting	5
THEA 119	Design Studio: Lighting Studio B	5
THEA 120	Voice and Movement for Performers	5
THEA 121	Acting Studio II: Shakespeare	5
THEA 123	Acting and Shakespeare	5
THEA 124	Movement for Performers	5
THEA 126	Acting Studio III	5
THEA 126M	The Meisner Technique: A Practical Exploration	5
THEA 131A	Dance Studio II: Asian or Asian Diasporic Practice	5
THEA 131B	Dance Studio II: Ballet	5
THEA 131C	Dance Studio II: Advanced Contemporary Forms and Practices	5
THEA 131L	Advanced Latin American Social Dances	5
THEA 135	Choreography I	5
THEA 136	Choreography II	5
THEA 141	Play Direction Studio I	5
THEA 142	Play Direction Studio II	5
THEA 145R	From Hamlet to Hamilton: Performing Rhythm and Rhyme in the Twenty-first Century	5
THEA 152	Advanced Stagecraft	5
THEA 157	Playwriting	5
THEA 158	New Play Festival	5
THEA 159	Advanced Playwriting	5
ARTG 118	Character Creation for Video Games	5
ARTG 134	Spectacular Play: Performance, Ritual, and Making a Scene IRL	5
ARTG 137	Experimental Tabletop RPG Design	5
ARTG 140	Writing for Interactive Narrative	5
ARTG 180	Personal Narrative in Play	5

Plus two history/theory/critical studies courses, chosen from:

THEA 100A	Asian Theater/Dance and Global Impacts	5
THEA 100B	Black Theater USA	5
THEA 100C	Courts, Courtesans, Shamans, and Clowns: Asian Drama	5

THEA 100W	Black/African Diasporic World Theater	5
THEA 104	Multimedia Authoring	5
THEA 108	Theater and Interaction Design	5
THEA 113	The History of Design for Theater	5
THEA 116A	History of Clothing and Costume	5
THEA 122	Indian Performance: Rama, Siva, Krishna	5
THEA 161	Advanced Dramaturgy	5
THEA 161B	Black Women and Diasporic Theatrical Expression	5
THEA 161C	Theater and Drama of the Renaissance	5
THEA 161D	Asian Theater: An Anthropological Approach	5
THEA 161H	Shakespeare In Asia	5
THEA 161M	Sexuality, Gender, Drama, and Performance	5
THEA 161P	Theater in the Chicano Power Movement	5
THEA 161Q	Queer Theatricks: Representations and Sensibilities	5
THEA 161R	Theatre of American Cultures: Fighting Oppression	5
THEA 161S	American Drama: Politics and Theater	5
THEA 161T	Women in Theater	5
THEA 161U	Performance of Story in Theater and Film	5
THEA 161Y	Modern Ancient Drama	5
THEA 163A	Shakespeare	5
THEA 163E	Chekhov and His Impact	5
THEA 163G	Special Studies in Playwrights: Artaud	5
THEA 163H	Henrik Ibsen and His Impact: Ghosts of the Future	5
THEA 163K	Special Studies in Playwrights: Euripides	5
THEA 164	Issues in Dance History and Theory	5
THEA 165	Dance Modernism	5
THEA 166	Ballet: A History	5
THEA 167	Africanist Aesthetics: Live Dialogues in the Americas and Africa	5
THEA 168	Disability and Performance	5
ARTG 138	Feminist Games	5
ARTG 139	Queer and Trans Art and Games	5
ARTG 142	Black Aesthetics: Interventions in Digital Media	5

Plus two upper-division elective courses:

One or both classes used to fulfill the upper-division elective requirements may be chosen from any of the courses listed in the upper-division studio section, the upper-division history/theory/critical studies section, or the Production Requirement section (excluding the lower-division THEA 55A and THEA 56R) as long as they are not being used to fulfill another requirement (unless they are repeatable for credit, in which case they may be used more than once).

Production Requirement

Theater arts majors must take one of the following classes to fulfill the major's Production Requirement. The two lower-division production courses, THEA 55A or THEA 56R, may fulfill both both production requirement and the lower-division elective requirement. The upper-division production courses listed (numbered 100 and above) may fulfill the production requirement and one of the two upper-division electives.

THEA 55A	Workshop in Performance: Barnstorm	5
THEA 56R	Rainbow Theater: An Introduction to Multicultural Theater	5
THEA 137	Studies in Performance (Dance)	5
THEA 137A	Studies in Performance (Dance): Asian	5
THEA 139	Random: With a Purpose	5
THEA 151	Studies in Performance (Drama)	5
THEA 151A	Studies in Performance: African American Theater Arts Troupe	5
THEA 151I	Studies in Performance: Indonesian Dance and Drama	5
THEA 155	Shakespeare to Go	5

The Production Requirement is separate from the three required enrollments in the 2-credit class THEA 50, Fundamentals of Theater Production. Enrollment in production classes is by audition or interview process; therefore, it is important that students begin trying to fulfill the requirement as early as possible as it cannot be predicted when they will be cast or chosen to participate. Contact the theater arts advisor for information. Details can also be found in the Theater Arts Undergraduate Handbook.

Plus this comprehensive requirement course:

THEA 185	Senior Seminar	5

The following courses DO NOT satisfy theater arts major requirements:

THEA 55B	Workshop in Performance: Barnstorm Lab	2
THEA 190	Group Projects	5
THEA 198	Independent Field Study	5
THEA 199	Tutorial	5

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major’s upper-division Disciplinary Communication (DC) Requirement. The

DC Requirement in Theater Arts B.A. is met by completion of the required courses:

THEA 160	Dramatic Theories	5
THEA 185	Senior Seminar	5

Comprehensive Requirement

THEA 185	Senior Seminar	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements (p. 1438) for more information.

Below are planners for frosh and junior transfer students.

Please note that **LD = lower division** (courses numbered 1–99), and **UD = upper division** (courses numbered 100–199).

Current course offerings can be found on the Theater Arts website.

Four-Year Frosh Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
Year 1 (Frosh)	THEA 20 or THEA 21	THEA 61B (offered winter quarter only)	THEA 61C (offered spring quarter only)	
	College 1	WRIT 1/WRIT 1E (if needed)	THEA 10	
Year 2 (Soph)	THEA 61A (offered fall quarter only)	THEA lower-division elective [could be used to fulfill the Production Requirement – see info. below]	THEA upper-division studio	
	Lower-division practice-based THEA dance class (one of the following: THEA 30, THEA 31A, THEA 31B, THEA 31C, THEA 31L, THEA 31M, THEA 36, THEA 37, THEA 80Z)			
	*WRIT 2	THEA upper-division elective 1 [could be used to fulfill the Production Requirement – see info. below]		
	THEA 50 (2-credit)	THEA 50 (2-credit)	THEA 50 (2-credit)	
Year 3 (Jr)	THEA upper-division studio	THEA upper-division History/Theory/Critical Studies	THEA 160 (offered spring quarter only)	
	THEA UD History/Theory/Critical	THEA upper-division		

	Studies	elective 2 [could be used to fulfill the Production Requirement – see info. below]		
Year 4 (Sr)	THEA 185 (offered fall quarter only)			

*WRIT 2 should be taken in or before spring quarter of the second year.

The specific courses shown in this four-year planner satisfy the IM and TA general education (GE) requirements (p. 1441). Other courses taken to fulfill major requirements may fulfill additional GE requirements. Students must satisfy all university requirements, including GE requirements. Students should consult their college advising office with any questions about GEs or other university requirements.

Theater Arts majors must take one class to fulfill the Production Requirement. Classes which may be used to fulfill the Production Requirement are the lower-division production classes THEA 55A or THEA 56R (either of these could also be used to fulfill the major's lower-division elective requirement); or one of the upper-division production classes THEA 151, THEA 151A, THEA 151I, THEA 155, THEA 137, THEA 137A, THEA 139 (these upper-division production classes may also be used to fulfill one or both of the the major's two upper-division elective requirements). The Production Requirement is separate from the three required enrollments in the 2-credit class THEA 50, Fundamentals of Theater Production. Enrollment in production classes is by audition or interview process; therefore, it is important that students begin trying to fulfill the requirement as early as possible as it cannot be predicted when they will be cast or chosen to participate. Contact the theater arts advisor for information. Details can also be found in the Theater Arts Undergraduate Handbook.

Two-Year Transfer Planner

	Fall	Winter	Spring	
Entering				KRSG 1T Summer Edge (optional)
Year 1 (Jr)	THEA 61A (offered fall quarter only)	THEA 61B (offered winter quarter only)	THEA 61C (offered spring quarter only)	
	THEA 20 or THEA 21	Lower-division practice-based THEA dance class (one of the following: THEA 30, THEA 31A, THEA 31B, THEA 31C, THEA 31L, THEA 31M, THEA 36, THEA 37, THEA 80Z)	THEA 160 (offered spring quarter only)	
	THEA 10	THEA lower-division elective [could be used to fulfill the Production Requirement – see info. below]	THEA upper-division elective 1 [could be used to fulfill the Production Requirement – see info. below]	
		THEA 50 (2-credit)	THEA 50 (2-credit)	
Year 2 (Sr)	THEA 185 (offered fall	THEA upper-division History/Theory/Critical Studies	THEA upper-division History/Theory/Critical Studies	

quarter only)		
THEA upper-division studio	THEA upper-division studio	THEA upper-division elective 2 [could be used to fulfill the Production Requirement – see info. below]
THEA 50 (2-credit)		

The specific courses shown in this four-year planner satisfy the IM and TA general education (GE) requirements (p. 1441). Other courses taken to fulfill major requirements may fulfill additional GE requirements. Students must satisfy all university requirements, including GE requirements. Students should consult their college advising office with any questions about GEs or other university requirements.

Theater arts majors must take one class to fulfill the Production Requirement. Classes which may be used to fulfill the Production Requirement are the lower-division production class THEA 55A and THEA 56R (either of these could also be used to fulfill the major's lower-division elective requirement), or one of the upper-division production classes THEA 151, THEA 151A, THEA 151I, THEA 155, THEA 137, THEA 137A, THEA 139 (these upper-division production classes may also be used to fulfill one or both of the the major's two upper-division elective requirements). The Production Requirement is separate from the three required enrollments in the 2-credit class THEA 50, Fundamentals of Theater Production. Enrollment in production classes is by audition or interview process; therefore, it is important that students begin trying to fulfill the requirement as early as possible as it cannot be predicted when they will be cast or chosen to participate. Contact the Theater arts advisor for information. Details can also be found in the Theater Arts Undergraduate Handbook.

THEATER ARTS MINOR

Students earn a minor in theater arts by completing eight courses (seven 5-credit courses and one 2-credit course) comprising a background in the theory and practice of the theater arts as well as a focus on drama, theater design/technology, or dance. The course requirements are listed below. There is no comprehensive requirement for the minor.

Declaration of the minor

There are no course requirements for declaring the minor, though individual courses may have enrollment prerequisites, and a major must be officially declared before a minor may be declared.

To declare the minor:

1. Inform your major advising office that you wish to declare a minor and request that they update, sign and date your major academic planning form (or create one if one does not yet exist).
2. While that plan is current, schedule an appointment with the Theater Arts advisor to add a plan for and declare the minor (Theater Arts advising appointments are scheduled through Navigate Slug Success).
3. Submit a Petition for Major/Minor form in MyUCSC: go to your Student Homepage and select the Undergraduate Student eForms tile > Petition for Major/Minor. If using a mobile device, be sure to select Full Site Login when logging into MyUCSC.

Students are strongly encouraged to consult early with the department advisor to create an academic plan for a minor in theater arts. This may be done prior to declaration.

Transfer students may petition to have equivalent lower-division courses taken at other schools count toward lower-division minor requirements and should consult with the Theater Arts Department academic advisor as early as possible regarding this possibility.

Course Requirements

Complete the following requirements. This program does not have a letter grade policy aside from the university's Pass/No Pass limit and minimum grade requirement (more information is available on the university's Pass/No Pass web page)

Lower-Division Courses

Choose one from the following series:

THEA 61A	Ancient and Medieval Drama	5
THEA 61B	Drama from the Renaissance to the Modern Age	5
THEA 61C	The Birth of the Modern: Drama and Performance After the Renaissance	5

Plus one course in the student's area of focus chosen from:

THEA 10	Introduction to Theater Design and Technology	5
THEA 20	Introductory Studies in Acting	5
THEA 21	Acting Studio I: Psychological Realism	5
THEA 30	Introduction to Dance Theory and Technique	5
THEA 31A	Dance Studio I: Asian or Asian Diasporic Practice	5

THEA 31B	Dance Studio I: Ballet	5
THEA 31C	Dance Studio I: Contemporary Dance Theory and Technique	5
THEA 31L	Dance Studio I: Introduction to Latin American Social Dances	5
THEA 31M	Introduction to Aikido	5
THEA 33C	Dance Studio I	5
THEA 36	Introduction to Dance Making	5
THEA 37	African Dance	5
THEA 40	Introduction to Directing	5
THEA 80Z	Indian Dance	5

Plus the following production fundamentals course:

Students are highly encouraged to contact the department advisor early to learn about the unique enrollment process for THEA 50, as well as to complete this course as early as possible, before their last year on campus.

THEA 50	Fundamentals of Theater Production	2

Upper-Division Courses

Three history/theory/critical studies courses chosen from the following:

THEA 100A	Asian Theater/Dance and Global Impacts	5
THEA 100B	Black Theater USA	5
THEA 100C	Courts, Courtesans, Shamans, and Clowns: Asian Drama	5
THEA 100W	Black/African Diasporic World Theater	5
THEA 104	Multimedia Authoring	5
THEA 108	Theater and Interaction Design	5
THEA 113	The History of Design for Theater	5
THEA 116A	History of Clothing and Costume	5
THEA 122	Indian Performance: Rama, Siva, Krishna	5
THEA 160	Dramatic Theories	5
THEA 161	Advanced Dramaturgy	5
THEA 161B	Black Women and Diasporic Theatrical Expression	5
THEA 161C	Theater and Drama of the Renaissance	5
THEA 161D	Asian Theater: An Anthropological Approach	5
THEA 161H	Shakespeare In Asia	5
THEA 161M	Sexuality, Gender, Drama, and Performance	5
THEA 161P	Theater in the Chicano Power Movement	5
THEA 161Q	Queer Theatricks: Representations and Sensibilities	5
THEA 161R	Theatre of American Cultures: Fighting Oppression	5
THEA 161S	American Drama: Politics and Theater	5
THEA 161T	Women in Theater	5
THEA 161U	Performance of Story in Theater and Film	5
THEA 161Y	Modern Ancient Drama	5
THEA 163A	Shakespeare	5
THEA 163E	Chekhov and His Impact	5
THEA 163G	Special Studies in Playwrights: Artaud	5
THEA 163H	Henrik Ibsen and His Impact: Ghosts of the Future	5
THEA 163K	Special Studies in Playwrights: Euripides	5
THEA 164	Issues in Dance History and Theory	5
THEA 165	Dance Modernism	5
THEA 166	Ballet: A History	5
THEA 167	Africanist Aesthetics: Live Dialogues in the Americas and Africa	5
THEA 168	Disability and Performance	5

Plus two studio courses (one of which may be a 5-credit upper-division theater arts production; see separate section below):

THEA 103	Design Concept Development	5
THEA 106	Digital Illustration	5
THEA 114	Sound Design and Engineering for the Theater	5
THEA 115A	Design Studio: Scenic Design	5
THEA 115B	Design Studio: Scenic Design B	5
THEA 117	Design Studio: Costume	5
THEA 117A	Advanced Costume Construction	5
THEA 118	Design Studio: Scene Painting	5
THEA 119	Design Studio: Lighting Studio B	5
THEA 120	Voice and Movement for Performers	5
THEA 121	Acting Studio II: Shakespeare	5
THEA 123	Acting and Shakespeare	5
THEA 124	Movement for Performers	5
THEA 126	Acting Studio III	5
THEA 126M	The Meisner Technique: A Practical Exploration	5
THEA 131A	Dance Studio II: Asian or Asian Diasporic Practice	5
THEA 131B	Dance Studio II: Ballet	5
THEA 131C	Dance Studio II: Advanced Contemporary Forms and Practices	5
THEA 131L	Advanced Latin American Social Dances	5
THEA 135	Choreography I	5
THEA 136	Choreography II	5
THEA 141	Play Direction Studio I	5
THEA 142	Play Direction Studio II	5

THEA 145R	From Hamlet to Hamilton: Performing Rhythm and Rhyme in the Twenty-first Century	5
THEA 152	Advanced Stagecraft	5
THEA 155	Shakespeare to Go	5
THEA 157	Playwriting	5
THEA 159	Advanced Playwriting	5

Optional: one 5-credit upper-division theater arts production course, which may be used toward an upper-division studio requirement:

THEA 137	Studies in Performance (Dance)	5
THEA 137A	Studies in Performance (Dance): Asian	5
THEA 139	Random: With a Purpose	5
THEA 151	Studies in Performance (Drama)	5
THEA 151A	Studies in Performance: African American Theater Arts Troupe	5
THEA 151I	Studies in Performance: Indonesian Dance and Drama	5
THEA 155	Shakespeare to Go	5

The following DO NOT satisfy theater arts minor requirements:

THEA 55A	Workshop in Performance: Barnstorm	5
THEA 55B	Workshop in Performance: Barnstorm Lab	2
THEA 190	Group Projects	5
THEA 198	Independent Field Study	5
THEA 199	Tutorial	5

DANCE MINOR

Students earn a minor in dance by completing eight courses (seven 5-credit courses and one 2-credit course) comprising a background in the theory and practice of dance. The course requirements are listed below. There is no comprehensive requirement for the minor.

Declaration of the minor

There are no course requirements for declaring the minor, though individual courses may have enrollment prerequisites, and a major must be officially declared before a minor may be declared.

To declare the minor:

1. Inform your major advising office that you wish to declare a minor and request that they update, sign and date your major academic planning form (or create one if one does not yet exist).
2. While that plan is current, schedule an appointment with the Theater Arts advisor to add a plan for and declare the minor (Theater Arts advising appointments are scheduled through Navigate Slug Success).
3. Submit a Petition for Major/Minor form in MyUCSC: go to your Student Homepage and select the Undergraduate Student eForms tile > Petition for Major/Minor. If using a mobile device, be sure to select Full Site Login when logging into MyUCSC.

Students are strongly encouraged to consult early with the Theater Arts advisor to create an academic plan for the minor. This may be done prior to declaration. Advising appointments are scheduled through Navigate Slug Success, or questions may be addressed to the Theater Arts advisor by emailing theater-ugradadv@ucsc.edu.

Transfer students may petition to have equivalent lower-division courses taken at other schools count toward lower-division minor requirements and should consult with the Theater Arts academic advisor as early as possible regarding this possibility.

Course Requirements

Complete the following requirements. This program does not have a letter grade policy aside from the university's Pass/No Pass limit and minimum grade requirement (more information is available on the university's Pass/No Pass web page)

Lower-Division Courses

Lower-division courses may be used to fulfill requirements in both the theater arts major and dance minor, but separate upper-division courses must be taken to satisfy major and minor requirements for these degrees. Consult with the Theater Arts advisor if planning to pursue both the theater arts major and dance minor.

One course in creative practice, chosen from:

THEA 30	Introduction to Dance Theory and Technique	5
THEA 36	Introduction to Dance Making	5

Plus one course in cross-cultural techniques, chosen from:

THEA 31A	Dance Studio I: Asian or Asian Diasporic Practice	5
THEA 31B	Dance Studio I: Ballet	5
THEA 31C	Dance Studio I: Contemporary Dance Theory and Technique	5
THEA 31L	Dance Studio I: Introduction to Latin American Social Dances	5
THEA 31M	Introduction to Aikido	5
THEA 37	African Dance	5
THEA 80R	Bollywood Dance and Culture in India and Indian Diaspora	5
THEA 80U	Everybody Dance Now!	5
THEA 80Z	Indian Dance	5

The following production fundamentals course:

Students are highly encouraged to contact the Theater Arts advisor early to learn about the unique enrollment process for THEA 50, as well as to complete this course as early as possible, before their last year on campus.

THEA 50	Fundamentals of Theater Production	2

Upper-Division Courses

One course in creative practice or cross-cultural techniques, chosen from:

THEA 131A	Dance Studio II: Asian or Asian Diasporic Practice	5
THEA 131B	Dance Studio II: Ballet	5
THEA 131C	Dance Studio II: Advanced Contemporary Forms and Practices	5
THEA 131L	Advanced Latin American Social Dances	5
THEA 135	Choreography I	5
THEA 136	Choreography II	5

Plus one course in critical studies, chosen from:

ARTG 143	Ecofutures	5
THEA 161R	Theatre of American Cultures: Fighting Oppression	5
THEA 164	Issues in Dance History and Theory	5
THEA 165	Dance Modernism	5
THEA 166	Ballet: A History	5
THEA 167	Africanist Aesthetics: Live Dialogues in the Americas and Africa	5
THEA 168	Disability and Performance	5

Plus three upper-division elective courses, which may be chosen from the following:

THEA 100A	Asian Theater/Dance and Global Impacts	5
THEA 124	Movement for Performers	5
THEA 137	Studies in Performance (Dance)	5
THEA 137A	Studies in Performance (Dance): Asian	5
THEA 139	Random: With a Purpose	5
THEA 151I	Studies in Performance: Indonesian Dance and Drama	5
THEA 161D	Asian Theater: An Anthropological Approach	5

Any upper-division course listed in the Creative Practice/Cross-Cultural Techniques or Critical Studies sections may be used as an elective (but not double counted).

A select number of other courses may be used if approved by the department in advance (consult with the Theater Arts advisor).

Courses that list “Repeatable For Credit: Yes” in the General Catalog may be taken more than once.

THEA 139, Random With A Purpose, is repeatable for credit and may be used to fulfill up to two upper-division elective requirements for the dance minor.

The following DO NOT satisfy the dance minor requirements:

THEA 55A	Workshop in Performance: Barnstorm	5
THEA 55B	Workshop in Performance: Barnstorm Lab	2
THEA 158	New Play Festival	5
THEA 190	Group Projects	5
THEA 198	Independent Field Study	5
THEA 199	Tutorial	5

THEATER ARTS M.A.

Introduction

The Theater Arts M.A. program has been discontinued as of June 30, 2026. Applications will no longer be accepted effective July 1, 2025.

The Department of Performance, Play Design offers a 12-month Master of Arts (M.A.) in Theater Arts degree, which serves as a bridge from undergraduate work to professional work in a range of performance-related fields. It can also place students in an excellent position to pursue further graduate academic work, such as an M.F.A. or Ph.D. The Master of Arts degree combines intellectually rigorous coursework with challenging artistic practice. Like our undergraduate curriculum, our graduate program integrates the study of ancient and modern theater texts and practices, and it examines diverse approaches to performance. It encourages collaboration, initiative, and cross-disciplinary thinking.

Requirements

Course Requirements

Students are required to complete 40 credits for the M.A. in Theater Arts.

This includes three graduate seminars for a total of 15 credits:

THEA 290A	Research Methods for Performance and Practice	5
THEA 290B	Practice of Theory	5
THEA 290C	Performance Analysis	5

Students must also complete a 10-credit performance research project that includes a professional internship project:

THEA 293	Performance Research Project	10

Students must also complete the following three 5-credit courses:

THEA 294	Future Stages	5

THEA 295	Group Critique	5
THEA 299	Capstone Thesis	5

Other Requirements

[Optional Catchall]

Applying for Graduation

HUMANITIES DIVISION

500 Humanities 1 Building
https://humanities.ucsc.edu/

ENGAGED WITH THE WORLD

In the Humanities Division, we explore the entire human experience. We're driven to understand how humans seek meaning, forge identities and cultures, and strive to make their voices heard. But we're also the humanities at UC Santa Cruz, and that means we're thinkers and doers, fully engaged in the world and the biggest social justice challenges around us. The wealth of experiences you can have with us, in the classroom and beyond it, will help you become the kind of creative problem-solver and communicator that every profession—and the world itself—needs more than ever.

The questions and ideas we explore resist tidy boxes and conventional answers. There's never been one way to do the humanities at UC Santa Cruz—in fact, we're famous for inventing new ways of understanding and engaging with the world. We know that different fields of study offer you different lenses for looking at ideas and problems, so we won't lock you into a narrow set of classes or class materials. The possibilities for expressing what you've learned are equally broad: our students present their ideas in archival and data-driven research and in creative writing; they create exhibits, archives, podcasts, oral histories, and digital experiences.

Become a community co-creator, collaborator, and advocate. We're a trusted partner with grassroots organizations and communities striving for justice and equity—throughout the Bay Area, and in global settings from Okinawa to Oaxaca. Our innovative public humanities projects collaborate with people to share their histories, celebrate their resilience, and connect their cultures to new audiences. We welcome your talents on these projects: The people you'll meet will change your life, and you'll gain real-world professional experience.

AN ENVIRONMENT OF INNOVATION, DIVERSITY, AND INCLUSION

Our professors are doing ground-breaking work questioning conventional, canonical wisdom and exploring multiple cultures, histories, and languages of places, including East Asia, the Americas, North Africa, and South Asia. Delve into your own cultural legacy and open yourself up to new cultural traditions and values. Discover how humanity's capacity to imagine what's possible and impossible changes across time and space.

Connections—between ideas and people—are easy to make in the Humanities Division. You'll find people are eager to invest in your ideas and help you cross disciplinary boundaries. Your professors are dedicated to offering you opportunities that stretch your intellect and talents and encourage you to grow professionally.

We'll equip you with the tools for career success—and a meaningful life. The observational and analytical skills you learn in the humanities will help you see through biased and binary thinking, and confidently engage with complexity. You'll learn how to create opportunities to democratize knowledge. You'll listen empathically, connect ideas and collaborate across lines of difference, and communicate persuasively on any platform.

Find your people here. We're a diverse community of faculty and students at UC Santa Cruz. It's exciting to learn alongside people who bring so many different lived experiences to the table, who have such wide-ranging curiosity, and who believe that sharing ideas is fundamental to human-centered change.

UNDERGRADUATE STUDY

Undergraduate Majors

- Applied Linguistics and Multilingualism B.A.
- Classical Studies B.A.
- Critical Race and Ethnic Studies B.A.
- Feminist Studies B.A.
- History B.A.
- Jewish Studies B.A.
- Language Studies B.A.
- Linguistics B.A.
- Literature B.A.
  Creative Writing Concentration
- Philosophy B.A.
- Spanish Studies B.A.

Undergraduate Minors and Certificates

- Black Studies Minor
- Classical Studies Minor
- East Asian Studies Minor
- History Minor
- History of Consciousness Minor
- Italian Studies Minor
- Jewish Studies Minor
- Language Studies Minor
- Linguistics Minor
- Literature Minor
- Middle Eastern and North African Studies Minor
- Philosophy Minor
- Spanish Studies Minor
- Humanizing Technology Certificate Program
- Visualizing Abolition Studies Certificate Program

GRADUATE STUDY

- Critical Race and Ethnic Studies, Designated Emphasis for Ph.D. students
- Feminist Studies, Ph.D., Designated Emphasis for Ph.D. students
  Feminist Studies graduate programs are not accepting applications during the 2025-26 academic year.
- History, Ph.D.
- History of Consciousness, Ph.D., Designated Emphasis for Ph.D. students
- Linguistics, M.A., Ph.D.
- Literature, M.A., Ph.D., Designated Emphasis for Ph.D. students
- Philosophy, M.A., Ph.D., Designated Emphasis for Ph.D. students

EMPLOYING HUMANITIES

The Humanities Division is excited to introduce Employing Humanities, a new career readiness initiative designed to help students connect the skills and knowledge they gain in their classes to the career opportunities waiting for them after graduation. The study of humanities nurtures foundational skills that employers across industries value, such as critical thinking and problem-solving, communication, collaboration, and ethical judgment and decision-making. Honing these skills with practical, hands-on training helps students articulate their abilities and prepares them to succeed as socially-just leaders.

The Humanities Division has designated eight career-readiness competencies that we aim to develop in our students through experiential learning opportunities: ethical leadership, equity and inclusion, critical thinking, teamwork, communication, career and self development, professionalism and work ethic, and digital technology.

The Mellon Foundation saw the potential of Employing Humanities and provided $1 million to support humanities' undergraduate majors and minors with paid experiential learning opportunities that connect their classroom curriculum with hands-on training, including internships and undergraduate research.

Humanities majors and minors are eligible for two experiential learning programs—the Humanities EXCEL Internship program and the Humanities EXPLORE Undergraduate Research Program. These programs foster student achievement, increase career-mindedness and academic engagement, and build a sense of belonging for undergraduate majors and minors in the Humanities Division.

Humanities EXCEL

Internship Program: Experiential Career Exploration and Learning

Students in this cohort program hold paid positions with off-campus community partner organizations. They earn $20/hour and work 10-20 hours/week. This program aims to increase career-mindedness and support EXCEL Fellows in nurturing transferable skills that prepare them for professional and community-engaged settings. EXCEL Fellows gain practical experience while learning about industries and positions that build on their studies in the humanities.

Humanities EXPLORE

Undergraduate Research Program: Experiential Learning Opportunities in Research

Faculty in the Humanities Division apply to the EXPLORE program and mentor undergraduate researchers who work on their faculty-led projects. Researchers are selected for projects that align with their skills and academic expertise. Researchers are hired, earn $18-$20/hour, and contribute at least 100 hours per quarter to the project. EXPLORE Fellows are invited to attend quarterly workshops on professional development for researchers and build support networks with faculty mentors, staff, and peers.

THE HUMANITIES INSTITUTE

The Humanities Institute (THI) is a hub for the kind of innovative work in the humanities for which UC Santa Cruz is world-famous. THI promotes **Research Excellence** through Centers, Projects, and Clusters that address important issues and foster cross-disciplinary collaboration in emerging fields; we fund fellowships that provide faculty and students with time and resources critical to their groundbreaking research. THI supports **Student Success** through a pioneering public fellows program that gives humanities students hands-on training and professional development that prepares them for meaningful careers. We address social inequalities by offering additional resources to students from groups traditionally underrepresented in higher education. THI's Public Programs continue our long commitment to public scholarship through humanities projects that promote vibrant intellectual exchange beyond the university and through community-engaged work that helps build a more just and equitable society.

Excellence in the humanities cultivates critical thinking, equips us to grapple with an ever-more complex world, and helps prepare a new generation of leaders. From fellows archiving historical documents to collaborations with partners on campus and in the community, our work brings insight through both big ideas and subtle distinctions. We see the forest ***and*** the trees. To learn more, see our Annual Impact Reports, our Student Success Impact Reports, and our Research, Funding, and Fellows pages.

Critical Race and Ethnic Studies

403 Humanities I
(831) 459-4246
https://cres.ucsc.edu/

PROGRAMS OFFERED

Critical Race and Ethnic Studies B.A. (p. 149)

Black Studies Minor (p. 156)

Critical Race and Ethnic Studies Designated Emphasis (p. 158)

OTHER PROGRAMS OF INTEREST

Critical Race and Ethnic Studies / Education MA/C Contiguous Bachelor's/Master's Pathway (p. 723)

UNDERGRADUATE PROGRAM

Launched in 2014-15, the Critical Race and Ethnic Studies (CRES) curriculum is structured so that undergraduate students may pursue organized study leading toward a bachelor of arts degree. CRES majors develop a deep understanding of how race and other modalities of power have structured human life and have informed the imagination of social transformation and justice in the past and the present. CRES accordingly offers a study of the dynamic power relations resulting from the cultural and institutional productions of the idea of "race" on a local, national, and global scale. Here, "race" is understood as a major ideological framework through which both practices of power and domination and struggles for liberation and self-determination have been articulated and enacted throughout modern history and in the contemporary moment. The study of race, as such, is a rigorous project, one which yields critical insights into the social, political, cultural, and economic processes that have defined and shaped the modern era—colonialism and slavery, conquest and displacement, genocide and warfare, migration and creolization, criminalization, imprisonment and disenfranchisement, globalization, and post-9/11 security state policies such as racial profiling. These phenomena orient our attention to particular academic fields with which CRES is necessarily in dialogue. These fields include postcolonial studies, settler colonial studies, human rights studies, indigenous studies, migration, diaspora and border studies, queer studies, legal studies, environmental studies, and science studies. CRES engages with queer and feminist critique, decolonial thought, and labor analysis in challenging asymmetrical and exploitative power relations, not only illuminating how race, racism, and racialization are socially reproduced in societies structures in dominance, but also, fostering emergent and contestatory forms of knowledge and praxis. A commitment to structural transformation is grounded in intersectional approaches to difference (race, class, gender, sexuality, and caste) defines the work we do.

Faculty from across the UC Santa Cruz campus have contributed significantly to conversations in critical race and ethnic studies for decades, with nationally renowned faculty in anthropology, community studies, feminist studies, film and digital media, history, history of art and visual culture, history of consciousness, Latin American and Latino studies, literature, music, performance, play, and design, politics, psychology, social documentation, sociology, and the sciences. In addition to courses specifically offered under the subject of CRES, many courses engaging critical race and ethnic studies are sponsored by these departments across campus.

BLACK STUDIES MINOR

Launched fall 2020, the Black studies minor offers students grounding in the intellectual histories, political movements, cultural expressions, and critical theories of the Black diaspora, all while engaging a range of methodologies from across disciplines. Attention to the significance of social justice is a hallmark of the minor. Supported by faculty expertise in Africa, the Caribbean, the Americas, Europe, and the Pacific, students can explore the globally multi-sited nature of Black freedom struggles, both past and present, and examine blackness through a comparative lens.

CRES AND EDUCATION MA/C CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

The MA/C Contiguous Bachelor's/Master's pathway, also known as a 4+1 pathway, is an option that allows undergraduates in the CRES major to finish the Education MA/Credential program in just one additional year. With the California Ethnic Studies Model Curriculum adopted in Spring 2021 and ethnic studies slated to be a high school requirement in California starting with the 2029-30 graduating class, the CRES/EDUC 4+1 program will train and prepare graduates to teach ethnic studies at the K-12 level.

GRADUATE PROGRAM

Also launched in 2014-2015, the Designated Emphasis (DE) in Critical Race and Ethnic Studies (CRES) is available for doctoral students to pursue alongside their doctoral degree program. To complete the DE, students must have a faculty advisor from the CRES faculty; complete four relevant courses, one of which is in CRES; and complete a significant piece of scholarly writing in the area of CRES. Students pursuing the designated emphasis are encouraged to serve as a teaching assistant for at least one CRES course, and may be eligible to teach a CRES course of their own design as a graduate student instructor.

CRITICAL RACE AND ETHNIC STUDIES B.A.

Information and Policies

Introduction

The B.A. program in critical race and ethnic studies (CRES) offers an interdisciplinary curriculum that enables majors to study the history of race and racialization both in the United States and across the globe and to learn how structures of race and racism have changed over time. By approaching race as a major ideological framework through which practices of power and domination as well as struggles for liberation and self-determination have been articulated and enacted throughout modern history and in the contemporary moment, our majors develop a deep understanding of how race and other modalities of power have informed the imagination and trajectory of social transformation and justice in the past and the present. The study of race in CRES yields critical insights into the social, political, cultural, and economic processes that have defined and shaped the modern era—colonialism, slavery, conquest, displacement, genocide, warfare, migration, creolization, criminalization, imprisonment, disenfranchisement, globalization, racial profiling, and post-9/11 security state policies. CRES engages with queer and feminist critique, decolonial thought, and analysis of labor in challenging asymmetrical and exploitative power relations, not only illuminating how race, racism, and racialization are socially reproduced in societies structured by dominance, but also fostering emergent and contestatory forms of knowledge and praxis. A commitment to structural transformation is grounded in intersectional approaches to difference (race, class, gender, sexuality, and caste) and defines the work we do.

The CRES major allows students flexibility at the upper-division level to design an interdisciplinary course of study that enables a general overview of areas of interest, while selecting electives from multiple areas of specific research and career interests. Alternatively, they can engage deeply with a key area of focus, taking a number of courses in a particular area in order to develop expertise in it. For example, they may wish to focus on a social group (e.g., members of the African diaspora), on a discipline (e.g., history), on a social phenomenon (e.g., social movements), or on a methodological or theoretical orientation (e.g., theories of race, gender, and sexuality).

Through immersion in a program of study that is multidisciplinary, comparative, and transnational in scope, CRES majors develop a critical perspective on race, racial relations, and racial justice in the United States and beyond. CRES also helps students develop skills in critical thinking, comparative analysis, the application of social theory, research, communication, and writing so that they can act effectively in an ever-changing, complex, and culturally diverse world. A student with a bachelor’s degree in CRES will be well prepared for employment and continuing educational opportunities in the humanities, social sciences, law, medicine/public health, education, and international affairs and strongly positioned to pursue careers in the private, public, and non-profit sectors.

Program Learning Outcomes

Students who complete the CRES major should emerge with the following skills, competencies, and knowledge:

Critical Frameworks

- Demonstrate deep knowledge of historical, contemporary, and intersectional perspectives on race and ethnicity.
- Demonstrate familiarity with different disciplinary methods applied to race and ethnicity.
- Demonstrate a critical perspective on institutional power and knowledge.

Communication

- Demonstrate ability to account for other people's arguments, to formulate one's own arguments, and to locate both arguments in the larger context of the field.
- Demonstrate ability to formulate an argument in alternative media, such as speech, audiovisual, digital, and other forms of non-written communication.
- Demonstrate writing effectively in the interdisciplinary field.

Research

- Demonstrate ability to design and implement a collaborative research project.
- Demonstrate ability to design and implement an independent research project.

Community Collaboration, Engagement, and Activism

- Demonstrate an understanding of the issues, ethics, and methods surrounding activist, collaborative, and community-based research projects.
- Demonstrate an understanding of collaborative knowledge that effectively integrates theoretical and experiential thinking about social justice.

Academic Advising for the Program

Email: cres@ucsc.edu
Phone: (831) 459-4246

CRES advising is held in Humanities 1, room 403 or via Zoom. Drop-in hours are posted on the CRES website. Students can make an appointment by using the Slug Success application found under Resources in their student portal (MyUCSC).

Transfer students should consult the Transfer Student Information and Policy section for specific requirements.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Students interested in CRES may declare at any time, including in their junior and even senior year. Students are encouraged to begin taking courses toward the major in their first year. To declare the CRES major, students are required to have completed CRES 10, or any 5-credit CRES-designated course with a passing grade (C or P) or better. (Please see the section "How to Declare a Major" for details.) All requirements of the major can be completed within two years. Although it is advisable to begin taking courses toward the major in the first year, it is not required.

Transfer Information and Policy

Transfer Admission Screening Policy

No major preparation courses are required prior to transfer; however, prospective students are strongly encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or to complete all University of California, Santa Cruz, general education requirements before matriculation. Students who did not list CRES on their application are welcome to pursue the major.

Getting Started in the Major: Transfer Students

Transfer students are encouraged to declare the major and enroll in CRES 10 as soon as possible to be assured entrance into the required core courses. Transfer students are encouraged to take advantage of the Summer Session offering of CRES 10 to jump-start their academic career. Transfer students and students in exceptional circumstances may substitute an equivalent course with the department chair or undergraduate director's approval. Students are recommended to make an advising appointment as soon as possible to plan their academic career.

Although rigorous, CRES major requirements are not numerous, and with guidance from a CRES advisor, they can easily be met during two years of study. The university also permits limited double-counting of upper-division electives, thus making possible for transfer students the pursuit of a double major in CRES and another field of study.

If you have completed prior college-level coursework in ethnic studies, American studies, or a similar field of study, please contact CRES advising as soon as possible and provide a copy of your unofficial transcript and course syllabi so the coursework can be reviewed for potential fulfillment of CRES major requirements. The CRES Department will consider, upon petition, which UC-transferable courses from other institutions are acceptable.

Major Qualification Policy and Declaration Process

Major Qualification

To declare the CRES major, students are required to have completed any 5-credit CRES-designated course with a passing grade (C or P) or better. CRES 10 is recommended. Exam credit awarding equivalency to CRES-designated courses may also satisfy this requirement. Courses cross-listed with CRES-designated courses are also accepted. Students may declare the CRES major at any time. Transfer students should consult the Transfer and Information Policy section above.

Appeal Process

A student may file an appeal with the CRES advisor within 15 days of the denial of major declaration. The CRES Department will notify the student and the college of the decision within 15 days of the receipt of the appeal.

How to Declare a Major

Students may declare the major by logging into MyUCSC and clicking the link to submit the Petition for Major/Minors to the department advisor. The major declaration should include a plan to complete CRES 10, CRES 100, and CRES 101 at the next possible opportunity. Students must complete all requirements for the major with a grade of P, C (2.0), or better.

Per campus policy, students must submit their major declaration no later than the third quarter of their sophomore year or, in the case of transfer students, no later than the second quarter of their junior year.

CRES welcomes students who are pursuing more than one major. If you are planning to declare a double major or major/minor program, each major advisor will need to approve your academic planner. Please follow the declaration protocol for each major before submitting the declaration of major petition on MyUCSC.

Letter Grade Policy

CRES does not have a letter grade policy outside of the university's letter grade policy.

[Optional Catchall]

Course Substitution Policy

CRES is an interdisciplinary major that includes courses taught by faculty in other departments (see the Electives section below for a list of approved courses). Students who wish to substitute a course not on the electives list should complete the Petition for Course Credit form available on the CRES website. A maximum of two courses may be petitioned for credit.

Double Majors and Major/Minor Combinations Policy

The CRES major works very well as a double major with numerous fields of study such as anthropology; community studies; creative writing; feminist studies; film and digital media; education; environmental studies; history; history of art and visual culture; legal studies; linguistics; languages; literature; music; performance, play, and design; politics; sociology; and more.

Study Abroad

Honors

CRES awards honors and highest honors in the major. Students are considered for honors and highest honors based on their cumulative GPA, calculated from grades earned in coursework and the senior exit requirement undertaken for completion of the major. For honors, students must earn a minimum GPA of 3.70 in the relevant courses, while for highest honors, the GPA must be 3.90 or higher. Writing a thesis is not a requirement for receiving honors or highest honors.

[Optional Catchall]

Requirements and Planners

Course Requirements

To graduate with a major in CRES, a student is required to complete 10 courses with the approval of the department. Some courses may be satisfied via exam credit.

Lower-Division Core

One lower-division foundation course:

CRES 10	Critical Race and Ethnic Studies: An Introduction	5

Upper-Division Core

Two upper-division core courses are required for the major:

CRES 100	Comparative Theories of Race and Ethnicity	5
CRES 101	Research Methods and Writing in Critical Race and Ethnic Studies	5

CRES 101 satisfies the Disciplinary Communication (DC) requirement.

Electives

Students must complete **six** electives from the General Electives, Transnational, and Social Movements lists below. Each course must be at least 5 credits. No more than one may be lower-division.

- At least **two** must be from the Transnational list. These are designated courses focusing on phenomena outside of the U.S. or on transnational or hemispheric subjects.
- At least **one** must be from the Social Movements list.
- One class may be used to satisfy **both** Transnational and Social Movement requirements, however, a total of six electives must still be completed.
- At least **two** must be CRES courses. These courses may overlap with the Transnational and Social Movements requirement above. Courses which are cross-listed with a CRES course may also count toward this requirement.

For current offerings, please visit the CRES course page.

Students are encouraged to supplement their upper-division coursework with language study, internships, and individual or group independent studies. Students may petition to have up to 10 credits (two courses) of such activities substituted for upper-division elective requirements, so long as these activities serve, or do not interfere with, the breadth requirements.

General Electives

CRES 12	Science and Justice: Critical Intro	5
CRES 14	Center for Racial Justice Service Learning	5
CRES 15	Resource Centers Service Learning Course	5
CRES 118	Abolitionist Futures	5
CRES 121	The Struggle for K-12 Ethnic Studies	5
CRES 150	Race, Gender and Algorithms	5
CRES 151	After Man: Race, Gender and Technology	5

CRES 161	The Racial and Gendered Economies of Housing	5
CRES 185	Race, Gender, and Science	5
CRES 188B	Topics in Black Studies	5
CRES 188S	Topics in Settler Colonial Critique	5
CRES 188T	Topics in Race, Science and Technology	5
CRES 188X	Topics in Critical Race and Ethnic Studies	5
ANTH 110I	Cultures of Sustainability and Social Justice	5
ANTH 110Q	Queer Sexuality in Black Popular Culture	5
ANTH 130O	Native Feminisms, Gender, and Settler Colonialism	5
ANTH 140	The Body in Rain: Environmental and Medical Intersections	5
ANTH 158	Feminist Ethnographies	5
ANTH 187	Cultural Heritage in Colonial Contexts	5
ANTH 196J	Imagining America	5
ARTG 139	Queer and Trans Art and Games	5
ARTG 142	Black Aesthetics: Interventions in Digital Media	5
ARTG 143	Ecofutures	5
CMMU 163	Health Care Inequalities	5
ECON 128	Poverty and Public Policy	5
EDUC 125	Multicultural Children's Literature for Elementary Classrooms	5
EDUC 128	Immigrants and Education	5
EDUC 135	Gender and Education	5
EDUC 140	Language, Diversity, and Learning	5
EDUC 141	Bilingualism and Schooling	5
EDUC 160	Issues in Educational Reform	5
EDUC 164	Urban Education	5
EDUC 173	Seminar in Critical Pedagogy	5
EDUC 174	Ethnographic Research in Schools and Communities	5
EDUC 177	Teaching Linguistically Diverse Students	5
EDUC 181	Race, Class, and Culture in Education	5
FILM 165B	Race on Screen	5
FILM 165D	Asian Americans and Media	5
FILM 165E	Chicana/o Cinema, Video	5
FMST 117	Post Zora Interventions: Art, Activism and Anthropology	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 125	Race, Sex, and Technology	5
FMST 136	Organizing for Water Justice in California	5
FMST 145	Racial and Gender Formations in the U.S	5
HAVC 140A	America in Art	5
HAVC 140C	Race and American Visual Arts	5
HAVC 141F	The Camera and the Body	5
HAVC 190J	Visual Cultures of the Vietnam-American War	5
HIS 9	Introduction to Native American History	5
HIS 104C	Celluloid Natives: American Indian History on Film	5
HIS 104D	Museums and the Representation of Native American History, Memory, and Culture	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 109A	Race, Gender, and Power in the Antebellum South	5
HIS 110H	Greater Reconstruction: Race, Empire, and Citizenship in the Post-Civil War United States	5
HIS 120	W.E.B. Du Bois	5
HIS 122A	Jazz and United States Cultural History, 1900-1945	5
HIS 122B	Jazz and United States Cultural History, 1945 to the Present	5
HIS 123	Immigrants and Immigration in U.S. History	5
HIS 128	Chicana/Chicano History	5
HIS 151A	Medicine and the Body in the Colonial World	5
HISC 83	White Like Me: Whiteness and the Racial Imaginary	5
JRLC 135	Apprenticeship in Community Engaged Research	5
JRLC 136	Methodologies of Critical Praxis	5
LALS 112	Immigration and Assimilation	5
LALS 128	Latino Media in the U.S	5
LALS 131	Latino Literatures: Assimilation and Assimilability	5
LALS 143	Race and Ethnicity	5
LALS 144	Mexicana/Chicana Histories	5
LGST 111B	Civil Liberties	5
LING 135	Language and Racialization	5
LIT 80H	The Politics of Fashion	5
LIT 121L	Green Ache: Ecopoetics, Race, and Material	5
LIT 121M	Blue and Brown: Race, Gender, and Blackness	5
LIT 121N	RAGE: Race and Performance	5
LIT 134A	Caribbean Literature	5
LIT 135F	Empire and After in the Anglophone Novel	5
LIT 135G	Postcolonial Writing	5
LIT 145A	Colonial American Literatures	5
LIT 148I	Toni Morrison's Americas	5
LIT 149E	Modern Fiction and Poetry	5
LIT 154C	Hip Hop Hi Art	5
LIT 160E	Theorizing Race and Comics	5

LIT 160K	Race, Labor, and Migration	5
LIT 161A	African American Literature	5
LIT 161B	African American Women Writers	5
LIT 162A	Asian American Literature	5
LIT 163A	American Indian Literature	5
LIT 165B	Latino Fictions of the Americas	5
LIT 169A	White Flow(n): Race, Gender, and Material	5
LIT 179E	Writing for Transformation	5
LIT 189F	Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish	5
LIT 189V	Andean Indigenismo	5
MUSC 81M	Chicano/Latino Music in the United States	5
PSYC 148	Stereotyping, Prejudice, and Racism	5
PSYC 153	The Psychology of Poverty and Social Class	5
PSYC 159H	Community-Based Interventions	5
PSYC 159I	Psychology of Immigration	5
PSYC 159P	Race, Ethnicity, and Environmental Inequality	5
SOCY 120	Gender, Race/Ethnicity, Sexuality and Cultural Politics	5
SOCY 127P	Sociology of Drugs, Botanicals and Pharmaceuticals	5
SOCY 128C	Social History of Democracy, Anarchism, and Indigenism	5
SOCY 128I	Race and Law	5
SOCY 139T	Community-Engaged Research Practicum	5
SOCY 148	Educational Inequality	5
SOCY 152	Body and Society	5
SOCY 156	U.S. Latinx Identities: Centers and Margins	5
SOCY 159	Pregnancy and Birth	5
SOCY 161	Postpartum	5
SOCY 170P	The Political Economy of Race	5
SOCY 173X	Water and Sanitation Justice	5
THEA 151A	Studies in Performance: African American Theater Arts Troupe	5

Transnational Courses

CRES 45	Pilipinx Historical Dialogue	5
CRES 60E	Blackness and Indigeneity in Europe	5
CRES 68	Approaches to Black Studies	5
CRES 70U	(Un)docu Studies	5
CRES 112	AsianAm Enviro Justice	5
CRES 113	Music and Performance	5
CRES 115	Frantz Fanon: Resistance, Revolution, and Decolonization	5
CRES 120	Third World Feminisms	5
CRES 123	Introduction to Native American & Indigenous Studies	5
CRES 127	Indigenous Environmentalisms From Oceania to Native California	5
CRES 134	The Black "Middle East"	5
CRES 153	A Radical History of the Korean War	5
CRES 170	Intro to Arab American Communities	5
CRES 171	Arab Feminist Visions	5
CRES 172	Arab Uprising: Movements, Revolutions, and Praxis	5
CRES 173	Palestine: A History from Below	5
CRES 174	Palestine Through Ethnic Studies Lens	5
CRES 179A	Critical Filipinx Poetics: A Workshop for Reading and Writing Poetry	5
CRES 188A	Topics in Transnational Asian American and Pacific Islander Studies	5
CRES 188M	Topics in Critical Migration Studies	5
CRES 190Y	Solidarity	5
ANTH 110O	Postcolonial Britain and France	5
ANTH 129	Beyond Borders: Other Globalizations and Histories of Interconnection	5
ANTH 130A	Anthropology of Africa.	5
ANTH 130C	Politics and Culture in China	5
ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130T	Religion and Politics in the Muslim World	5
ANTH 159	Race and Anthropology	5
CMMU 145	Global Capitalism: a History of the Present	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 178	Race and the Environment	5
FIL 82	Introduction to Filipino Language & Culture	5
FMST 112	Women and the Law	5
FMST 115	Gender, Sexuality, and Transnational Migration Across the Americas	5
FMST 194U	Touring War and Empire	5
HAVC 124B	History of Photography in Southeast Asia	5
HAVC 170	Art of the Body in Oceania	5
HAVC 179	Topics in Oceanic Visual Culture	5
HIS 106A	Vietnam War Memories	5

HIS 131	Women in Colonial Latin America	5
HIS 140D	Recent Chinese History	5
HIS 150E	History and Memory in the Okinawan Islands	5
HIS 154	Post-Colonial North Africa	5
HIS 156	Interrogating Politics in the Post-Colonial Middle East	5
HIS 158C	Slavery in the Atlantic World: Historical and Archaeological Perspectives	5
HIS 166	Northern Ireland: Communities in Conflict	5
HIS 170C	Mediterranean France: The History and Politics of Immigration	5
HIS 181B	Africa and Britain in an Imperial World	5
HIS 184B	Racism and Antiracism in Europe: From 1870 to the Present	5
HIS 190A	Slavery and Race in Latin America	5
HIS 194T	Worlds of Labor in Asia	5
HIS 194U	The Cold War and East Asia	5
HISC 117	Making the Refugee Century: Non-Citizens and Modernity	5
LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 150	Afro-Latinos/as: Social, Cultural, and Political Dimensions	5
LALS 152	Consumer Cultures Between the Americas	5
LALS 151	Race & Mobility	5
LALS 170	Indigenous Struggles in the Americas	5
LALS 171	Brazil in Black and White	5
LALS 172	Visualizing Human Rights	5
LALS 175	Migration, Gender, and Health	5
LALS 178	Gender, Transnationalism, and Globalization	5
LALS 180	Borders: Real and Imagined	5
LALS 194H	Central America and the United States	5
LIT 131C	Worldings	5
LIT 133G	The Nuclear Pacific	5
LIT 133H	Haunted by the Forgotten War: Literature and Film of the Korean War	5
LIT 135A	Topics in African Literature	5
LIT 138A	Culture and Nation	5
LIT 155E	Cinema and Social Change in Latin America	5
LIT 160I	Race, Militarism, and Empire in Asia and the Pacific	5
LIT 160J	Exile, Diaspora, Migration	5
LIT 162B	Literature of the Asian Diaspora	5
LIT 164G	Literature and the Holocaust	5
LIT 165A	Chicanx/Mexican American Literature	5
LIT 165C	Mesoamerican Indigenous/Indigenista Literature	5
LIT 179E	Writing for Transformation	5
LIT 189P	Las mujeres en la literatura latinoamericana	5
LIT 189S	La cultura popular en la narrativa latinoamericana	5
LIT 190O	Studies in Slavery, Race, and Nation in the Americas	5
POLI 187	Decolonial Global Health: A View from the Middle East and Africa	5
SOCY 117E	Migrant Europe	5
SOCY 128	Law and Politics in Contemporary Japan and East Asian Societies	5
SOCY 128M	International Law and Global Justice	5
SOCY 143	Black Botanical Medicine in the Americas	5
THEA 167	Africanist Aesthetics: Live Dialogues in the Americas and Africa	5

Social Movement Courses

CRES 45	Pilipinx Historical Dialogue	5
CRES 68	Approaches to Black Studies	5
CRES 70B	Black Radical University?	5
CRES 70U	(Un)docu Studies	5
CRES 112	AsianAm Enviro Justice	5
CRES 113	Music and Performance	5
CRES 115	Frantz Fanon: Resistance, Revolution, and Decolonization	5
CRES 120	Third World Feminisms	5
CRES 123	Introduction to Native American & Indigenous Studies	5
CRES 127	Indigenous Environmentalisms From Oceania to Native California	5
CRES 131	Black Freedom Movements	5
CRES 132	Black Speculations	5
CRES 134	The Black "Middle East"	5
CRES 153	A Radical History of the Korean War	5
CRES 160	Latina/o/x Geographies	5
CRES 170	Intro to Arab American Communities	5
CRES 172	Arab Uprising: Movements, Revolutions, and Praxis	5
CRES 173	Palestine: A History from Below	5
CRES 174	Palestine Through Ethnic Studies Lens	5
CRES 179C	Artivist Creative Nonfiction Workshop	5
CRES 190Y	Solidarity	5

ANTH 110G	Westside Stories: Race, Place and the California Imaginary	5
ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
CMMU 186	Food and Agriculture Social Movements	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 178	Race and the Environment	5
FIL 82	Introduction to Filipino Language & Culture	5
FMST 20	Feminism and Social Justice	5
FMST 147	Gender, Race, Power, Knowledge	5
FMST 194R	HIstories of the Carceral State	5
HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HIS 121B	African American History, 1877 to the Present	5
HIS 154	Post-Colonial North Africa	5
HIS 156	Interrogating Politics in the Post-Colonial Middle East	5
HIS 184B	Racism and Antiracism in Europe: From 1870 to the Present	5
JRLC 111	Joy In Social Movements	5
LALS 170	Indigenous Struggles in the Americas	5
LALS 178	Gender, Transnationalism, and Globalization	5
LIT 179E	Writing for Transformation	5
SOCY 172	Sociology of Social Movements	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in CRES is satisfied by completing CRES 101, Research Methods and Writing in Critical Race and Ethnic Studies. Students must complete their DC requirement prior to the Senior Seminar.

CRES 101	Research Methods and Writing in Critical Race and Ethnic Studies	5

Comprehensive Requirement

The comprehensive requirement is fulfilled by completing a senior seminar from the CRES 190 series, or one of the other senior seminars listed below. CRES 190 series courses in the current General Catalog are also listed below; any CRES 190 series course that is listed in a subsequent General Catalog will also satisfy the comprehensive requirement.

Prerequisites for the CRES 190 series include CRES 10, CRES 100, and CRES 101 and satisfaction of the Entry Level Writing and Composition requirements. Senior seminars outside of CRES may have additional enrollment restrictions or prerequisites.

ANTH 196G	Queer Worlds: Sexuality, Intimacy and Power in Contemporary Ethnography	5
CRES 190A	Critical Race Feminisms	5
CRES 190B	Critical Migration Studies	5
CRES 190C	The Black Transnational	5
CRES 190D	Black Geographies and the Imperative of Abolition	5
CRES 190F	Black Queer Film	5
CRES 190L/FMST 1/FMST 100	Comparative Settler Colonial Studies	5
CRES 190N	Science/Fiction and the Possible	5
CRES 190P	Trans of Color Performance and Media	5
CRES 190S	From Slavery to Precarity: Race, Logistics and Globalization	5
CRES 190T	The War on Terror: Imperialism Past and Present	5
CRES 190X	Racial Capitalism	5
CRES 190Y	Solidarity	5
FMST 194K	Black Diaspora	5
FMST 194M	Empire and Sexuality	5
FMST 194O	The Politics of Gender and Human Rights	5
FMST 194Q	Queer Diasporas	5
FMST 194R	HIstories of the Carceral State	5
FMST 194U	Touring War and Empire	5
FMST 194V	Marxism and Feminism	5

HIS 190C was previously offered as FMST 194L with a crosslisting of CRES 190L. The course is now offered as CRES 190L with a crosslisting of FMST 194L.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Sample Academic Plan For CRES Major (Frosh)

Students must have satisfied the English language and writing requirement (ELWR) and have completed the C1 requirement in order to enroll in CRES 10. Students who place into C2 in their first fall quarter may enroll in CRES 10 in their first fall quarter.

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)

1st (frosh)	College 1	WRIT 1/WRIT 1E (if needed)	
2nd (soph)	CRES 10 WRIT 2*	CRES 100	CRES 101 CRES elective
3rd (junior)	CRES elective	CRES elective CRES elective	CRES elective
4th (senior)	CRES elective	CRES 190	

Students must also complete all general education requirements except for ER, which is satisfied by CRES 10.

*WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Sample Academic Plan for CRES Major (Transfer Students)

Transfer students should complete their general education (GE) requirements or IGETC before enrolling at UCSC, but this is not a requirement to complete the major within two years of transferring. The CRES major consists of 10 courses, allowing transfer students to complete about two CRES courses per quarter along with additional units to complete the required 180 units for graduation.

Sample Transfer-Students Academic Planner for CRES Major – Fall Admission

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	CRES 10	CRES 100 CRES elective	CRES 101 CRES elective	
2nd (senior)	CRES elective CRES elective	CRES elective CRES elective	CRES 190	

BLACK STUDIES MINOR

Housed in the Critical Race and Ethnic Studies (CRES) Department, the Black Studies minor offers students grounding in the intellectual histories, political movements, cultural expressions, and critical theories of the black diaspora, all while engaging a range of methodologies from across disciplines. Attention to the significance of social justice is a hallmark of the minor. Supported by faculty expertise in Africa, the Caribbean, the Americas, Europe, and the Pacific, students can explore the globally multi-sited nature of black freedom struggles, both past and present, and examine blackness through a comparative lens.

Through careful advising, students can pursue a set of electives, tailored to their interests, enabling broad or deep exploration of specific histories, geographic regions, and thematic concerns.

Course Requirements

To graduate with a minor in Black studies, a student is required to complete six courses. CRES 68, Approaches to Black Studies is the expected foundational course. Students will undertake an additional 25 credits—or five upper-division elective courses—drawn from the Arts, Humanities, and Social Sciences divisions. Students can select these five electives from a list of pre-approved courses. Students who wish to substitute a course not on the approved upper-division list should complete the Petition for Course Credit form available on the CRES website. A maximum of two courses may be petitioned for credit. Some courses may be satisfied via exam credit. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Take the following course:

CRES 68	Approaches to Black Studies	5

Upper-Division Courses

Five upper-division courses from the General Electives list below. At least **two** of these electives must be CRES courses (i.e., under the CRES designation). Courses in the General Electives list that are cross-listed with a CRES course may also count toward the two required CRES courses.

General Electives

CRES 113	Music and Performance	5
CRES 115	Frantz Fanon: Resistance, Revolution, and Decolonization	5
CRES 118	Abolitionist Futures	5
CRES 131	Black Freedom Movements	5
CRES 132	Black Speculations	5
CRES 134	The Black "Middle East"	5
CRES 153	A Radical History of the Korean War	5
CRES 161	The Racial and Gendered Economies of Housing	5
CRES 188B	Topics in Black Studies	5
CRES 190C	The Black Transnational	5
CRES 190D	Black Geographies and the Imperative of Abolition	5
CRES 190F	Black Queer Film	5
ANTH 110G	Westside Stories: Race, Place and the California Imaginary	5
ANTH 110Q	Queer Sexuality in Black Popular Culture	5
ANTH 130A	Anthropology of Africa.	5
ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 159	Race and Anthropology	5
ANTH 194L	Archaeology of the African Diaspora	5
ANTH 196J	Imagining America	5
ARTG 142	Black Aesthetics: Interventions in Digital Media	5
EDUC 160	Issues in Educational Reform	5
EDUC 164	Urban Education	5
EDUC 181	Race, Class, and Culture in Education	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 178	Race and the Environment	5
FILM 165B	Race on Screen	5
FMST 102	Feminist Critical Race Studies	5
FMST 115	Gender, Sexuality, and Transnational Migration Across the Americas	5
FMST 117	Post Zora Interventions: Art, Activism and Anthropology	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 125	Race, Sex, and Technology	5
FMST 145	Racial and Gender Formations in the U.S	5
FMST 147	Gender, Race, Power, Knowledge	5
HAVC 140C	Race and American Visual Arts	5
HIS 109A	Race, Gender, and Power in the Antebellum South	5
HIS 110H	Greater Reconstruction: Race, Empire, and Citizenship in the Post-Civil War United States	5
HIS 120	W.E.B. Du Bois	5
HIS 121B	African American History, 1877 to the Present	5
HIS 122A	Jazz and United States Cultural History, 1900-1945	5
HIS 122B	Jazz and United States Cultural History, 1945 to the Present	5
HIS 158C	Slavery in the Atlantic World: Historical and Archaeological Perspectives	5
JRLC 111	Joy In Social Movements	5
LALS 150	Afro-Latinos/as: Social, Cultural, and Political Dimensions	5
LALS 151	Race & Mobility	5
LALS 171	Brazil in Black and White	5
LIT 121N	RAGE: Race and Performance	5
LIT 135A	Topics in African Literature	5
LIT 148I	Toni Morrison's Americas	5
LIT 154C	Hip Hop Hi Art	5
LIT 161A	African American Literature	5
LIT 161B	African American Women Writers	5
LIT 179E	Writing for Transformation	5
LIT 190O	Studies in Slavery, Race, and Nation in the Americas	5
MUSC 101F	Musics of Africa and the Americas	5
PSYC 148	Stereotyping, Prejudice, and Racism	5
PSYC 159P	Race, Ethnicity, and Environmental Inequality	5
SOCY 117E	Migrant Europe	5
SOCY 128I	Race and Law	5
SOCY 143	Black Botanical Medicine in the Americas	5
SOCY 161	Postpartum	5
SOCY 170P	The Political Economy of Race	5
SOCY 180	Social Movements of the 1960s	5
THEA 100B	Black Theater USA	5
THEA 100W	Black/African Diasporic World Theater	5
THEA 151A	Studies in Performance: African American Theater Arts Troupe	5

THEA 167	Africanist Aesthetics: Live Dialogues in the Americas and Africa	5

CRITICAL RACE AND ETHNIC STUDIES DESIGNATED EMPHASIS

Introduction

UC Santa Cruz graduate students enrolled in doctoral programs may obtain a designated emphasis in Critical Race and Ethnic Studies as part of their Ph.D. degree. The designated emphasis is the equivalent of a “minor” for doctoral study. It will provide you with a framework for in-depth study in specialized fields in your area, and an opportunity for recognition of particular scholarly expertise.

Requirements

Doctoral students from other departments may obtain a designated emphasis in Critical Race and Ethnic Studies (CRES) by completing the following requirements in addition to the requirements for the doctorate in their home department:

Committee Composition and Departmental Approvals

The student must have a designated graduate advisor from the CRES principal faculty or by exception from affiliated faculty. The student must meet with this CRES advisor to develop a coherent plan for meeting the requirements for the designated emphasis, preferably before the end of the student’s first year. This plan must be approved by the CRES department chair.

A member of the CRES principal or affiliate faculty (usually the CRES graduate advisor) must serve on the student's qualifying examination committee and on the student's dissertation committee.

Course Requirements

The student must take four relevant graduate seminars taught by CRES principal faculty, at least one of which must have the CRES designation. Substitutions and other exceptions to this requirement may be approved on an individual basis by the CRES Department chair, in consultation with the student's advisor of record. One relevant graduate seminar taught by non-program faculty may be counted with the approval of the CRES Department chair. The department chair may also approve the substitution of an individual or group independent study addressing a set of readings or focused on research and writing for one of the four required graduate courses. The specific courses used must reflect a coherent plan of study that embodies both breadth and focus.

Current academic year courses recommended for the designated emphasis (DE) are listed on the CRES website, but eligible courses are not limited to this list.

Writing, Research and/or Teaching Requirements

The student must prepare a significant piece of scholarly writing in the area of CRES. This writing may take the form of a substantial seminar paper, a master's or qualifying exam essay, or a portion of the doctoral dissertation. The student's CRES advisor will determine whether a particular piece of writing meets this requirement.

Students pursuing the designated emphasis are encouraged to serve as a teaching assistant for at least one CRES core or elective course. CRES faculty are encouraged to appoint CRES designated emphasis students as teaching assistants when possible and appropriate.

Academic Progress

Proposing and Obtaining the Designated Emphasis

Once a plan for meeting the requirements is agreed upon, the student should complete the CRES DE application, obtain the CRES advisor’s and department chair's signatures, and submit the application to the CRES administrative office. The request for the designated emphasis must originate in the degree-granting department.

Once the requirements have been met, the student submits relevant documentation to the CRES administrative office for final approval by the CRES Department chair. At a minimum, the student should submit copies of the qualifying examination and/or Dissertation Committee Nomination forms and a note from the advisor confirming that the writing sample and proposed courses have been completed. If the proposed courses have changed, an explanation of the changes should be included.

The CRES administrative office will notify the student and the home department of approval for the designated emphasis.

[Optional Catchall]

Feminist Studies

403 Humanities 1
fmstad@ucsc.edu
https://feministstudies.ucsc.edu/

PROGRAMS OFFERED

Feminist Studies B.A. (p. 159)

Feminist Studies Ph.D. (p. 164) (suspended)

Feminist Studies Designated Emphasis (p. 167) (suspended)

The feminist studies degree programs at the University of California, Santa Cruz, are dedicated to an interdisciplinary investigation of gender relations and their centrality to social,

political, economic, and cultural formations. Initially established as a program in Women's Studies in 1974 and then a department in 1996, it re-envisioned and defined its epistemological emphasis through feminist analytics and became the first in the nation to change its name to Feminist Studies in 2005. In 2025, the department disestablished, but the degree programs continue (the graduate programs are currently on suspension). The faculty, who represent a range of expertise, are invested in a rigorous analysis of capitalism, racism, and colonialism and its legacies through persistent critique. Rather than conceive of "woman" as an always already known category or an object of study, feminist studies is invested in analyzing how knowledge about gender, sexuality, race and class has been constructed over time and reveals the historical processes through which concepts like equity and justice (including gender and racial justice) acquire meaning.

We offer an undergraduate major, a Ph.D. program, and a designated emphasis, however, the Ph.D. and designated emphasis programs are not currently accepting new applications. The feminist studies degrees provide students with a unique interdisciplinary and transnational perspective by emphasizing theories and practices derived from multiracial and multicultural contexts.

FEMINIST STUDIES B.A.

Information and Policies

Introduction

Note: Students admitted after fall of 2025 may not be guaranteed admission to the major.

Feminist studies is an interdisciplinary field of analysis in the humanities that investigates how relations of gender are embedded in social, political, and cultural formations. The undergraduate program in feminist studies provides students with a unique interdisciplinary and transnational perspective. The program emphasizes theories and practices derived from multiracial and multicultural contexts. Some topics you will find in our curriculum include: Black/Africana studies; colonialism and decolonization; trans, queer, and sexuality studies; media studies; law, politics, and social change; and science and technology studies. Feminist studies prepares undergraduates for a variety of careers. The Bachelor of Arts (B.A.) in Feminist Studies provides excellent grounding for undergraduates who have career aspirations in, for example, law, health, non-governmental organizations, museum curation, politics, media and film, research institutes, journalism, community organizations, and social services.

Students wishing to pursue doctoral work also will find that interdisciplinary training in Feminist studies equips them with theoretical and methodological strengths in most disciplines and applied research fields including American Studies, Ethnic Studies, Science Studies, Anthropology, Communications, and Legal Studies.

Specialists in feminist studies are employed as consultants in industry, higher education, and human resources. State and federal government agencies employ people who have special training in understanding gender and race relations. Educational institutions need specialists to develop and administer Feminist Studies programs, women's centers, and other institutional structures designed specifically to study and assist marginalized peoples, including women.

Program Learning Outcomes

Students who complete the Feminist Studies major should demonstrate the following skills upon graduation:

Outcome 1: Application of Feminist Approaches to Critical Interpretation

Students should be able to:

- Discuss a diversity of feminist approaches to understanding social, political, cultural, and scientific phenomena
- Connect feminist inquiry to a variety of other social phenomena including but not limited to race, nation, class, and sexuality
- Distinguish and evaluate assumptions underlying data and claims
- Place divergent interpretive frameworks in dialogue
- Perform close reading of texts and/or other objects

Outcome 2: Original Research

Students should be able to:

- Develop specific and detailed research questions
- Identify appropriate primary sources for feminist research projects
- Collect, evaluate, and analyze source material using appropriate theoretical framework(s)
- Identify key findings and draw conclusions for research and/or application

Outcome 3: Argumentative Communication

Students should be able to:

- Effectively formulate written arguments to frame research questions and analyze source material
- Present appropriate evidence to substantiate claims
- Logically organize arguments over the course of a research paper
- Use appropriate mechanics/grammar

Academic Advising for the Program

Email: fmstad@ucsc.edu

Feminist Studies advising is held remotely and in Humanities 1, Room 403. Drop-in hours are posted on the Feminist Studies website. Students can make an appointment by using

the Slug Success application found under Resources in their student portal (MyUCSC).

Transfer students should also consult the Transfer Student Information and Policy section for specific requirements.

Getting Started in the Major: Frosh

Acceptance to the Feminist Studies major: This major is not highly sequential or course intensive. Although it is advisable to begin taking courses in the major in the first year, it is not required.

Students are encouraged to declare the major as soon as possible to be assured entrance into the required core courses. Please see the section How to Declare a Major for more details.

There are no prerequisite courses that must be satisfied before declaring the Feminist Studies major.

Students should plan to enroll in FMST 01, Feminist Studies: An Introduction, in the fall quarter of their sophomore year if they did not complete the course during their first year at UC Santa Cruz. Please refer to the Four-Year Plan in the Planners section of the catalog.

Transfer Information and Policy

Transfer Admission Screening Policy

No major preparation courses are required prior to transfer. Prospective students are encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or to complete all UC Santa Cruz general education requirements before matriculation. Transfer students may potentially pursue the Feminist Studies major even if they did not enter UC Santa Cruz with a proposed Feminist Studies major.

Getting Started in the Major: Transfer Students

Transfer students are encouraged to declare the major as soon as possible to be assured entrance into the required core courses. Please see the section How to Declare a Major for more details.

Transfer students may use an articulated equivalent of FMST 1 to satisfy the FMST 1 requirement. Please check assist.org for current articulation agreements.

If you have completed prior college-level coursework in Feminist Studies, Women's Studies, or a similar field of study, please contact Feminist Studies advising as soon as possible and provide a copy of your unofficial transcript and course syllabi so the coursework can be reviewed for potential fulfillment of Feminist Studies major requirements.

The feminist studies program will consider, upon petition, which UC-transferrable courses from other institutions are acceptable. FMST 1, one Feminist Studies (FMST) lower-division course, and FMST 100 must be completed before the senior year so that the comprehensive requirement may be completed in the senior year.

Major Qualification Policy and Declaration Process

Major Qualification

Undeclared students may declare the Feminist Studies major at any time. While specific courses are not required in order to declare, students ideally will have completed or be enrolled in FMST 1, Feminist Studies: An Introduction.

Appeal Process

How to Declare a Major

Petition to declare the Feminist Studies major before you reach your declaration deadline quarter. Students who enter UC Santa Cruz as frosh or sophomores must be formally declared in a major before enrolling in their third year (or equivalent). Junior transfer students must be declared in a major by the deadline in their second term at UCSC.

For a single major: Familiarize yourself with the content of the Feminist Studies website. Log into MyUCSC and click the link to submit the Petition for Major/Minor. Before submitting the petition, students are required to meet with Feminist Studies advising to create and/or update their academic planner. A template planner can be found here.

If you are planning to declare a double major or major/minor program, each major advisor will need to approve your academic planner. Please follow the declaration protocol for each major before submitting the declaration of major petition on MyUCSC.

If your proposed program exceeds your expected graduation term (EGT), your major advisor(s) will use the extension section of your academic planner to assign your college advising office to review the extension of enrollment request. Your college advising office will approve or deny the request and update your expected graduation term.

Students should submit a petition to declare as soon as they reach their declaration deadline quarter.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter.

Letter Grade Policy

Letter grades are required for 10 of the 11 courses applied toward the Feminist Studies major. FMST 100 and the comprehensive requirement course (FMST 194 or FMST 195) must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Feminist Studies is an interdisciplinary major that includes courses taught by affiliated faculty in other departments (see the Courses page of the feminist studies website for current year offerings). However, a minimum of five courses

counting toward major requirements must be taken at UC Santa Cruz taught directly in the feminist studies program, (i.e., courses designated FMST, not including FMST 193, FMST 198, or FMST 199). At most three courses may be transferred to count toward the major, including three Education Abroad Program (EAP) courses or courses from another university. Courses cross-listed with FMST courses count toward this five-course minimum..

Double Majors and Major/Minor Combinations Policy

The Feminist Studies major works very well as a double major with fields of study such as Community Studies, Critical Race and Ethnic Studies, Sociology, Politics, Education, Legal Studies, Literature, Psychology, and more.

Study Abroad

As stated in the course substitution policy, a maximum of three courses may be transferred to count toward the major, including courses from an Education Abroad Program (EAP).

Feminist Studies majors are strongly encouraged to consider enriching their time at UCSC with Study Abroad opportunities. International classes are an exciting chance to broaden and deepen your feminist education by bringing questions around gender, sexuality, and social justice into dialog with different regions, nations, and cultures around the world.

Students should refer to the list of Feminist Studies approved Study Abroad classes offered at colleges around the globe. This list is being updated with more approved courses from more countries on an ongoing basis.

As noted above, students can use up to three approved Study Abroad courses to fulfill Feminist Studies upper-division elective requirements. Interested students should review the Feminist Studies major requirements and refer to these two- and four-year academic planners for examples of how to incorporate international classes into the Feminist Studies curriculum.

Honors

Feminist Studies awards honors and highest honors in the major. At the end of each quarter, a faculty committee meets to review graduating students' files. Students are considered for honors and highest honors based on their cumulative GPA, calculated from grades earned in coursework and the comprehensive requirement undertaken for completion of the major. For honors, students must earn a minimum GPA of 3.70 in the relevant courses, while for highest honors, the GPA must be 3.90 or higher. Writing a thesis is not a requirement for receiving honors or highest honors.

[Optional Catchall]

Requirements and Planners

Course Requirements

Feminist Studies majors must complete 11 courses including a comprehensive requirement in the Feminist Studies Department program. The three core courses--FMST 1, one lower-division feminist studies course, and FMST 100--must be taken at UC Santa Cruz absent a petition. A minimum of five courses at UC Santa Cruz taught directly in the Feminist Studies Department, (i.e., courses designated FMST, not including FMST 193, FMST 198, or FMST 199) must be completed for the major.

Lower-Division Courses

Take the following course:

FMST 1	Feminist Studies: An Introduction	5

And one of the following courses:

FMST 10	Feminisms of/and the Global South	5
FMST 12	Podcasting: Feminist Files	5
FMST 14	Popular Culture in South Asia	5
FMST 15	Gender, Sexuality, and Transnational Migration Across the Americas	5
FMST 16	Media Histories--News and New Media	5
FMST 18	Black Feminist Ethnographies	5
FMST 19	Black Feminisms: An Introduction	5
FMST 20	Feminism and Social Justice	5
FMST 21	Religion in American Politics and Culture	5
FMST 30	Feminism and Science	5
FMST 31	Disability Studies	5
FMST 40	Sexuality and Globalization	5
FMST 41	Trans Gender Bodies	5
FMST 43	Rasanblaj: On Wholeness and Well-Being	5
FMST 71	Introduction to Visualizing Abolition Studies	5

Upper-Division Courses

FMST 100	Feminist Theories	5

Students are required to complete FMST 100, Feminist Theories, at UC Santa Cruz absent a petition.

Electives

Students complete seven additional 5-credit upper-division electives. Courses may be chosen from FMST 100-199, or the lists of approved electives from affiliated departments below.

As stated in the Course Substitution Policy, a minimum of five courses used toward major requirements must be taken in the feminist studies program at UC Santa Cruz (i.e. courses designated FMST). FMST 193, 198, and 199 do not count toward this five-course minimum. Courses cross-listed with a FMST course will count toward this five-course minimum. At most three courses may be transferred to count toward the

major, including three Education Abroad Program (EAP) courses or courses from another university.

The Feminist Studies Tentative Curriculum is the definitive list of courses offered during the current academic year that will satisfy major requirements and is comprised of courses offered both from within the feminist studies program but also with approved courses originating from many different departments throughout UC Santa Cruz.

Please consult feminist studies advising with any questions regarding this requirement.

Division of the Humanities Approved Electives

APLX 112	Language and Gender	5
CRES 100	Comparative Theories of Race and Ethnicity	5
CRES 101	Research Methods and Writing in Critical Race and Ethnic Studies	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 109A	Race, Gender, and Power in the Antebellum South	5
HIS 110A	Colonial America, 1500-1750	5
HIS 112	American Feminist Thought, 1750-1950	5
HIS 113C	Women and American Religious Culture	5
HIS 119	Indigenous Feminisms	5
HIS 121B	African American History, 1877 to the Present	5
HIS 128	Chicana/Chicano History	5
HIS 131	Women in Colonial Latin America	5
HIS 140C	Revolutionary China 1895-1960	5
HIS 140D	Recent Chinese History	5
HIS 140E	Women in China's Long 20th Century	5
HIS 150F	Engendering Empires: Women in Modern Japan and Korea	5
HIS 151A	Medicine and the Body in the Colonial World	5
HIS 159B	Women and Gender in Ancient Egypt	5
HIS 196H	Sex and the City--The History of Sexuality in Urban Areas Around the Globe	5
HISC 113	History of Capitalism	5
HISC 125	Queerness and Race	5
LIT 112P	Gwendolyn Brooks	5
LIT 121M	Blue and Brown: Race, Gender, and Blackness	5
LIT 121O	Body Theories and Embodied Poetics in Contemporary American Poetry	5
LIT 146G	Queer(y)ing Victorian Literature	5
LIT 156A	The Gothic Imagination in Fiction, Film, and Theory	5
LIT 161B	African American Women Writers	5
LIT 162C	So Many Little Lives: Representations of Trauma in Asian American Literature	5
LIT 166A	Representations of Gender in Medieval Literature	5
LIT 166E	Women's Literature	5
LIT 167E	The Vampire in Literature and Popular Culture	5
PHIL 147	Topics in Feminist Philosophy	5

Division of Social Sciences Approved Electives

ANTH 110G	Westside Stories: Race, Place and the California Imaginary	5
ANTH 110Q	Queer Sexuality in Black Popular Culture	5
ANTH 110T	Motherhood in American Culture	5
ANTH 130E	Culture and Politics of Island Southeast Asia	5
ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130O	Native Feminisms, Gender, and Settler Colonialism	5
ANTH 131	Gender in Cross-Cultural Context	5
ANTH 134	Medical Anthropology: An Introduction	5
ANTH 140	The Body in Rain: Environmental and Medical Intersections	5
ANTH 148	Gender and Global Development	5
ANTH 158	Feminist Ethnographies	5
ANTH 160	Reproductive and Population Politics	5
ANTH 194M	Medical Anthropology	5
ANTH 194X	Women in Politics: A Third World Perspective	5
CMMU 151	Sex, Race, and Globalization	5
CMMU 161	Gender Health and Justice	5
EDUC 135	Gender and Education	5
ECON 183	Women in the Economy	5
LALS 144	Mexicana/Chicana Histories	5
LALS 172	Visualizing Human Rights	5
LALS 175	Migration, Gender, and Health	5
LGST 111B	Civil Liberties	5
POLI 103	Feminist Interventions	5
POLI 105B	Early Modern Political Thought	5
PSYC 107	Gender and Development	5
PSYC 140G	Women's Lives in Context	5
PSYC 140H	Sexual Identity and Society	5
PSYC 140L	Women's Bodies and Psychological Well-Being	5
PSYC 140Q	Social Psychology of Gender	5
PSYC 140T	Psychology of Trauma	5

PSYC 149	Community Psychology: Transforming Communities	5
PSYC 153	The Psychology of Poverty and Social Class	5
SOCY 158	Politics of Sex Work and Erotic Labor	5
PSYC 159A	Sexual Identity	5
PSYC 159D	Psychology of Sexual Aggression	5
SOCY 111	Family and Society	5
SOCY 120	Gender, Race/Ethnicity, Sexuality and Cultural Politics	5
SOCY 121	Sociology of Health and Medicine	5
SOCY 126	Sex and Sexuality as Social Practice and Representation	5
SOCY 132	Sociology of Science and Technology	5
SOCY 145	Sociology of Masculinities	5
SOCY 149	Sex and Gender	5
SOCY 150	Sociology of Death and Dying	5
SOCY 152	Body and Society	5
SOCY 157	Sexualities and Society	5
SOCY 156	U.S. Latinx Identities: Centers and Margins	5
SOCY 172	Sociology of Social Movements	5
SOCY 176	Women and Work	5
SOCY 187	Feminist Theory	5

Division of the Arts Approved Electives

FILM 130	Silent Cinema	5
FILM 165A	Film, Video, and Gender	5
FILM 165B	Race on Screen	5
FILM 165C	Lesbian, Gay, and Queer Film and Video	5
FILM 165D	Asian Americans and Media	5
FILM 165E	Chicana/o Cinema, Video	5
FILM 165G	Gender and Global Cinema	5
FILM 194E	International Cinemas	5
HAVC 115	Gender in African Visual Culture	5
HAVC 140C	Race and American Visual Arts	5
HAVC 141F	The Camera and the Body	5
HAVC 170	Art of the Body in Oceania	5
HAVC 172	Textile Traditions of Oceania	5
HAVC 186	Horror and Gender in Art and Visual Culture	5
HAVC 186Q	Queer Visual Culture	5
THEA 161M	Sexuality, Gender, Drama, and Performance	5
THEA 161T	Women in Theater	5

The Colleges Approved Electives

JRLC 135	Apprenticeship in Community Engaged Research	5
OAKS 150	Queer History and Theory in the United States	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in feminist studies is satisfied by completing the comprehensive requirement (FMST 194 or FMST 195).

Comprehensive Requirement

Comprehensive requirement options include a senior seminar taught by core faculty or a senior thesis/project. Completion of the Entry Level Writing and Composition Requirements are prerequisites to FMST 194 and FMST 195.

Students who wish to complete FMST 195, Senior Thesis or Project, should consult early with the feminist studies advisor and a prospective faculty advisor. The senior thesis or project option is by petition only, and faculty advisors may request that students complete a Senior Seminar (FMST 194) before agreeing to supervise a senior thesis or project.

Double majors may be able to write a thesis of 50 or more pages over three quarters to satisfy the comprehensive requirements of feminist studies and the second major. The Feminist Studies Department will review and approve or deny proposals for a double thesis on a case-by-case basis.

Students should be aware that not all departments will accept a double thesis. Students who wish to propose a double thesis should consult with both major advisors before the end of their junior year. Such a proposal must be approved by both departments or referred to the Committee on Educational Policy. In evaluating such proposals, the departments will require the student to have completed significantly more work than the minimum required for the comprehensive requirement of each major. The student's work must clearly explain to the reader the relevance of the work to both disciplines.

FMST 194A	Feminist Jurisprudence	5
FMST 194B	Queer/Feminist Historiography	5
FMST 194C	Gender and Iconicity	5
FMST 194D	Feminist Science Studies	5
FMST 194F	Chicana/Latina Cultural Production	5
FMST 194G	Images of Africa	5
FMST 194H	Michel Foucault: An Introduction	5
FMST 194I	Feminist Oral History and Memoir	5
FMST 194K	Black Diaspora	5
FMST 194M	Empire and Sexuality	5
FMST 194O	The Politics of Gender and Human Rights	5
FMST 194Q	Queer Diasporas	5
FMST 194R	HIstories of the Carceral State	5
FMST 194T	Transgender Studies	5
FMST 194U	Touring War and Empire	5
FMST 194V	Marxism and Feminism	5
FMST 194W	Politics of Space, Time, and Matter	5

FMST 194X	Genders, Archives, Histories	5
FMST 194Y	Sonic Worlds: Voice, Sound, Music	5
FMST 195	Senior Thesis or Project	5
CRES 190A	Critical Race Feminisms	5
CRES 190L/FMST 1/FMST 100	Comparative Settler Colonial Studies	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four Year Plan

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	College 1 WRIT 2*	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	FMST 1 WRIT 2*	FMST 100	FMST lower-division core	
3rd (junior)	FMST elective	FMST elective FMST elective	FMST elective	
4th (senior)	FMST elective	FMST 194 or FMST 195	FMST elective	

FMST 01 fulfills the CC general education (GE) requirement. Many FMST courses fulfill other GE requirements.

*WRIT 2 should be taken in or before spring quarter of the second year.

Two Year Plan for Transfer Students:

	Fall	Winter	Spring	Summer
Entering				Kresge 1T Summer Edge (optional)
3rd (junior)	FMST 1 FMST lower-division core FMST elective*	FMST 100	FMST elective FMST elective	
4th (senior)	FMST elective FMST elective	FMST elective FMST elective	FMST 194 or 195	

*Transfer students are strongly encouraged to enroll in FMST 105, Feminist Methodologies, a course designed specifically to aid in the transition to UC Santa Cruz's feminist studies major for incoming transfer students. FMST 105 is offered every fall. This course will also satisfy one FMST elective requirement.

FEMINIST STUDIES PH.D.

Introduction

Note: The Feminist Studies Ph.D. Program is not accepting applications in the 2025-26 Academic Year.

The inaugural class of students seeking a Doctor of Philosophy degree (Ph.D.) in Feminist Studies began in fall 2013. Feminism(s) today mandate new histories of the global. A Ph.D. in feminist studies at UC Santa Cruz is an interdisciplinary, transregional program committed to thinking inequity across regions both within and outside the U.S.. Our four key foci are: (1) the global south (2) justice (3) abolition (4) comparative colonialism(s). Combining intellectual diversity across disciplines and areas, we train graduate students to engage with pressing histories of the present. Our faculty work across field-formations of race and social justice, queer/sexuality/trans studies, law and society, popular media, music and the arts, politics and social movements, race and migration, development and political economy, and more.

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this program, please notify the graduate coordinator of your program as soon as practical. All students are encouraged to consider how they may benefit from learning more about Disability Resource Center (DRC) services and to contact the DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

Advancement to Candidacy

Students are expected to take the Ph.D. qualifying examination in their third year and no later than their fourth year, by which point they also must fulfill the course requirements and demonstrate proficiency in a second language.

Course Requirements

Ph.D. students will complete most of their coursework during their first two years. Students are required to complete a total of 12 courses: three required courses–Feminist Theories (FMST 200), Feminist Methodologies (FMST 201), and Disciplining Knowledge (FMST 202)--and nine electives. Feminist studies requires FMST 200 and FMST 201 to be taken consecutively the fall and winter quarters of the first year, while FMST 202 will be offered in the spring of the second year.
In addition, students must enroll in three 2-credit advising courses (FMST 297F) with their first-year mentor or primary advisor. FMST 290, a 2-credit pedagogy training course, is to be taken prior to and/or in conjunction with the first teaching assistant appointment.

FMST 200	Feminist Theories	5
FMST 201	Topics in Feminist Methodologies	5
FMST 202	Disciplining Knowledge/Graduate Research	5

Elective Courses

Students may take elective courses in the feminist studies program as well as in other departments. Graduate seminars, independent studies, and directed readings with the Feminist Studies faculty count toward the elective course requirement. Graduate seminars from other departments may also be used to fulfill the elective requirement.

FMST 203	Feminist Pedagogies	5
FMST 207	Topics in Queer/Race Studies	5
FMST 211	Sexuality, Race, and Migration in the Americas	5
FMST 212	Feminist Theory and the Law	5
FMST 214	Topics in Feminist Science Studies	5
FMST 215	Postcolonial and Postsocialist Transactional Analytics	5
FMST 216	Archives/Genders/Histories: An Introduction	5
FMST 218	Militarism and Tourism	5
FMST 222	Religion, Feminism, and Sexual Politics	5
FMST 232	Topics in Postcolonial Studies	5
FMST 243	Feminism, Race, and the Politics of Knowledge	5
FMST 260	Black Feminist Reconstruction	5
FMST 270	Anthropology at Its Interfaces with Feminist, Postcolonial, and Decolonial STS	5

Foreign Language Requirements

Students normally satisfy the language requirement by the end of the second year; the requirement must be satisfied in order to pass the qualifying exam. Fulfillment of the language requirement in feminist studies can be documented in several ways. The documentation should demonstrate current ability to use the language in an appropriate way in scholarship. The language appropriate to research could be oral, gestural, or written, or a combination of these. Depending on the specific language and on the research needs of the student, functional language competence could include the ability to read the scholarly literature or other written material needed in research, the ability to conduct fieldwork in the language, or the ability to produce written work in the language. Students should discuss their language requirement with their faculty advisor who, along with the graduate director, has responsibility for determining whether a student has satisfied the requirement. If neither the advisor nor the graduate director have proficiency in the proposed language, then an outside person will be consulted to verify competency in the proposed language. According to Graduate Division policy, proficiency should be demonstrated **before** the qualifying examination committee can be appointed and at least one month prior to taking the qualifying examination.

Teaching Requirement

Pre-Qualifying Requirements

Qualifying Examination

Advancement to candidacy depends on the general quality of a student's work; demonstration of proficiency in a foreign language relevant to the student's area of work, either by passing a written examination administered by the department

or successfully completing a language course approved by the department; success in the qualifying examination, and proposal of an acceptable dissertation topic.

Students should consult their advisor when composing their qualifying examination committee. Per Academic Senate policy, committees must consist of at least four members, one of whom is not a member of the student's department. The chair of the committee must be tenured, and will not be the student's dissertation advisor. The outside member must be a tenured faculty member, or may be from a non-academic field. The feminist studies Ph.D program requires that at least two members of the committee must be members of the Feminist Studies faculty. The graduate dean has authority to approve committee nominations and grant authorities.

The qualifying examination focuses on the student's research project and on the fields of scholarship it presupposes. The qualifying examination consists of:

1. Written Portion (75-95 pages total)
    a. Introduction to the Qualifying Exam (15-20p): This document explains the intellectual trajectory of the student, the development of the student's research questions, and the relationship between the different written components submitted for the exam.
    b. Qualifying Essay(s) (50-60p): In consultation with the advisor, the student will submit one or two research essays totaling 50-60 pages. Depending on the nature of the student's project and method, as well as the advisor's preferences concerning the exam format, the Qualifying Essay(s) may consist of article- or chapter-length research paper(s), literature review(s), and/or field statement(s) related to the student's primary areas of research.
    c. Dissertation Prospectus (10-15p): A draft dissertation prospectus is due at the time of exam. A revised prospectus will be due to the committee no later than the end of the quarter following the oral exam. The prospectus outlines the primary research questions, fields of intervention, timeline, and potential claims of the dissertation project.
2. Oral Examination
    a. The oral examination typically lasts 2.5-3 hours. The student is invited to give a 10-minute introduction to the qualifying essay and research project. Each examiner on the QE Committee will have approximately 20-30 minutes to put questions to the student regarding the written portion of their examination. A general discussion typically follows the round-robin questioning. Upon completion of the questions and discussion, the student is excused and the committee members evaluate the student's performance with the goal of achieving some unanimity. The committee invites the student back to the room to share the group's evaluation, offer advice, and articulate any requirements. The committee will also suggest revisions to the dissertation prospectus, to be completed by the end of the quarter following the oral exam.
    b. The chair of the committee composes a final report based on the committee's evaluation of the student's performance. After approval by the other committee members, the report is submitted to the Graduate Division to recommend advancement to candidacy.

Post-Qualifying Requirements

Immediately after the qualifying examination, students will consult their primary advisor to convene a Dissertation Committee. The Dissertation Committee must be composed of at least three members, the majority of whom must be members of the UC Santa Cruz Academic Senate, and at least one of whom is a member in Feminist Studies. Advancement to candidacy will only take place after a committee is approved by the graduate dean.

Award of Master's Degree

The program admits students on the Ph.D. track. However, in exceptional circumstances, for example, if a student has to leave the program before completing the Ph.D., the Master of Arts (M.A.) degree in Feminist Studies may be conferred. In consultation with the advisor and graduate director, the M.A. requirements are as follows:

1. Completion of nine graduate seminars, including FMST 200, FMST 201, and FMST 202 to the satisfaction of the program. The remaining six seminars are to be selected from the feminist studies offerings to reflect the student's particular academic plan, agreed upon by the student and graduate advisor.
2. Successful completion of the qualifying examination, including all written and oral components.
3.

Completion of the master's degree cannot be accomplished in less than two full academic years.

Students who wish to petition for the M.A. degree in Feminist Studies must meet all guidelines for the degree established by the Graduate Division and petition for the degree prior to the due date set by the division. Upon successful completion of the qualifying examination, students must submit the completed qualifying examination written materials to the program as the final portfolio of work for the degree.

The Master's of Fine Arts (M.F.A.) in Social Documentation (SocDoc) is an innovative interdisciplinary two-year program in the Film and Digital Media Department (FDM) that trains students to critically analyze, frame, and reflect on contemporary social issues through the art of documentary media. Designed for future documentarians committed to social change and to documenting communities, cultures, issues, and individuals who are marginalized in our current landscape of representation, the SocDoc Program supports

students who share a commitment to social justice and human rights and who have a desire to study their subject areas in depth. In a rapidly expanding and changing field, SocDoc invites students to investigate critical social issues through an approach that fuses arts-based, social science and humanities research methods to artful and ethical documentary media practices. We prepare graduates for careers in independent and community media, public broadcasting, media education, human rights work and more.

Objectives

The Social Documentation M.F.A. program aims to train graduate students in critical thinking, social science analysis, arts-based approaches, and ethical standards for engaging with and documenting underrepresented communities. The curriculum concentrates on the analysis of social and structural systems, the creation of a rigorous and ethical approach in the collection and presentation of documentary material, and on the potential role of the documentary in social change.

SocDoc leverages faculty advisors across the campus to provide students with access to interdisciplinary expertise, grounding M.F.A. students in a deep understanding of their research subjects as well as in fluency with documentary production and postproduction techniques. Benefiting from deep faculty experience with media-making, documentary history, and community organizing, students in our program hone documentary approaches suited to their topical interests, ground themselves in social science analysis and research methodologies, and acquire professional skills, while maintaining a commitment to social justice and to communities in need. Central to our ethos is training in critical documentary frameworks, documentary ethics, and modes of community engagement and collaboration.

M.F.A. candidates build a curriculum around a required set of core courses that offer a foundation in the theory, methods, and production practices of social documentary, combined with elective courses in their substantive area of interest. The culminating work in the program is the creation of a creative documentary thesis project, developed in stages across the duration of the two-year degree.

[Optional Catchall]

Dissertation

Dissertation

After advancement to candidacy, expected by the end of the third year, students take courses in the 290 sequence (FMST 299A) until the dissertation is submitted. Successful revision of the dissertation prospectus will be due to the Dissertation Committee no later than the end of the quarter after completion of the oral examination to remain in good academic standing. Students submit the revised prospectus to their committee for approval and transmit the document to the graduate coordinator.

Upon approval of the revised dissertation prospectus, students concentrate on dissertation writing. The current normative time to degree limit is six years, although students should plan dissertation research and writing timelines keeping in mind the funding commitments made by the department at the time of matriculation. Students also have the option of doing advanced work in a traditional discipline and receiving a Designated Emphasis of this specialization. In such cases, students must satisfy the appropriate department's criteria (see the departmental web site for information). Students are expected to complete at least one year of supervised teaching as part of the degree requirements.

Dissertation Defense

The dissertation defense serves as the final opportunity for the student to receive focused feedback on research and writing, ideally with the goal of developing the dissertation into a book or other major project following completion of the Ph.D. The defense typically lasts two hours and is an occasion for thoughtful, constructive criticism and guidance; it is not an examination. For this reason, the defense will normally be conducted as a closed meeting between the committee and the student, along with a small audience of guests invited by the student and/or advisor. The student may elect to conduct a public defense with permission of the advisor. In such instances, the chair must convene a closed committee discussion at the end of the defense to complete conferral of the Ph.D.

Academic Progress

Normative time to completion of the Ph.D. is six years. Upon advancement to candidacy, students are expected to complete the dissertation within three years to make satisfactory academic progress.

Applying for Graduation

At the end of the dissertation writing process, the student must petition for the degree, format the dissertation according to Graduate Division guidelines, complete an oral dissertation defense with the Dissertation Committee, and obtain signatures of the committee members on the official title page. Once these items are complete, the student may file the dissertation to complete the Ph.D.

[Optional Catchall]

FEMINIST STUDIES DESIGNATED EMPHASIS

Introduction

Note: The Feminist Studies DE Program is not accepting applications in the 2025-26 Academic Year.

Graduate students may work toward a Doctor of Philosophy (Ph.D.) degree that notes a designated emphasis in feminist studies on the graduation documents. Students wishing to pursue this option should consult with the chair of their respective Ph.D. program and are encouraged to apply in the first or second year of graduate study. The application and an

annually updated list of regularly offered, approved graduate courses are available at the Feminist Studies website.

Requirements

The following are required for the designated emphasis:

Committee Composition and Departmental Approvals

The student must have a designated graduate advisor from the feminist studies core faculty who serves on the qualifying examination committee or in some other appropriate capacity.

Course Requirements

The student must take four graduate courses in feminist studies, two of which must be taught directly in the program Two courses can be selected from among the graduate offerings of any UC Santa Cruz department, as long as they are taught by core or affiliated feminist studies faculty.

FMST 200	Feminist Theories	5
FMST 201	Topics in Feminist Methodologies	5
FMST 202	Disciplining Knowledge/Graduate Research	5
FMST 203	Feminist Pedagogies	5
FMST 207	Topics in Queer/Race Studies	5
FMST 211	Sexuality, Race, and Migration in the Americas	5
FMST 212	Feminist Theory and the Law	5
FMST 214	Topics in Feminist Science Studies	5
FMST 215	Postcolonial and Postsocialist Transactional Analytics	5
FMST 216	Archives/Genders/Histories: An Introduction	5
FMST 218	Militarism and Tourism	5
FMST 222	Religion, Feminism, and Sexual Politics	5
FMST 232	Topics in Postcolonial Studies	5
FMST 243	Feminism, Race, and the Politics of Knowledge	5
FMST 260	Black Feminist Reconstruction	5
FMST 270	Anthropology at Its Interfaces with Feminist, Postcolonial, and Decolonial STS	5

Courses in Other Departments

Courses in other departments that satisfy the DE requirement when taught by affiliated faculty include:

ANTH 231	Intimacy and Affective Labor	5
ANTH 232	Bodies, Knowledge, Practice	5
ANTH 234	Feminist Anthropology	5
ANTH 238	Advanced Topics in Cultural Anthropology	5
ANTH 243	Cultures of Capitalism	5
ANTH 249	Ecological Discourses	5
ANTH 255	Regulating Religion/Sex	5
ANTH 260	Anthropology of Freedom	5
FILM 226	Queer Theory and Global Film and Media	5
FILM 284	Film, Culture, and Modernity	5
HAVC 245	Race and Representation	5
HIS 204A	History of Gender Research Seminar	5
HIS 205	Diaspora and World History	5
HIS 215A	Topics in American History: U.S. Labor and Working Class History	5
HIS 221	Empires and New Nations in the Americas	5
HIS 227	Gender and Colonialism	5
HIS 230B	Engendering China	5
HIS 230C	Readings in 20th-Century China	5
HIS 231	Historicizing the People's Republic of China	5
HIS 243	Transnational Japan	5
HIS 244	Gender and Japanese History	5
LALS 210	Latina Feminisms: Theory and Practice	5
LALS 215	Latina Cultural Studies: Culture, Power, and Coloniality	5
LALS 240	Culture and Politics of Human Rights	5
LALS 242	Globalization, Transnationalism, and Gender in the Americas	5
LIT 230C	Feminist Theories/Historical Perspectives	5
LIT 231A	Studies in Literary and Cultural History	5
LIT 250	Theory and Methods	5
LIT 251	Topics in Cultural Studies	5
MUSC 254K	Music, Gender, and Sexuality	5
POLI 204	Bodies in History	5
PSYC 210	The Experimental Method in Social Psychology	5
PSYC 247	Special Topics in Developmental Psychology	5
PSYC 251	Feminist Theory and Social Psychology	5
PSYC 254	Psychology of Gender	5
PSYC 256	Psychology of Social Class and Economic Justice	5
PSYC 264	Transnational Feminism, Development, and Psychology	5
SOCY 240	Inequality and Identity	5
SOCY 245	Feminist Theory	5
SOCY 249	Feminisms and Cultural Politics	5
SOCY 255	Engaging Cultural Studies	5
SOCY 264	Science, Technology, and Medicine	5

Writing, Research and/or Teaching Requirements

The student must prepare a significant piece of writing in the area of feminist studies. This writing may be a master’s essay, qualifying examination essay, or a chapter of the doctoral dissertation.

[Optional Catchall]

Queer and Sexuality Studies

Scholarship pertaining to the critical study of gender and sexuality can be found across a broad range of departments and programs at UCSC. This presence is manifested in a diverse faculty, in course offerings, and in research programs. Courses with queer content can be found across a broad range of departments, programs, and colleges at UCSC.

For more specialization, programs and departments such as Feminist Studies and Literature have sufficient flexibility to allow students to design a course of study within those majors to explore these interests. For students who prefer to take a more self-directed approach, there is the option of designing an individual major.

The Lionel Cantú GLBTI Resource Center serves as a clearinghouse for queer activities on the UCSC campus. Each quarter, the center prepares a list of all course offerings with queer content. Information is available at the Lionel Cantú Queer Center website or via e-mail to queer@ucsc.edu.

You could contact the following faculty for more information (this is not an exhaustive list): Anjali Arondekar (Humanties), Carla Freccero (Literature, History of Consciousness), Irene Gustafson (Film and Digital Media), Marcia Ochoa (Theater Arts, Performance, Play and Design and Critical Race and Ethnic Studies). Additional faculty contacts: Julie Bettie (Sociology), Benjamin Carson (Music), Sheila Crane (History of Art and Visual Culture), Jody Greene (Literature,), Herbert Lee (Applied Mathematics and Statistics), Peter Limbrick (Film and Digital Media), Catherine S. Ramírez (Latin American and Latino Studies), Jenny Reardon (Sociology), Daniel Selden (Literature), Elizabeth Stephens (Art).

Please contact the feminist studies program at fmstad@ucsc.edu for information about course offerings and resources.

History

201 Humanities
(831) 459-2982
https://history.ucsc.edu/

For Ancient Studies

https://classicalstudies.ucsc.edu/

For East Asian Studies

https://eastasianstudies.ucsc.edu/

For Jewish Studies

https://jewishstudies.ucsc.edu

PROGRAMS OFFERED

History B.A. (p. 170)

History Minor (p. 179)

Ancient Studies B.A. (formerly Classical Studies) (p. 179)

Ancient Studies Minor (p. 184)

East Asian Studies Minor (p. 185)

Jewish Studies B.A. (p. 187)

Jewish Studies Minor (p. 192)

History M.A. (p. 193)

History Ph.D. (p. 194)

UNDERGRADUATE PROGRAM

History is the stories humans tell about the past. For professional historians, those stories are based on evidence that is carefully collected and rigorously interpreted. Both the evidence and interpretation are passionately debated in the classroom, in articles and books, and in the public sphere. This makes history a dynamic enterprise. Students of history ask new questions, find new evidence, incorporate more voices, and reconsider old assumptions. Studying history enriches our understanding of the world by deepening our knowledge of the past and by pushing us to ask new questions that provide insight into our own time. Our History Department is committed to helping students learn to think historically, which entails asking not just what happened, but why it happened the way it did.

Thinking historically cultivates the empathy and imagination necessary to understand multiple perspectives on events both past and present.

It is impossible to understand the world we inhabit, including its complex global conflicts, climatic transformations, and fundamental shifts in understandings of individual identity, without history. Yet, as much as history can illuminate the present, its study also requires recognizing that often, "the past is a foreign country," where words, ideas, and even bodies themselves operate on radically unfamiliar terms. Our department's strengths in transnational, gender, environmental, cultural, and social history, including critical race and ethnic studies, enable students to engage in a variety of approaches to studying history.

This training equips students to be engaged citizens and prepares them for a wide range of careers. History majors develop skills in critical reading, effective research, analytical thinking, and clear, persuasive communication. Such skills are the essential foundation for jobs directly connected with the field, like teaching, research, and working in public history venues such as museums, archives, and libraries. These skills are also invaluable to careers in law, business, government, foreign service, management, publishing, journalism, social media, and many other areas. The ability to identify and access salient information, evaluate it critically, and use it to engage in constructive debate is essential for navigating a complex, dynamic, and global world.

Greek

The History Department offers instruction in elementary ancient Greek. It consists of a two-course sequence, GREE 1 and GREE 2, that begins in the fall quarter only. Students interested in Greek literature should see the course listings under Literature. Those interested in ancient studies should see the program description for ancient studies (p. 179).

Campus Language Laboratories and Placement Exams

No placement examination is required for entry into GREE 1. Contact the History Department for more information about these topics.

Latin

The History Department offers instruction in elementary Latin. It consists of a two-course sequence, LATN 1 and LATN 2, that begins in the fall quarter only. Students interested in Latin literature should see the course listings under Literature. Those interested in ancient studies should see the program description for ancient studies (p. 179).

Campus Language Laboratories and Placement Exams

No placement exam is required for entry into LATN 1. Contact the History Department for more information about these topics.

GRADUATE PROGRAM

The Ph.D. program in history at UCSC emphasizes an interdisciplinary and cross-cultural approach to historical studies. The History Department offers a rigorous program of instruction and independent work that trains students in the techniques of original historical research and equips them to teach university-level courses in history. The department only admits those highly motivated students who are most qualified to pursue advanced studies in history. The department also only admits those applicants who can best benefit from the specific strengths of our faculty. Just as the work of most professional historians centers around research and teaching, training in these areas constitutes the two essential poles of the graduate program in history.

HISTORY B.A.

Information and Policies

Introduction

History is about the past, but it is also about understanding the world we live in today. Our faculty seek to understand and help you understand how the challenges that confront us today like economic inequality, environmental degradation, and racism developed and changed over time. We also explore the patterns of social movements and political transformation that help us understand how people change the world.

Students often think of studying history as a matter of memorizing names and dates. While having a command of basic facts is important, college-level study of history shifts the focus to learning how to ask illuminating questions about the past. History majors at the University of California, Santa Cruz, cultivate a broad understanding of human history across time and space and develop deep knowledge of a particular region of the world. At the same time, they learn how to ask transformative questions, develop their ability to answer them through effective research, and convey their ideas clearly and persuasively through strong communication skills.

Students and their parents alike often express the sentiment that history is fascinating, but sometimes raise questions about its practicality as a college major. However, substantial research demonstrates that history majors thrive in their careers, and employers often express a need for the skills that studying history instills. A history major isn't just fascinating; it's a path to success. History majors develop skills in critical reading, effective research, analytical thinking, and clear, persuasive communication. Such skills are the essential foundation for jobs directly connected with the field, like teaching, research, and working in public history venues such as museums, archives, and libraries. These skills are also invaluable to careers in law, business, government, foreign service, management, publishing, journalism, social media, and many other areas. The ability to identify and access salient information, evaluate it critically, and use it to engage in constructive debate is essential for navigating a complex, dynamic, and global world. Visit our website for selected reports on the value of the history major.

Program Learning Outcomes

Students who complete the history major graduate with the following:

History

- Understanding of a basic narrative of historical events in a specific region of the world.

Critical Reading

- The ability to distinguish primary and secondary sources.
- The ability to evaluate historical ideas, arguments, and points of view.
- The ability to evaluate competing interpretations and multiple narratives of the past.

Research and Evidence

- The ability to gather and assess primary historical evidence.
- The ability to compile a bibliography.

Communication

- The ability to present clear and compelling arguments, based on critical analysis of diverse historical sources, and effectively communicate your interpretations in written essays and/or other media.

- The ability to develop a research question and complete a well-supported piece of historical writing about it.

Scope and Thematics

- Through completion of a combination of courses, become familiar with the history of:
    - The pre-modern world
    - The modern world
    - Transnational or transcultural circulations of ideas, people, and material goods
    - One or more national histories
    - Regional comparisons

Academic Advising for the Program

Academic advising is an important part of your undergraduate education. The History Department undergraduate program coordinator can help you clarify your educational goals, select classes that complement your academic interests and develop an individualized plan of study. The undergraduate program coordinator can also help you identify faculty mentors and enrichment opportunities within and related to your major.

Advising is held in Humanities 1, room 201. Undergraduate advising email contact: historyundergrad@ucsc.edu

Transfer students are encouraged to additionally consult the "Transfer Information and Policy" information included below.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required. Four-year students considering the history major are encouraged to enroll in at least one lower-division history course during their first year. These offer a broad sweep of a historical period and give students a sense of how studying history in college differs from studying it in high school. Students are encouraged but not required to take three lower-division history courses, one from each of the three regions of concentration, during the first year. Taking courses from each of the three regions of concentration during the first year helps students decide on a concentration as their area of focus and clarify their educational goals (see the Regions of Concentration section below for more information).

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz.

Transfer students are advised to complete the Intersegmental General Education Transfer Curriculum (IGETC) or UC Santa Cruz general education requirements in preparation for transfer to UCSC. Transfer course agreements and articulation between the University of California and California community colleges can be found on the ASSIST.ORG website. Prospective transfer students may also wish to consult the UC Transfer Pathway for History.

Transfer students are enthusiastically encouraged to study history at UC Santa Cruz. Transfer students can finish all of the UC Santa Cruz history major requirements within two years, even if they haven't completed any preparatory history coursework prior to transferring. For additional information for transfer history majors please visit this transfer student information page.

Getting Started in the Major: Transfer Students

Transfer students are expected to complete HIS 100 within the first two quarters after transferring to UC Santa Cruz.

Transfer students are strongly encouraged to meet with the History Department undergraduate program coordinator before the end of their first quarter at UCSC. Transfer students are encouraged to declare their major during Slug Orientation!

Major Qualification Policy and Declaration Process

Major Qualification

The history major has no qualification. All students, including transfers, are eligible to pursue this major, even if they did not list history on their UC Santa Cruz application. It is advisable to complete at least one lower-division history course (1–99) before declaring, but it is not required. Students who plan on majoring in history are encouraged to declare as soon as possible (see information about declaring below). Students should submit a petition to declare before or by their declaration deadline quarter.

How to Declare a Major

To declare the history major students should create a history major academic plan and meet with the History Department undergraduate program coordinator. For planning documents and detailed major declaration instructions visit the declaring the history major webpage.

Letter Grade Policy

History majors may take up to two of their history major courses Pass/No Pass, with the exception of the Senior Comprehensive Requirement, provided students are in compliance with the university's Pass/No Pass regulation.

Optional Catchall

History Senior Check-in

In addition to all coursework, history majors must complete a senior check-in during the first quarter of their senior year. Students who do not submit their senior check-in for review may have their graduation date delayed. Please consult the department website for a more detailed description.

Course Substitution Policy

History majors must complete a minimum of five regularly scheduled history courses plus the comprehensive requirement taught by members of the UC Santa Cruz history faculty. Intensive history majors must complete a minimum of eight. Subject to the limits indicated in parentheses, courses from the following categories may also be applied to the history major:

- Courses completed at a California community college or other domestic university (limit of three)
- Education Abroad Program (limit of three)
- UCDC (limit of two)
- UC in Sacramento (limit of two)
- Interdisciplinary Coursework/upper-division courses taken in another UC Santa Cruz department (limit of one)
- Independent and field studies (limit of one)

For information and instructions on how to petition courses from the above categories, visit the History Department webpage on course substitutions.

Study Abroad

All history students are encouraged to consider studying abroad. UC Education Abroad Program (EAP) offers students an opportunity to study abroad in more than 40 countries with more than 150 program options. A variety of academic programs are available: language and culture programs facilitate language acquisition; "focus" programs allow students to concentrate on a plan of study applicable to their major. More than half of all EAP programs are in English, and there are traditional semester and yearlong program options. Subject to the limitations described above under "Course Substitution Policy," up to three courses in history completed through EAP may be applied toward major requirements. Consult the History Department website and speak with the undergraduate program coordinator for further details.

Honors

Honors are awarded to the top 10-15 percent of graduating students per quarter; highest honors may be granted to approximately the top five percent. Honors are determined by the Undergraduate Education Committee in consultation with the History Department faculty. The department considers each student's GPA in the history major, supplemented when appropriate by an assessment of work in the senior capstone course or honors thesis preparation. The history major GPA is calculated based upon all history courses attempted at UC Santa Cruz; grades from courses taken outside of the department will not be calculated into a student's history major GPA, even in cases when the student is allowed to use said courses toward their history major degree requirements. Summer, fall, and winter graduates will be reviewed at the end of each of their respective quarters. Spring graduates will be reviewed using their earned history major GPAs as of the spring announcement of candidacy deadline.

Interdisciplinary Coursework

The History Department encourages its majors to take upper-division courses in disciplines related to history, including sociology, literature, community studies, politics, Latin American and Latino studies, and others. Students may petition to substitute one such appropriate upper-division course for a history elective. At least 50 percent of the readings and written work in these courses must be historical in nature. Consult the History Department website and speak with the undergraduate program coordinator for further details.

These courses are subject to the limitations described above under the "Course Substitution Policy" section.

Regions of Concentration

The History Department curriculum and major is broadly organized along three regions of concentration. Each history major identifies one of three geographic regions of concentration as their primary area of focus:

The Americas and Africa

The Americas and Africa caucus invites students to explore the complex history of intercultural encounter, exchange, and conflict that connects South, Central, and North America and the diverse nations of Africa. Courses in this concentration locate these regions within larger global movements of people, goods, and ideas. Major topical themes in the concentration include Indigenous history, African diaspora, immigration, gender, labor, religion, social movements, politics, and critical history of race. Courses in this concentration extend from the colonial era to the modern day and reflect interdisciplinary approaches to historical practice.

Asia and the Pacific

The Asia and Pacific concentration—which encompasses East, South, and Central Asia along with the Pacific and the Indian Ocean—offers students the opportunity to explore gender, class, race, and ethnicity through the examination of premodern and modern empires and nations, their borders and peripheries, and their flows of people, materials, and ideas. Major topics of focus include the early modern and modern eras, Western and Japanese imperialisms, labor and other major social movements, socialist transformations, and cultural, intellectual, and science history.

Europe and the Mediterranean World

The Europe and the Mediterranean World concentration offers students the opportunity to explore the histories of Europe, North Africa, and the Middle East, and connections between these places and the larger world. We look at the continual flow of ideas, people, and material goods across this region, from the earliest states in the ancient world until today. We examine how empires, colonialism, religion, culture, the environment, and social and economic forces, including the development of capitalism and of the nation-state, shaped

these interactions in profound ways. Collectively, we trace more than 5,000 years of intersecting histories, examining linkages and conflicts forged by geography, trade, war, migration, imperial aspirations, colonial violence, religious and ethnic minorities, and struggles for liberation.

The caucus includes intensive study of the histories of Europe, Russia, North Africa and the Middle East, as well as imperial, colonial, and transnational histories that trace the changing relations among these places. Major periods and areas of focus include the ancient and medieval worlds, oceanic empires in the early modern period (1450-1800 A.D.), modern imperialism and colonialism, and decolonization and postcolonial states in the 20th century.

Optional Catchall

General History Major

Course Requirements

A minimum of 12 unique courses are required for the major, of which no more than four may be lower-division. At least eight of the 12 courses must be 5-credit upper-division courses, including the comprehensive requirement.

Distribution requirements. Among the 12 courses required for the major, at least three must meet chronological distribution requirements. One must be set before 600 C.E., and two must be set in periods prior to the year 1800 C.E.

Students are encouraged to reference the History Course List to determine how history courses may apply to the different geographic regions of concentration and the chronological distribution requirements. Students can also consult the department's website for a sortable version of this information.

Region of Concentration (5 Courses, Plus 1 Comprehensive Requirement)

Each history major identifies one of three geographic regions of concentration as their primary area of focus:

- The Americas and Africa
- Asia and the Pacific
- Europe and the Mediterranean World

Lower-Division Survey (1 Course)

At least one lower-division survey course within their chosen region of concentration. The survey course is one of the four allowed lower-divisions.

Americas/Africa

HIS 10A	United States History to 1877	5
HIS 10B	United States History, 1877 to 1977	5
HIS 11A	Latin America: Colonial Period	5
HIS 11B	Latin America: National Period	5
HIS 12	Introduction to Latino American History	5

Asia/Pacific

HIS 40A	Early Modern East Asia	5
HIS 40B	The Making of Modern East Asia	5
HIS 44	Modern South Asia, 1500 to Present	5

Europe/Mediterranean World

HIS 41	The Making of the Modern Middle East	5
HIS 58	From Pirates to Refugees: The History of the Modern Mediterranean	5
HIS 65B	Plagues, Peasants, and Pirates: Late Medieval Europe, 1000-1500	5
HIS 70A	Modern European History, 1500-1815	5
HIS 70B	Modern European History, 1815-present	5
HIS 74	Introduction to Jewish History and Cultures	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 74B	Introduction to Middle Eastern and North African Jewish History, 1500-2000	5

Transfer coursework may or may not apply toward the survey course requirement; consult with the history undergraduate program coordinator.

Additional Concentration Courses (4 Courses)

Four additional courses in the region of concentration, at least three of which must be 5-credit upper-division courses.

Comprehensive Requirement

One comprehensive requirement: All students must complete either a research seminar (HIS 190 series, HIS 194 series, or HIS 196 series), or a senior thesis (HIS 195A and HIS 195B) in their area of concentration. Detailed information on the comprehensive requirement can be found below.

Breadth Requirements (4 Courses)

Two courses from each of the remaining two regions of concentration.

At least one of the four breadth courses must be a 5-credit upper-division course. If two lower-division courses (including the survey) are applied to the region of concentration, then at least two of the four breadth courses must be 5-credit upper-division courses.

Historical Skills and Methods (1 Course)

Students who enter UC Santa Cruz as frosh are expected to complete HIS 100 by the end of their second year. Transfer students are expected to complete HIS 100 no later than their second term at UC Santa Cruz. HIS 100 is a prerequisite for all history research seminars (HIS 190 series, HIS 194 series, and HIS 196 series).

HIS 100	Historical Skills and Methods	5

Elective (1 Course)

One 5-credit upper-division history course from any of the three regions of concentration.

Language Recommendation

Proficiency in a foreign language is strongly recommended for all history students and is essential for those who plan to pursue graduate studies in history. Many Ph.D. programs in history require applicants to read one or two languages besides English. The University of California Education Abroad Program (EAP) is appropriate for history majors as a means to both enhance language skills and take history courses elsewhere.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. History students fulfill the upper-division disciplinary communication (DC) requirement by completing a comprehensive requirement in their region of concentration. Students may complete a research seminar (one quarter: HIS 190 series, HIS 194 series, or HIS 196 series) or a thesis (two quarters: courses HIS 195A and HIS 195B). Please consult the department website for a more detailed description of these courses and refer to the updated DC information in the disciplinary communication chart.

Comprehensive Requirement

History majors may satisfy the UC Santa Cruz comprehensive requirement in one of two ways:

Research Seminar (one quarter: 190 series, 194 series, or 196 series)

In courses designated as History 190, 194, or 196, students participate in a small discussion-based senior research seminar, which provides an opportunity to acquire experience in practical research skills while developing a research project culminating in the writing of a substantial research paper. Students must complete HIS 100 before taking a research seminar. Seminars require submission of written work totaling approximately 25 pages and satisfy the disciplinary communication (DC) general education requirement. Seminars must be taken in the student's chosen area of concentration to qualify as their comprehensive requirement.

Thesis (Two Quarters: HIS 195A, Thesis Research and HIS 195B, Thesis Writing)

Before undertaking an independent thesis, students must complete one research seminar in their region of concentration. In extraordinary circumstances, students may petition the History Department for an exception to this requirement. The successful completion of both HIS 195A and HIS 195B will satisfy the comprehensive and disciplinary communication (DC) requirements for students who are granted an exception to the seminar requirement.

Students who want to write a thesis need to begin planning well in advance. Students must first find a faculty thesis adviser and a second reader to sponsor and advise on the thesis project. Once a thesis adviser and a second reader have been secured and a topic defined, students must submit a thesis proposal to the department for consideration. Proposals are due at least one quarter before the start of the research quarter. Completed theses must be at least 40 pages in length and are due on the last day of the writing quarter.

Please consult the department website for more information about the thesis option.

Research Pathways

The history program encourages its students to carve out their own research pathways. Pathways can be straight or meandering, cover one area exhaustively or take a student across broad stretches. Even though you are required to select one of three geographic regions—the Americas and Africa, Asia and the Pacific, Europe and the Mediterranean World—as your primary area of focus, we encourage you to also think about your degree progress along thematic lines: religion, social movements, science and environment, and gender, to name a few. Faculty and staff advisers will assist students who choose this option with their course selection.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Each of these planners indicate only one of the many possibly pathways through the major. Individual student plans will vary. For assistance developing your history major plan, meet with the history undergraduate program coordinator.

Sample Four Year Plan

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)

1st (frosh)	Lower-division survey, concentration	Lower-division breadth area No. 1 WRIT 1/WRIT 1E (if needed)	Lower-division breadth area No. 2	
2nd (soph)	Lower-division concentration	HIS 100 WRIT 2*	Upper-division breadth area No. 1	
3rd (junior)	Upper-division concentration	Upper-division breadth area No. 2	Upper-division concentration	
4th (senior)	Upper-division concentration	Exit seminar, concentration	Upper-division elective (any)	

Of the 12 courses listed, one must be set before 600 C.E., and two more must be set in periods prior to the year 1800 C.E.

In addition to the courses above, students will need to take courses that satisfy the Math and Formal Reasoning (MF) and Composition (C) general education requirements, along with any other general education requirements that are not satisfied by the classes they have chosen for the major. Most lower-division history courses satisfy the Cross-Cultural Analysis (CC) or Ethnicity and Race (ER) general education requirements. HIS 100 satisfies the Textual Analysis and Interpretation (TA) general education requirement.

*WRIT 2 should be taken in or before spring quarter of the second year.

Sample Three Year Plan

This plan is appropriate for students admitted to UC Santa Cruz as freshman who are considering the Three Year Accelerated Pathways program.

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st Year	Lower-division survey, concentration	Lower-division breadth area No. 1 WRIT 1/WRIT 1E (if needed)	Lower-division breadth area No. 2	
2nd Year	Lower-division concentration WRIT 2*	HIS 100 Upper-division concentration	Upper-division breadth area No. 1 Upper-division concentration	
3rd Year	Upper-division concentration	Exit seminar, concentration	Upper-division breadth area No. 2 Upper-division elective (any)	

*WRIT 2 should be taken in or before spring quarter of the second year.

Of the 12 courses listed, one must be set before 600 C.E., and two more must be set in periods prior to the year 1800 C.E.

Sample Transfer Plan

	Fall	Winter	Spring	Summer
Entering				KRSG 1T

				Summer Edge (optional)
Pre-Transfer	Lower-division survey, concentration	Lower-division breadth area No. 1	Lower-division breadth area No. 2	
1st (junior)	HIS 100	Lower-division concentration	Upper-division concentration	
	Upper-division concentration	Upper-division breadth area No. 1	Upper-division breadth area No. 2	
2nd (senior)	Upper-division concentration	Exit seminar, concentration	Upper-division elective (any)	

Of the 12 courses listed, one must be set before 600 C.E., and two more must be set in periods prior to the year 1800 C.E.

This planner assumes that a student has completed most of their general education requirements before coming to UC Santa Cruz. Students from California community colleges are advised to complete the Intersegmental General Education Transfer Curriculum (IGETC) in preparation for transfer to UC Santa Cruz.

Intensive History Major

The intensive major track offers history majors a pathway to enrich their study of history, refine their skills in writing and research, and receive a designation on their transcripts that signals their ambition and accomplishment to potential employers and graduate schools. All history majors are eligible to declare the intensive track, including junior transfers. If a student attempts but does not complete the intensive track, they may still graduate with a standard history degree, provided the appropriate major coursework has been completed.

Course Requirements

A minimum of 15 unique courses are required for the intensive history major, of which no more than four may be lower-division. At least 11 of the 15 courses must be 5-credit upper-division courses, including the comprehensive requirement. The intensive major also requires one year or equivalent of language study (see below).

Distribution requirements. Among the 15 courses required for the intensive major, at least three must meet chronological distribution requirements. One must be set before 600 C.E., and two must be set in periods prior to the year 1800 C.E.

Students are encouraged to reference the History Course List to determine how history courses may apply to the different geographic regions of concentration and the chronological distribution requirements. Students can also consult the department's website for a sortable version of this information.

Region of Concentration (5 Courses, Plus 1 Comprehensive Requirement)

Each history major identifies one of three geographic regions of concentration as their primary area of focus:

- The Americas and Africa
- Asia and the Pacific
- Europe and the Mediterranean World

Lower-Division Survey (1 Course)

At least one lower-division survey course within their chosen region of concentration. The survey course is one of the four allowed lower-divisions.

Americas Africa

HIS 10A	United States History to 1877	5
HIS 10B	United States History, 1877 to 1977	5
HIS 11A	Latin America: Colonial Period	5
HIS 11B	Latin America: National Period	5
HIS 12	Introduction to Latino American History	5

Asia Pacific

HIS 40A	Early Modern East Asia	5
HIS 40B	The Making of Modern East Asia	5
HIS 44	Modern South Asia, 1500 to Present	5

Europe Mediterranean

HIS 41	The Making of the Modern Middle East	5
HIS 58	From Pirates to Refugees: The History of the Modern Mediterranean	5

HIS 65B	Plagues, Peasants, and Pirates: Late Medieval Europe, 1000-1500	5
HIS 70A	Modern European History, 1500-1815	5
HIS 70B	Modern European History, 1815-present	5
HIS 74	Introduction to Jewish History and Cultures	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 74B	Introduction to Middle Eastern and North African Jewish History, 1500-2000	5

Transfer coursework may or may not apply toward the survey course requirement; consult the history undergraduate program coordinator.

Additional Concentration Courses (4 Courses)

Four additional courses in the region of concentration, at least three of which must be 5-credit upper-division courses.

Comprehensive Requirement

One comprehensive requirement: All students must complete either a research seminar (HIS 190 series, HIS 194 series, or HIS 196 series), or a senior thesis (HIS 195A and HIS 195B) in their area of concentration. Detailed information on the comprehensive requirement can be found below.

Breadth Requirements (4 Courses)

Two courses from each of the remaining two regions of concentration.

At least one of the four breadth courses must be a 5-credit upper-division course. If two lower-division courses (including the survey) are applied to the region of concentration, then at least two of the four breadth courses must be 5-credit upper-division courses.

Historical Skills and Methods (1 Course)

Students who enter UC Santa Cruz as frosh are expected to complete HIS 100 by the end of their second year. Transfer students are expected to complete HIS 100 no later than their second term at UC Santa Cruz. HIS 100 is a prerequisite for all history research seminars (HIS 190 series, HIS 194 series, and HIS 196 series).

HIS 100	Historical Skills and Methods	5

Electives (4 Courses)

Four 5-credit upper-division history courses from any of the three regions of concentration.

Advanced Research Requirement

Three of the 15 courses required for the intensive major must require advanced historical research. Advanced research seminars (HIS 190 series, HIS 194 series, or HIS 196 series), the senior thesis (HIS 195A and HIS 195B) and/or independent studies (HIS 199) conducted under faculty supervisor may satisfy this requirement. At least one seminar or senior thesis must be completed in the student's chosen region of concentration to ensure the UC Santa Cruz comprehensive and disciplinary communication (DC) requirements are satisfied.

Language Requirement

Intensive majors must pursue training in a second language by completing three quarters of college-level language study (or equivalent) in a single, non-English modern or ancient language (e.g. SPAN 1–SPAN 3, ITAL 2–ITAL 4, etc.). Students with prior training in a second language are advised to complete a language placement exam to determine the appropriate level of language course instruction. With prior approval by the undergraduate director, the language training requirement may be satisfied by at least one quarter study abroad with foreign language instruction. Students do not necessarily need to pursue a language related to their region of concentration, but are encouraged to do so when possible. After consultation with the undergraduate director, students can petition for alternative ways by which to satisfy this requirement.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. History students fulfill the upper-division disciplinary communication (DC) requirement by completing a comprehensive requirement in their region of concentration. Students may complete a research seminar (one quarter: HIS 190 series, HIS 194 series, or HIS 196 series) or a thesis (two quarters: courses HIS 195A and HIS 195B). Please consult the department website for a more detailed description of these courses and refer to the updated DC information in the disciplinary communication chart.

Comprehensive Requirement

History majors may satisfy the UC Santa Cruz comprehensive requirement in one of two ways:

Research Seminar (one quarter: 190 series, 194 series, or 196 series)

In courses designated as History 190, 194, or 196, students participate in a small discussion-based Senior Research Seminar, which provides an opportunity to acquire experience in practical research skills while developing a research project culminating in the writing of a substantial research paper. Students must complete HIS 100 before taking a research seminar. Seminars require submission of written work totaling approximately 25 pages and satisfy the disciplinary communication (DC) general education requirement. Seminars must be taken in the student's chosen area of concentration to qualify as their comprehensive requirement.

Thesis (Two Quarters: HIS 195A, Thesis Research and HIS 195B, Thesis Writing)

Before undertaking an independent thesis students must complete one research seminar in their region of concentration. In extraordinary circumstances, students may petition the History Department for an exception to this requirement. The successful completion of both HIS 195A and HIS 195B will satisfy the comprehensive and disciplinary communication (DC) requirements for students who are granted an exception to the seminar requirement.

Students who want to write a thesis need to begin planning well in advance. Students must find a faculty thesis adviser and a second reader to sponsor and advise on the thesis project. Once a thesis adviser and a second reader have been secured and a topic defined, students must submit a thesis proposal to the department for consideration. Proposals are due at least one quarter before the start of the research quarter. Completed theses must be at least 40 pages in length and are due on the last day of the writing quarter.

Please consult the department website for more information about the thesis option.

Research Pathways

The history program encourages its students to carve out their own research pathways. Pathways can be straight or meandering, cover one area exhaustively or take a student across broad stretches. Even though you are required to select one of three geographic regions—the Americas and Africa, Asia and the Pacific, Europe and the Mediterranean World—as your primary area of focus, we encourage you to also think about your degree progress along thematic lines: religion, social movements, science and environment, and gender, to name a few. Faculty and staff advisers will assist students who choose this option with their course selection.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Each of these planners indicates only one of the many possibly pathways through the major. Individual student plans will vary. For assistance developing your history major plan, meet with the undergraduate program coordinator.

Sample Intensive Major Four-Year Plan

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	Lower-division survey, concentration Language 1 College 1	Lower-division breadth area No. 1 Language 2 WRIT 1/WRIT 1E (if needed)	Lower-division breadth area No. 2 Language 3	
2nd (soph)	Lower-division concentration WRIT 2*	HIS 100	Upper-division breadth area No. 1	
3rd (junior)	Upper-division concentration	Upper-division breadth area No. 2 Upper-division concentration	Upper-division concentration	
4th (senior)	Exit seminar, concentration	Research course Upper-division elective (any)	Research course Upper-division elective (any)	

Of the 12 courses listed, one must be set before 600 C.E., and two more must be set in periods prior to the year 1800 C.E.

In addition to the courses above, students will need to take courses that satisfy the Math and Formal Reasoning (MF) and Composition (C) general education requirements, along with any other general education requirements that are not satisfied by the classes they have chosen for the major. Most lower-division history courses satisfy the Cross-Cultural Analysis (CC) or Ethnicity and Race (ER) general education requirements. HIS 100 satisfies the Textual Analysis and Interpretation (TA) general education requirement.

*WRIT 2 should be taken in or before spring quarter of the second year.

Sample Intensive Major Transfer Plan

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
Pre-Transfer	Lower-division concentration	Lower-division breadth area No. 1	Lower-division breadth area No. 2	
1st (junior)	HIS 100	Lower-division concentration	Upper-division concentration	
	Upper-division concentration	Upper-division breadth area No. 1	Upper-division breadth area No. 2	
	Language 1	Language 2	Language 3	
2nd (senior)	Upper-division concentration	Research course	Research course	
	Exit seminar, concentration	Upper-division elective (any)	Upper-division elective (any)	

Of the 12 courses listed, one must be set before 600 C.E., and two more must be set in periods prior to the year 1800 C.E.

This planner assumes that a student has completed most of their general education requirements before coming to UC Santa Cruz. Students from California community colleges are advised to complete the Intersegmental General Education Transfer Curriculum (IGETC) in preparation for transfer to UC Santa Cruz.

HISTORY MINOR

Students whose major area of study is not history may nonetheless find that a minor in history makes an invaluable contribution to their studies.

Course Requirements

Eight history courses are required, five of which must be 5-credit upper-division courses. There are no distribution requirements, and there is no comprehensive requirement for the minor. Students are allowed to complete up to two of their minor courses for pass/no pass grades.

Lower-Division Courses

Three 5-credit lower-division (HIS 1–HIS 99) and/or 5-credit upper-division (HIS 100–HIS 199) history courses.

Upper-Division Courses

Five 5-credit upper-division (HIS 100–HIS 199) history courses.

ANCIENT STUDIES B.A.

Information and Policies

Introduction

Ancient studies at the University of California, Santa Cruz, combines features of traditional programs, such as solid grounding in the ancient languages, with innovative, interdisciplinary approaches. While the core of the program is focused on courses in the ancient Greek and Latin languages, the program also encompasses courses in history, the history of art and visual culture, literature, philosophy, politics, and theater arts, from the Bronze Age through the Early Christian era. Recent offerings have included everything from introductory surveys in ancient mythology and Greek and Roman history, to advanced courses in women and gender in Ancient Egypt and modern ancient drama. Students are encouraged to study the literary and material artifacts of Greece and Rome within the larger context of ancient Mediterranean and Near Eastern cultures.

The ancient studies program provides the nurturing atmosphere and personal attention associated with a small liberal arts college, in the context of a large university. We offer students an opportunity to work in small classes with a distinguished and dedicated teaching faculty and excellent fellow students. Public lectures, guest speakers, and frequent social events bring students and faculty together and strengthen the program.

Ancient studies students have the opportunity to give close, sustained attention to an area of study, from an almost unlimited variety of perspectives. For example, students with an interest in contemporary philosophy and political theory might want to concentrate in Greek, taking upper-division courses in Greek, history, philosophy, and politics. Students with an interest in European literature might want to concentrate in Latin, taking upper-division courses in Latin, history, and literature in translation. Students planning on pursuing a classics degree at the Ph.D. level should concentrate most of their coursework in the Greek and Latin languages themselves.

Ancient studies is excellent preparation for further study in a wide variety of graduate and professional programs including history, art history, comparative literature, English, philosophy, law, education, and publishing.

Program Learning Outcomes

Students who complete the ancient studies major graduate with the following knowledge and skills:

Language

- Competence in one or more ancient languages. At present offerings include Greek and Latin (full curriculum offered yearly). Majors have also taken Biblical Hebrew and Hieroglyphics (offered less often).

Interdisciplinary Exposure

- Familiarity with one or more of the disciplinary approaches represented by the faculty in the program, as well as other relevant approaches in the division and the university. Courses at present credited for the major include (but are not limited to) offerings in: history, literature, philosophy, archaeology, art history, and theater arts. For the skills and outcomes fostered by these disciplines see the reports of the relevant departments.

Collaboration

- Provide constructive and effective critiques of each other’s work.
- Complete a shared research project.

Research, Critical Reading, Writing

- Gather and engage critically with primary sources.
- Evaluate competing interpretations and multiple narratives.
- Compile a bibliography.
- Present clear and compelling arguments, based on critical analysis of diverse historical sources, and effectively communicate your interpretations in written essays and/or other media.

Scope and Thematics

- Through completion of a combination of courses, become familiar with the ancient cultures of:
    - the western Mediterranean
    - the eastern Mediterranean
    - the Near East
- Comparative study: whether of diverse ancient cultures or of ancient and later cultures
- Reception: ancient culture as understood by later traditions

Academic Advising for the Program

The ancient studies program is administered by the Department of History. Students in this program receive advising support from the history undergraduate program coordinator.

Transfer students are encouraged to additionally consult the "Transfer Information and Policy" information included below.

Getting Started in the Major: Frosh

This is a moderately course-intensive and/or sequential program, and students who intend to pursue ancient studies should begin taking classes for the major in their first or second year at UC Santa Cruz.

GREE 1 and LATN 1 are only offered in the fall quarter. Students seeking their degree in four years should complete the introductory sequence in elementary ancient Greek or Latin language no later than their second year.

Students with prior knowledge of ancient Greek or Latin are advised to consult with the ancient studies faculty to determine if they have satisfied any of the elementary language course requirements.

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz.

Transfer students from California Community Colleges are encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or UC Santa Cruz general education requirements in preparation for transfer to UC Santa Cruz.

Some background in history and in literary analysis and interpretation is desirable, but not essential. Since this is an interdisciplinary major, preparatory work in art history, history, literature, philosophy, or politics, depending on the student's interests, may also be useful.

Getting Started in the Major: Transfer Students

Transfer students entering at the junior level can readily complete the ancient studies major within two years, provided that they complete GREE 1 or LATN 1 during their first quarter of enrollment at UC Santa Cruz. These courses are only offered in the fall quarter. Transfer applicants seeking to enter in winter quarter will be screened by the program to confirm prior knowledge of ancient Greek or Latin. Please contact the ancient studies director at clstdirector@ucsc.edu to schedule this screening.

Transfer students are strongly encouraged to meet with the history undergraduate program coordinator before their first quarter of enrollment at UCSC.

Students with prior knowledge of ancient Greek or Latin are advised to consult with the ancient studies faculty to determine if they have satisfied any of the elementary language course requirements.

GREE 1	Elementary Ancient Greek	5
LATN 1	Elementary Latin	5

Major Qualification Policy and Declaration Process

Major Qualification

Ancient studies has no major qualification. Students should submit a petition to declare before or by their declaration deadline quarter.

While ancient studies does not have an official qualification policy, it should be noted that the major requires the successful completion of upper-division coursework in ancient Greek and/or Latin language literature. Students who are unable to successfully complete the introductory sequence in elementary ancient Greek or Latin language (or equivalent) will not be able to advance to the upper-division coursework required for this major.

All students, including transfers, are eligible to pursue this major, even if they did not list ancient studies on their UC Santa Cruz application.

Other Programs That May Be of Interest

Since ancient studies is an interdisciplinary field of study, many of the courses in this major are offered by other UC Santa Cruz departments. Students with an interest in the ancient world who would prefer to take courses in English are encouraged to consider the following majors and programs: history, history of art and visual culture, literature, philosophy, and politics.

How to Declare a Major

Students are permitted to declare the ancient studies major at any time but encouraged to do so only after they have successfully completed the lower-division sequence in elementary ancient Greek or Latin language (or equivalent):

1. Fill out a Ancient Studies Major Planning Worksheet. Include ancient studies courses you've completed, are currently taking, and plan on taking in the future.
2. Meet with the ancient studies academic advising coordinator to review and discuss your proposed plan of study. Obtain their signature on your worksheet.
3. Submit your approved Ancient Studies Major Planning Worksheet to the history undergraduate program coordinator for processing.

Letter Grade Policy

Students are allowed to complete up to two of their ancient studies major requirements for Pass/No Pass.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Study Abroad

We actively encourage our students to expand their horizons in interdisciplinary and international settings by taking advantage of the University of California Education Abroad Program (EAP). A quarter or year abroad may be seamlessly integrated into any ancient studies student's academic plan; up to three of the major or minor elective requirements may be completed abroad.

Honors

All students who announce candidacy during the academic year are reviewed for honors or highest honors in the major. The ancient studies faculty advisers determine honors based upon courses applied toward the ancient studies major. Performance in courses taken elsewhere and being transferred toward the major will be considered when applicable. The minimum standard applied is excellence in most courses for honors, and excellence in all courses for highest honors. Summer, fall, and winter graduates will be reviewed at the end of each of their respective quarters. Spring graduates will be reviewed as of the spring announcement of candidacy deadline.

[Optional Catchall]

Requirements and Planners

Course Requirements

The ancient studies major requires three lower-division courses (including two elementary language courses), nine 5-credit upper-division courses, and an additional two-credit upper-division seminar, CLST 197F, which is taken in the same quarter that the senior comprehensive examination is given (see Comprehensive Requirement section below for more information). These must include the following:

Lower-Division Courses

The lower-division sequence in elementary ancient Greek or Latin language (or equivalent):

	Either these courses	
GREE 1	Elementary Ancient Greek	5
GREE 2	Elementary Ancient Greek	5
	or these courses	
LATN 1	Elementary Latin	5
LATN 2	Elementary Latin	5

Ancient Studies Survey

One lower-division survey of ancient history or literature in translation:

HIS 5B	Cult, Church, Empire: History of Early Christianity, 0-431 C.E.	5

HIS 5C	The Bible in History, Culture, and Controversy	5
HIS 50	When Pharaohs Reigned: The History of Ancient Egypt	5
HIS 51	Pyramids of Earth: Religion and Symbol in the Ancient World	5
HIS 61	Classical Mythology	5
HIS 62A	Classical World: Greece	5
HIS 62B	Classical World: Rome	5
HAVC 50	Ancient Mediterranean Visual Cultures	5
HAVC 51	Greek Eyes: Visual Culture and Power in the Ancient Greek World	5
HAVC 55	Unclothed: The Naked Body from Antiquity to the Present	5
LIT 61M	Approaches to Classical Myth	5
LIT 61P	Introduction to Reading Poetry	5
LIT 61S	Sacred Texts	5
LIT 61X	Tragedy: Learning Through Suffering	5
LIT 80T	Practical Magic	5
LIT 80W	Captive Minds: The Literature of Pre-modern Slavery	5
LIT 81A	Homer's Odyssey	5
LIT 81D	The Prophet and the Qur'an	5
THEA 61A	Ancient and Medieval Drama	5

Upper-Division Courses

Three 5-credit upper-division courses in Greek (LIT 184A-LIT 184Z) and/or Latin literature (LIT 186A-LIT 186Z):

LIT 184A	Introduction to Greek Literature	5
LIT 184B	Greek Drama	5
LIT 184C	Greek Poetry	5
LIT 184D	Prose Authors	5
LIT 184E	Special Topics in Greek Literature	5
LIT 186A	Introduction to Latin Literature	5
LIT 186B	Roman Poetry	5
LIT 186C	Prose Authors	5
LIT 186D	Special Topics in Latin Literature	5

Electives

Six additional ancient studies 5-credit upper-division courses:

HIS 147A	History of Premodern India	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 159A	Cleopatra to Constantine: Greek and Roman Egypt	5
HIS 159B	Women and Gender in Ancient Egypt	5
HIS 159C	Temple and City: The Egyptian New Kingdom and the City of Thebes	5
HIS 159D	When Cities Were New: the Rise of Urbanism in the Ancient Near East and Mediterranean	5
HIS 160A	Athenian Democracy	5
HIS 160C	Topics in Greek History	5
HIS 161B	Topics in Roman History	5
HIS 163B	Genesis: A History	5
HIS 194S	Special Topics in Ancient Egyptian History	5
HIS 196S	Special Topics in Ancient History	5
HAVC 135F	Art of the Book in Western Europe 500-1600	5
HAVC 151	Greek Myths Antiquity to the Present	5
HAVC 152	Roman Eyes: Visual Culture and Power in the Ancient Roman World	5
HAVC 154	Byzantine Visual Culture: Politics and Religion in the Empire of Constantinople, 330-1453 A. C	5
HAVC 155	Constructing Cleopatra: Power, Sexuality, and Femininity Across the Ages	5
HAVC 190C	The Mediterranean from the Rise of Christianity to the Rise of Islam	5
LIT 116I	Philosophy in India	5
LIT 117A	Old Iranian Literature	5
LIT 118A	Hebrew Bible	5
LIT 121A	The Heroic Epic	5
LIT 125A	Ancient Novel	5
LIT 130A	Ancient Literature in Cross-Cultural Perspective	5
LIT 154B	Literature and the Arts	5
LIT 159M	The Curse of the Mummy	5
LIT 184A	Introduction to Greek Literature	5
LIT 184B	Greek Drama	5
LIT 184C	Greek Poetry	5
LIT 184D	Prose Authors	5
LIT 184E	Special Topics in Greek Literature	5
LIT 186A	Introduction to Latin Literature	5
LIT 186B	Roman Poetry	5
LIT 186C	Prose Authors	5
LIT 186D	Special Topics in Latin Literature	5
LIT 181A	Biblical Hebrew, Part 1	5
LIT 181B	Biblical Hebrew, Part 2	5
LIT 181D	Reading Egyptian Hieroglyphs, Part 1	5
LIT 181E	Reading Egyptian Hieroglyphs, Part 2	5

LIT 181F	Reading Egyptian Hieroglyphs, Part 3	5
LIT 190T	Topics in Modern Literary Studies	5
PHIL 100A	Ancient Greek Philosophy	5
PHIL 118	Stoic Ethics	5
POLI 105A	Ancient Political Thought	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in ancient studies is satisfied by completing two 5-credit upper-division courses in Greek literature or Latin literature from the following list:

Greek Literature:

LIT 184B	Greek Drama	5
LIT 184C	Greek Poetry	5
LIT 184D	Prose Authors	5
LIT 184E	Special Topics in Greek Literature	5

Latin Literature:

LIT 186B	Roman Poetry	5
LIT 186C	Prose Authors	5
LIT 186D	Special Topics in Latin Literature	5

Comprehensive Requirement

Ancient studies majors are required to pass a senior comprehensive examination. Each student shall identify a minimum of two ancient studies faculty members to serve on the examination committee, one of which shall be designated as the committee chair. Please consult the ancient studies website for a more detailed description of this requirement.

Enrollment in a 2-credit comprehensive examination preparatory course, CLST 197F, is required in the same quarter that the senior comprehensive examination will be given. The preparatory course will be taken with the chair of the student's examination committee.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Four-Year Plan

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	GREE 1 or LATN 1 CLST lower-division survey College 1	GREE 2 or LATN 2 WRIT 1/WRIT 1E (if needed)	LIT 184A or LIT 186A	
2nd (soph)	LIT 184-series/LIT 186-series WRIT 2*	LIT 184-series/LIT 186-series	Upper-division elective	
3rd (junior)	Upper-division elective	Upper-division elective	Upper-division elective	
4th (senior)	Upper-division elective	Upper-division elective	CLST 197F (2 credits)	

In addition to the specific courses shown above, a student must complete courses satisfying all of UC Santa Cruz's general education requirements. Individual student plans will vary, and some general education requirements may be satisfied within the ancient studies major requirements depending on each student's individual course selection.

*WRIT 2 should be taken in or before spring quarter of the second year

Sample Transfer Plan

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	GREE 1 or LATN 1 CLST lower-division survey Upper-division elective	GREE 2 or LATN 2 Upper-division elective	LIT 184A or LIT 186A Upper-division elective	
2nd (senior)	LIT 184-series/LIT 186-series Upper-division elective	LIT 184-series/LIT 186-series Upper-division elective	Upper-division elective CLST 197F (2 credits)	

This planner assumes that a student has completed most of their general education requirements before coming to UC Santa Cruz. Students from California community colleges are advised to complete the Intersegmental General Education Transfer Curriculum (IGETC) in preparation for transfer to UC Santa Cruz.

ANCIENT STUDIES MINOR

Course Requirements

The classical studies minor requires a minimum of seven courses: two lower-division ancient Greek or Latin language courses (or equivalent), and five 5-credit upper-division courses (minimum of 25 upper-division credits). Students are allowed to complete up to two of their minor courses for pass/no pass grades.

Lower-Division Courses

A minor in ancient studies requires the lower-division sequence in elementary Greek or Latin language (or equivalent):

	Either these courses	
GREE 1	Elementary Ancient Greek	5
GREE 2	Elementary Ancient Greek	5
	or these courses	
LATN 1	Elementary Latin	5
LATN 2	Elementary Latin	5

Students with prior knowledge of ancient Greek or Latin are advised to consult with the ancient studies faculty to determine if they have satisfied any of the elementary language course requirements.

Upper-Division Courses

Choose one of the following courses:

LIT 184A	Introduction to Greek Literature	5
LIT 186A	Introduction to Latin Literature	5

Reading proficiency in ancient Greek or Latin required for these courses. LIT 184A should be taken after GREE 2, and LIT 186A should be taken after LATN 2.

Plus any four of the upper-division courses listed below

HIS 147A	History of Premodern India	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 159A	Cleopatra to Constantine: Greek and Roman Egypt	5
HIS 159B	Women and Gender in Ancient Egypt	5
HIS 159C	Temple and City: The Egyptian New Kingdom and the City of Thebes	5
HIS 159D	When Cities Were New: the Rise of Urbanism in the Ancient Near East and Mediterranean	5
HIS 160A	Athenian Democracy	5
HIS 160C	Topics in Greek History	5
HIS 161B	Topics in Roman History	5
HIS 163B	Genesis: A History	5
HIS 194S	Special Topics in Ancient Egyptian History	5
HIS 196S	Special Topics in Ancient History	5
HAVC 135F	Art of the Book in Western Europe 500-1600	5
HAVC 151	Greek Myths Antiquity to the Present	5
HAVC 152	Roman Eyes: Visual Culture and Power in the Ancient Roman World	5

HAVC 154	Byzantine Visual Culture: Politics and Religion in the Empire of Constantinople, 330-1453 A. C	5
HAVC 155	Constructing Cleopatra: Power, Sexuality, and Femininity Across the Ages	5
HAVC 190C	The Mediterranean from the Rise of Christianity to the Rise of Islam	5
LIT 116I	Philosophy in India	5
LIT 117A	Old Iranian Literature	5
LIT 118A	Hebrew Bible	5
LIT 121A	The Heroic Epic	5
LIT 125A	Ancient Novel	5
LIT 130A	Ancient Literature in Cross-Cultural Perspective	5
LIT 154B	Literature and the Arts	5
LIT 159M	The Curse of the Mummy	5
LIT 184A	Introduction to Greek Literature	5
LIT 184B	Greek Drama	5
LIT 184C	Greek Poetry	5
LIT 184D	Prose Authors	5
LIT 184E	Special Topics in Greek Literature	5
LIT 186A	Introduction to Latin Literature	5
LIT 186B	Roman Poetry	5
LIT 186C	Prose Authors	5
LIT 186D	Special Topics in Latin Literature	5
LIT 181A	Biblical Hebrew, Part 1	5
LIT 181B	Biblical Hebrew, Part 2	5
LIT 181D	Reading Egyptian Hieroglyphs, Part 1	5
LIT 181E	Reading Egyptian Hieroglyphs, Part 2	5
LIT 181F	Reading Egyptian Hieroglyphs, Part 3	5
LIT 190T	Topics in Modern Literary Studies	5
PHIL 100A	Ancient Greek Philosophy	5
PHIL 118	Stoic Ethics	5
POLI 105A	Ancient Political Thought	5

EAST ASIAN STUDIES MINOR

East Asian studies addresses the three societies of China, Japan, and Korea in northeast Asia. We recognize that they compose a meaningful regional designation that contains a diverse range of peoples, languages, and cultures. Linked by centuries of common use of the Chinese writing system, a shared textual canon, general principles of statecraft, and the continual circulation of people and goods, the three societies nevertheless also possess distinctive languages, histories, and social identities, making it necessary to explore each society in its own right.

In recognition of this diversity within the common bonds, East Asian studies at UC Santa Cruz encourages students to explore East Asia in both depth and breadth. Building first upon developing language skills in Chinese or Japanese, students also begin their studies in a historical survey—HIS 40A, HIS 40B, HIS 80C, or HIS 81—which explore the broad regional forces that contextualize each society's particular trajectory. From these foundations, students are encouraged to investigate a broad range of questions pertinent to each society in classes across the university, including anthropology, economics, education, feminist studies, film and digital media, history, history of art and visual culture, languages, linguistics, literature, music, politics, sociology, and theater arts.

The East Asian studies minor is administered by the Department of History. For additional information on curriculum and advising, visit the East Asian studies website.

Study Abroad

Because the minor is designed to support the integration of language training with exploration of East Asian societies, we strongly endorse participation in one of the many education abroad programs available for UC students in East Asia where language skills acquired at the university are put to practical use in daily life and research. At present, there are UC Education Abroad Programs in China, Japan, Hong Kong, Korea, and Taiwan. Students who complete Chinese or Japanese language courses while studying abroad are expected to complete a language placement exam upon their return to UCSC. Instructions for the placement exam can be found on the Languages and Applied Linguistics website. For more information about study abroad, see the UC Education Abroad Program (UCEAP) and UCSC Global Learning websites.

Course Requirements

The East Asian studies minor requires a minimum of six courses, five of which must be 5-credit upper-division courses (minimum of 25 upper-division credits). Additional lower-division coursework in Chinese or Japanese language may be need in order to gain the proficiency necessary to take the upper-division Chinese or Japanese language courses required for this minor (see below). Students are allowed to complete up to two of their minor courses for pass/no pass grades.

Lower-Division Courses

Language

All East Asian studies minors are expected to gain proficiency in Chinese or Japanese language. Students without prior knowledge of Chinese or Japanese should enroll in beginning Chinese (CHIN 1) or Japanese (JAPN 1) no later than fall quarter of their second year. Students with prior knowledge of Chinese or Japanese are required to complete a language placement exam to determine which course of Chinese or Japanese language instruction best suits their skill level. Instructions for the placement exam may be found on the Languages and Applied Linguistics website. Students may also pursue study abroad opportunities as a way of acquiring Chinese or Japanese language instruction.

Either these courses

CHIN 1	First-Year Chinese	5
CHIN 2	First-Year Chinese	5
CHIN 3	First-Year Chinese	5
CHIN 4	Second-Year Chinese	5
CHIN 5	Second-Year Chinese	5
CHIN 6	Second-Year Chinese	5
	or these courses	
JAPN 1	First-Year Japanese	5
JAPN 2	First-Year Japanese	5
JAPN 3	First-Year Japanese	5
JAPN 4	Second-Year Japanese	5
JAPN 5	Second-Year Japanese	5
JAPN 6	Second-Year Japanese	5

Core Courses

Choose one of the following courses:

HIS 40A	Early Modern East Asia	5
HIS 40B	The Making of Modern East Asia	5
HIS 80C	Global China	5
HIS 81	Science in the Colonial World	5

Upper-Division Courses

Upper-Division Chinese or Japanese Language

All East Asian studies minors are required to complete two 5-credit upper-division courses in Chinese language instruction or two 5-credit upper-division courses in Japanese language instruction. Additional upper-division courses in Chinese or Japanese language may be applied to the upper-division electives requirements (see below).

Chinese Language Courses

CHIN 103	Advanced Chinese: Language and Society	5
CHIN 104	Advanced Chinese: Readings in Literature	5
CHIN 105	Advanced Chinese: Readings in History	5
CHIN 107	Introduction to Classical Chinese Prose	5
CHIN 108	Introduction to Classical Chinese Poetry	5

Japanese Language Courses

JAPN 103	Advanced Japanese	5
JAPN 104	Advanced Japanese	5
JAPN 105	Advanced Japanese	5
JAPN 109	Japanese Language, Culture, and Society	5

Upper-Division Electives

Three additional 5-credit upper-division courses from the East Asian studies curriculum, one of which may be a topically appropriate individual study: CHIN 199, HIS 199, JAPN 199, LIT 199, etc.

ANTH 130C	Politics and Culture in China	5
ANTH 130G	Asian Americans in Ethnography and Film	5
CHIN 103	Advanced Chinese: Language and Society	5
CHIN 104	Advanced Chinese: Readings in Literature	5
CHIN 105	Advanced Chinese: Readings in History	5
CHIN 107	Introduction to Classical Chinese Prose	5
CHIN 108	Introduction to Classical Chinese Poetry	5
CHIN 199	Tutorial	5
ECON 149	The Economies of East and Southeast Asia	5
HAVC 122A	Sacred Geography of China	5
HAVC 122B	Constructing Lives in China: Biographies and Portraits	5
HAVC 122C	Writing in China	5
HAVC 122D	Chinese Landscape Painting	5
HAVC 122E	Art and Propaganda in China	5
HAVC 122F	Bodies in Chinese Culture	5
HAVC 127A	Buddhist Visual Worlds	5
HAVC 127B	Buddhist Pure Lands	5
HAVC 190D	The World of the Lotus Sutra	5
HAVC 190F	Chan Texts and Images	5
HAVC 190G	Buddhist Wisdom Traditions	5
HIS 101D	World History of Science	5
HIS 101F	Global Environmental History	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 140B	History of Qing China, 1644-1911	5
HIS 140C	Revolutionary China 1895-1960	5
HIS 140D	Recent Chinese History	5
HIS 140E	Women in China's Long 20th Century	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 150B	Tokugawa Japan	5
HIS 150C	Inventing Modern Japan: The State and the People	5
HIS 150D	The Japanese Empire, 1868-1945	5
HIS 150E	History and Memory in the Okinawan Islands	5
HIS 150F	Engendering Empires: Women in Modern Japan and Korea	5
HIS 150G	History of Disabilities in East Asia	5
HIS 190G	Comparative History of Redress and Reparations	5
HIS 194C	Topics in Modern Chinese History	5
HIS 194E	Women in Japanese History	5
HIS 194M	Literati, Samurai, and Yangban: Comparative History of State and Elite in East Asia, 1600-1900	5
HIS 194U	The Cold War and East Asia	5

HIS 194Y	Memories of WWII in the U.S. and Japan	5
JAPN 103	Advanced Japanese	5
JAPN 104	Advanced Japanese	5
JAPN 105	Advanced Japanese	5
JAPN 199	Tutorial	5
JAPN 109	Japanese Language, Culture, and Society	5
LIT 133E	Contemporary Chinese Society, Culture, and Politics	5
LIT 133F	Pacific Rim Discourse	5
LIT 133G	The Nuclear Pacific	5
LIT 133H	Haunted by the Forgotten War: Literature and Film of the Korean War	5
LIT 133I	Global Japan: Literatures of the Japanese Diaspora	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
LIT 149C	The 1960s	5
LIT 162B	Literature of the Asian Diaspora	5
POLI 140D	Politics of East Asia	5
POLI 141	Politics of China	5
POLI 161	The Rise of China	5
POLI 190T	Governance and Conflict in East Asia	5
SOCY 128	Law and Politics in Contemporary Japan and East Asian Societies	5
SOCY 128J	The World Jury on Trial	5
THEA 161D	Asian Theater: An Anthropological Approach	5

JEWISH STUDIES B.A.

Information and Policies

Introduction

The interdisciplinary program in Jewish studies introduces students to the study of classical, medieval, early modern, and modern Jewish cultures and to the range of disciplines that bear upon the field.

The Jewish studies major and minor offer students the chance to study Jewish communities and cultures across the world, with special reference (though not limited) to modern issues. The major and minor will help them prepare to move successfully into graduate programs in a variety of disciplines, especially in humanities, social sciences, and pre-professional programs, and will provide students with a grounding in materials fundamental to a liberal arts education. This program connects with a range of disciplines and programs on the University of California, Santa Cruz, campus that explore the meanings of modernity; at the same time, this program will help students develop analytical tools, methodological versatility, and critical literacy.

Note that modernity here is not defined as unfolding solely in Europe or North America; the Jewish studies program intends to speak to modernity as a global phenomenon, dealing with sites where Jews lived. In the 19th and 20th centuries Jews were widely spread across the globe and often played active and influential roles in their communities. These include such places as China, India, Latin America, North Africa, the Middle East, as well as Europe and North America.

Program Learning Outcomes

Jewish History and Culture

- Identify and interpret major events, figures, and topics in Jewish history and culture.

Holocaust

- Demonstrate thorough knowledge of the Holocaust as a historical phenomenon.
- Develop a nuanced understanding of the cultural dimensions of the Holocaust through an analysis of literature, films, art, and/or music.

Jewish Languages

- Develop basic competency in Hebrew (modern or Biblical) or Yiddish.

Critical Analysis

- Distinguish between primary and secondary sources.
- Evaluate competing interpretations and multiple narratives of the past.
- Analyze Jewish cultural sources, including literary texts, films, and music within a broader, cross-cultural context.

Effective Communication

- Present clear and compelling arguments, based on critical analysis of diverse literary, historical, film, and/or musical sources, and effectively communicate interpretations in written essays and/or other media.

Scope

- Classical through Modern periods.

Academic Advising for the Program

The Jewish studies program is administered by the Department of History. Students in this program receive advising support from the history undergraduate program coordinator.

Transfer students are encouraged to consult the "Transfer Information and Policy" information included below.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required.

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz.

Transfer students entering at the junior level can readily finish all of the Jewish Studies major requirements within two years, even if they haven't completed any preparatory coursework prior to transferring. Some background in history and in literary analysis and interpretation is desirable, but not essential. Since this is an interdisciplinary major, preparatory work in art history, philosophy, or politics, depending on the student's interests, may also be useful.

Transfer students are encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or UC Santa Cruz general education requirements in preparation for transfer to UC Santa Cruz.

Getting Started in the Major: Transfer Students

Transfer students are advised to complete the lower-division Jewish studies course requirements, including the language requirement, by the end of their first year. The upper-division courses required for this major may be taken simultaneously with the required lower-division courses. Please refer to the sample academic plan provided below.

Transfer students are strongly encouraged to meet with the history undergraduate program coordinator before the end of their first quarter at UC Santa Cruz.

Major Qualification Policy and Declaration Process

Major Qualification

Jewish studies has no major qualification. Students should submit a petition to declare before or by their declaration deadline quarter. While specific courses are not required in order to declare, students will have ideally completed some or all of the lower-division requirements.

All students, including transfers, are eligible to pursue this major, even if they did not list Jewish studies on their UC Santa Cruz application.

Appeal Process

How to Declare a Major

1. Fill out a Jewish Studies Major Planning Worksheet. Include Jewish studies courses you've completed, are currently taking, and plan on taking in the future.
2. Meet with a Jewish studies faculty advisor to review and discuss your proposed plan of study. Obtain their signature on your worksheet.
3. Submit your approved Jewish Studies Major Planning Worksheet to the history undergraduate program coordinator for processing.

Letter Grade Policy

Students are allowed to complete up to two of their Jewish studies major requirements for Pass/No Pass, with the exception of their comprehensive requirement.

[Optional Catchall]

Course Substitution Policy

Jewish studies majors must take a minimum of five regularly scheduled Jewish studies courses plus the comprehensive/disciplinary communications (DC) requirement from members of the UC Santa Cruz Jewish studies faculty. Subject to the limits indicated, courses from the following categories may be applied to the Jewish studies major:

- Courses transferred from a California Community College or other domestic university (limit of three)
- Education Abroad Program (limit of three)
- Related courses not currently on the pre-approved Jewish studies course list (limit of two)
- Independent and field studies (limit of one)

Double Majors and Major/Minor Combinations Policy

Study Abroad

The program in Jewish studies encourages students to take advantage of the UC Education Abroad Program (EAP). The University of California has developed educational opportunities abroad in conjunction with the Jerusalem Study Center at The Hebrew University of Jerusalem. Subject to the limitations described in the "Course Substitution Policy" section, up to three courses from EAP may be applied toward the Jewish studies major requirements.

Honors

All students who announce candidacy during the academic year are reviewed for honors or highest honors in the major. The Jewish studies faculty advisors determine honors based upon courses applied toward the Jewish studies major. Performance in courses taken elsewhere and being transferred toward the major will be considered when applicable. The minimum standard applied is excellence in most courses for honors, and excellence in all courses for highest honors. Summer, fall, and winter graduates will be reviewed at the end of each of their respective quarters. Spring graduates will be reviewed as of the spring announcement of candidacy deadline.

[Optional Catchall]

Requirements and Planners

Course Requirements

The Jewish studies major requires a minimum of 11 courses, including the comprehensive requirement, and an additional three language courses (or equivalent).

In consultation with a faculty advisor, students will plan a program of study to fulfill the following distribution of courses:

Lower-Division Courses

Language Requirement

Three quarters of lower-division instruction (or equivalent) in a Jewish language in any combination of the student's choosing:

HEBR 1	First-Year Hebrew	5
HEBR 2	First-Year Hebrew	5
HEBR 3	First-Year Hebrew	5
HEBR 4	Second-Year Hebrew	5
HEBR 80	Introduction to Biblical Hebrew	5
YIDD 1	First-Year Yiddish	5
YIDD 2	First-Year Yiddish	5
YIDD 3	First-Year Yiddish	5

Lower-Division Core Courses

Choose one of the following courses:

HIS 74	Introduction to Jewish History and Cultures	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 74B	Introduction to Middle Eastern and North African Jewish History, 1500-2000	5
LIT 61J	Introduction to Jewish Literature and Culture	5

Plus one of the following courses:

HIS 75	Film and the Holocaust	5
HIS 76	Introduction to the Holocaust	5

Upper-Division Courses

Four 5-credit upper-division Jewish studies core courses:

HIS 155	History of Modern Israel	5
HIS 163B	Genesis: A History	5
HIS 172A	German History	5
HIS 172B	German Film, 1919-1945	5
HIS 178E	Modern Jewish Intellectual History	5
HIS 185C	Communism, Nationalism, and Zionism: Comparative Radical Jewish Politics	5
HIS 185I	Latin American Jewish History in the Modern Period	5
HIS 185J	The Modern Jewish Experience	5
HIS 185K	Jewish Life in Eastern Mediterranean Port Cities	5
HIS 185L	Where Civilizations Met--Jews, Judaism, and the Iberian Peninsula	5
HIS 185M	Zionism: An Intellectual History	5
HIS 185O	The Holocaust and the Arab World	5
HAVC 135E	Jewish Identity and Visual Representation	5
LGST 114	Jews, Anti-Semitism, and the American Legal System	5
LGST 115	Law and the Holocaust	5
LIT 118A	Hebrew Bible	5
LIT 164A	Jewish Travel Narratives	5
LIT 164B	Hebrew Poetry	5
LIT 164C	Global Jewish Writing	5
LIT 164D	Jewish Diaspora, Ethnicity, and Urban Life	5
LIT 164G	Literature and the Holocaust	5
LIT 164H	Jewish Writers and the European City	5
LIT 164J	Jewish Writers and the American City	5
LIT 181A	Biblical Hebrew, Part 1	5
PHIL 148	The Holocaust and Philosophy	5
LIT 181B	Biblical Hebrew, Part 2	5

Electives

Four additional Jewish studies courses of the student's choice, three of which must be 5-credit upper-division courses.

The following courses are electives only. Students may satisfy their Jewish studies elective requirements by taking additional language, lower-division core, and upper-division core courses from the Jewish studies curriculum.

HIS 2A	The World to 1500	5
HIS 2B	The World Since 1500	5
HIS 5C	The Bible in History, Culture, and Controversy	5
HIS 70A	Modern European History, 1500-1815	5
HIS 70B	Modern European History, 1815-present	5
HIS 78	Modern Authoritarianism in Europe and Beyond	5
HIS 167A	The First World War	5
HIS 167B	The Second World War in Europe	5
HIS 169	Dutch and Belgian History, 1500 to Present	5
HIS 172C	History of German Film, 1945 to Present	5
HIS 174	Spies: History and Culture of Espionage	5
HIS 176	Eastern Europe, 1848-2000	5

HIS 178A	European Intellectual History: The Enlightenment	5
HIS 178B	European Intellectual History: The 19th Century	5
HIS 178C	European Intellectual History, 1870-1970	5
HIS 184B	Racism and Antiracism in Europe: From 1870 to the Present	5
JWST 199	Tutorial	5
LIT 112I	Kafka	5
LIT 160U	Conspiracy Theories	5
MUSC 80I	Music of Modern Israel	5
MUSC 80T	Mizrach: Jewish Music in the Lands of Islam	5
MUSC 80Y	Music, Anti-Semitism, and the Holocaust	5
MUSC 81P	History of Jewish Music	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in Jewish studies is satisfied by completing an exit seminar or thesis:

Choose an exit seminar

One quarter; choose one of the following courses:

HIS 190G	Comparative History of Redress and Reparations	5
HIS 194L	Exile, Diaspora, and Displacement: Jewish Lives from North Africa to the Middle East	5
HIS 194V	Fascism and Anti-Fascism: The Global Spanish Civil War	5
HIS 196E	Modern Irish History	5
HIS 196G	Topics in Modern Germany and Europe	5
HIS 196M	Shtetl: Eastern European Jewish Life	5
HIS 196N	Eastern European Jewish Social History	5
HIS 196S	Special Topics in Ancient History	5
LIT 190Y	Topics in Jewish Literature and Culture	5

Or a thesis

Two quarters; all-of-the-following-courses:

JWST 195A	Thesis Research	5
JWST 195B	Thesis Writing	5

Comprehensive Requirement

Students may satisfy the Jewish studies comprehensive exit requirement by completing an approved exit seminar or senior thesis:

Choose an exit seminar

One quarter; choose one of the following courses:

HIS 190G	Comparative History of Redress and Reparations	5
HIS 194L	Exile, Diaspora, and Displacement: Jewish Lives from North Africa to the Middle East	5
HIS 194V	Fascism and Anti-Fascism: The Global Spanish Civil War	5
HIS 196E	Modern Irish History	5
HIS 196G	Topics in Modern Germany and Europe	5
HIS 196M	Shtetl: Eastern European Jewish Life	5
HIS 196N	Eastern European Jewish Social History	5
HIS 196S	Special Topics in Ancient History	5
LIT 190Y	Topics in Jewish Literature and Culture	5

Or a thesis

Two quarters; all of the following courses:

JWST 195A	Thesis Research	5
JWST 195B	Thesis Writing	5

Classical Chronological Distribution Requirement

One course from the following:

HEBR 80	Introduction to Biblical Hebrew	5
HIS 74	Introduction to Jewish History and Cultures	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 163B	Genesis: A History	5
LIT 61J	Introduction to Jewish Literature and Culture	5
LIT 118A	Hebrew Bible	5
LIT 181A	Biblical Hebrew, Part 1	5
LIT 181B	Biblical Hebrew, Part 2	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Four Year Plan

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge (optional)

				er
Entering				KRSG 1T
				Summer Edge (optional)
1st (junior)	Language 1	Language 2	Language 3	
	HIS 74 or HIS 74A or HIS 74B or LIT 61J	Upper-division core course	HIS 75 or HIS 76	
		Additional core or elective 1 (classical requirement)	Upper-division core course 2	
2nd (senior)	Upper-division core course 3	Upper-division core course 4	Upper-division additional core or elective 4	
	Upper-division additional core or elective 2	Upper-division additional core or elective 3	Exit seminar or thesis (DC)	

This planner assumes that a student has completed most of their general education requirements before coming to UC Santa Cruz. Students from California community colleges are advised to complete the Intersegmental General Education Transfer Curriculum (IGETC) in preparation for transfer to UC Santa Cruz.

These are sample plans. Actual student plans will vary according to annual course offerings and student's unique academic goals.

In addition to the specific courses shown in these planners, a student must complete courses satisfying all of UC Santa Cruz's general education requirements. Individual student plans will vary, and some general education requirements may be satisfied by Jewish studies major requirements depending on each student's individual course selection.

*WRIT 2 should be taken in or before spring quarter of the second year.

Sample Transfer Plan

	Fall	**Winter**	**Spring**	**Summ**
1st (frosh)	Language 1	Language 2	Language 3	
	HIS 74 or HIS 74A or HIS 74B or LIT 61J	WRIT 1/WRIT 1E (if needed)	HIS 75 or HIS 76	
	College 1			
2nd (soph)	Upper-division core course 1	Upper-division core course 2	Upper-division core course 3	
	WRIT 2*			
3rd (junior)	Upper-division core course 4	Additional core or elective 1 (classical requirement)	Upper-division additional core or elective 2	
4th (senior)	Upper division additional core or elective 3	Upper division additional core or elective 4	Exit seminar or thesis (DC)	

JEWISH STUDIES MINOR

Students whose major area of interest is not Jewish studies may nonetheless find that a minor in Jewish studies makes an invaluable contribution to their studies. This introduction to Jewish studies is helpful for students who plan to do graduate work in Jewish studies, whether through traditional academic disciplines or in Jewish studies programs, and also for students who plan to attend rabbinical schools or to find work with Jewish communities. For others with an interest in Jewish topics, but without such plans, a minor in Jewish studies offers intellectual enrichment and a focus within the student's chosen field.

Course Requirements

The minor requires a minimum of eight courses. A minimum of five 5-credit upper-division courses must be completed within the Jewish studies minor course requirements. Students are allowed to complete up to two of their minor courses for pass/no pass grades. In consultation with a faculty adviser, students will plan a program of study to fulfill the following distribution of courses:

Lower-Division Courses

One of the following Jewish studies core courses:

HIS 74	Introduction to Jewish History and Cultures	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 74B	Introduction to Middle Eastern and North African Jewish History, 1500-2000	5
HIS 75	Film and the Holocaust	5
HIS 76	Introduction to the Holocaust	5
LIT 61J	Introduction to Jewish Literature and Culture	5

Upper-Division Courses

Three 5-credit upper-division Jewish studies core courses:

HIS 155	History of Modern Israel	5
HIS 163B	Genesis: A History	5
HIS 172A	German History	5
HIS 172B	German Film, 1919-1945	5
HIS 178E	Modern Jewish Intellectual History	5
HIS 185C	Communism, Nationalism, and Zionism: Comparative Radical Jewish Politics	5
HIS 185I	Latin American Jewish History in the Modern Period	5
HIS 185J	The Modern Jewish Experience	5
HIS 185K	Jewish Life in Eastern Mediterranean Port Cities	5
HIS 185L	Where Civilizations Met--Jews, Judaism, and the Iberian Peninsula	5
HIS 185M	Zionism: An Intellectual History	5
HIS 185O	The Holocaust and the Arab World	5
HAVC 135E	Jewish Identity and Visual Representation	5
LGST 114	Jews, Anti-Semitism, and the American Legal System	5
LGST 115	Law and the Holocaust	5
LIT 118A	Hebrew Bible	5
LIT 164A	Jewish Travel Narratives	5
LIT 164B	Hebrew Poetry	5
LIT 164C	Global Jewish Writing	5
LIT 164D	Jewish Diaspora, Ethnicity, and Urban Life	5
LIT 164G	Literature and the Holocaust	5
LIT 164H	Jewish Writers and the European City	5
LIT 164J	Jewish Writers and the American City	5
LIT 181A	Biblical Hebrew, Part 1	5
LIT 181B	Biblical Hebrew, Part 2	5
PHIL 148	The Holocaust and Philosophy	5

Electives

Four courses chosen from the list below or any courses not already taken in the above lower- or upper-division core requirements. Two of the electives must be 5-credit upper-division courses.

HEBR 1	First-Year Hebrew	5
HEBR 2	First-Year Hebrew	5
HEBR 3	First-Year Hebrew	5
HEBR 4	Second-Year Hebrew	5
HIS 2A	The World to 1500	5
HIS 2B	The World Since 1500	5
HIS 5C	The Bible in History, Culture, and Controversy	5
HIS 70A	Modern European History, 1500-1815	5
HIS 70B	Modern European History, 1815-present	5
HIS 78	Modern Authoritarianism in Europe and Beyond	5
HIS 167A	The First World War	5
HIS 167B	The Second World War in Europe	5
HIS 169	Dutch and Belgian History, 1500 to Present	5
HIS 172C	History of German Film, 1945 to Present	5
HIS 174	Spies: History and Culture of Espionage	5
HIS 176	Eastern Europe, 1848-2000	5
HIS 178A	European Intellectual History: The Enlightenment	5
HIS 178B	European Intellectual History: The 19th Century	5
HIS 178C	European Intellectual History, 1870-1970	5

HIS 184B	Racism and Antiracism in Europe: From 1870 to the Present	5
HIS 190G	Comparative History of Redress and Reparations	5
HIS 196E	Modern Irish History	5
HIS 196S	Special Topics in Ancient History	5
JWST 199	Tutorial	5
LIT 112I	Kafka	5
LIT 160U	Conspiracy Theories	5
MUSC 80I	Music of Modern Israel	5
MUSC 80T	Mizrach: Jewish Music in the Lands of Islam	5
MUSC 80Y	Music, Anti-Semitism, and the Holocaust	5
MUSC 81P	History of Jewish Music	5
YIDD 1	First-Year Yiddish	5
YIDD 2	First-Year Yiddish	5
YIDD 3	First-Year Yiddish	5

HISTORY M.A.

Introduction

The history M.A. program will accept applications in 2025-26 for the 2026-27 academic year. Changes to the M.A. curriculum to better align it with that of the history Ph.D. program are pending review.

The Department of History offers an M.A. degree in history for those individuals who are interested in postgraduate work, but who are not planning to complete a Ph.D. It is a degree program that can fulfill in-service education requirements for current teachers as well as for future teachers earning a single-subject credential in social studies. Part-time enrollment is allowed.

Each student will be required to choose one of three areas of specialization (U.S., Europe, East Asia). To complete the degree, each student must pass a total of 12 courses of 5 credits each and two courses of 2 credits each. Students are required to produce a substantial research essay (average word count of 8000-10,000) grounded in original research in primary historical documents. There is no language requirement.

Detailed information for prospective graduate students, including procedures for applications and admission to graduate studies, examinations and requirements is available from the Division of Graduate Studies admissions website.

Applications

Information on the History Department application deadline can be found on the Division of Graduate Studies admissions application deadlines webpage. Admission information and application material are on the Division of Graduate Studies website.

Requirements

The M.A. degree is awarded after two years in residence, provided that the following requirements have been met:

- Completion of 12 five-credit courses and two 2-credit proseminars
- Removal of all Incomplete notations on record
- Approval of an M.A. essay

Course Requirements

HIS 200	Methods and Theories of History	5
HIS 201	Directed Research Colloquium	5
HIS 202	Practicing World History	5

HIS 200: year 1, fall quarter

HIS 201: year 2, winter quarter

HIS 202: year 1, spring quarter

One research seminar during the first four quarters:

HIS 204A	History of Gender Research Seminar	5
HIS 204C	Colonialism, Nationalism and Race Research Seminar	5
HIS 204E	Transnationalism, Borderlands, and History	5

Three Proseminars of 2 credits each including:

HIS 280A	History Graduate Proseminar: Teaching Pedagogy	2
HIS 280B	History Graduate Proseminar: Research Presentations and Grant Writing	2
HIS 280C	History Graduate Proseminar: Job Market	2

HIS 280A: year 1

HIS 280B: year 1

HIS 280C: year 2

Six area of concentration electives of 5 credits each, two of which may be taken outside the History Department.

Courses taken must be graduate seminars, upper-division undergraduate courses, and independent study courses (maximum of two).

Reading seminars in the area of specialization:

U.S.:

HIS 210A	Readings in U.S. History	5
HIS 210B	Readings in U.S. History	5

Europe:

HIS 251A	Readings in Modern European History: Environment and Technology	5

HIS 251B	Readings in Modern European History: Empire	5

East Asia:

HIS 230A	Readings in Late Imperial China	5
HIS 230B	Engendering China	5
HIS 230C	Readings in 20th-Century China	5
HIS 242	Readings in Modern Japan	5
HIS 243	Transnational Japan	5
HIS 244	Gender and Japanese History	5

Other Requirements

[Optional Catchall]

Applying for Graduation

The final essay (hard copy and pdf copy) must be submitted to the graduate program coordinator by the spring quarter deadline. A completed Application for the Master's Degree must be filed with the graduate coordinator with the submission of your final essay.

Essay Review and Evaluation

The Graduate Committee evaluates the master's essays and makes recommendations to the graduate director on the awarding of the M.A. degree. Applicants are notified of the committee's decision in June.

HISTORY PH.D.

Introduction

The Ph.D. program in history at UC Santa Cruz has a global and transnational orientation, and emphasizes an interdisciplinary and cross-cultural approach to historical studies, encouraging innovative thinking about global historical processes. In consultation with their faculty advisors, Ph.D. students complete courses of study and original research that bring together their temporal, geographical and thematic or methodological interests. Every student also acquires expertise in a more broadly conceived primary teaching field, defined in terms of geography and period, as well as a secondary teaching field that is focused on a different region or analytical approach.

We offer a rigorous program of instruction and independent work that trains students in the techniques of original historical research and equips them to teach university-level courses in history. Just as the work of most professional historians centers around both research and teaching, training in these areas constitutes the two essential poles of the graduate program in history. We only admit those highly motivated students who are most qualified to pursue advanced studies in history. We also only admit those applicants who can best benefit from the specific strengths of our faculty.

Detailed information for prospective graduate students, including procedures for applications and admissions to graduate studies, examinations and requirement is available from the Division of Graduate Studies.

Applications

Information on the History Department application deadline can be found on the Graduate Admissions Deadlines webpage. Additional information and application material are on the Division of Graduate Studies website.

Advancement to Candidacy

Course Requirements

Until they pass the qualifying examination and are formally advanced to candidacy for the Ph.D. degree, students must be in residence at UC Santa Cruz and are expected to complete a minimum of 10 credits each quarter to maintain normal academic progress. Completion of a minimum of 10 courses of 5 credits each and one proseminar of 2 credits (HIS 280A) is required for advancement to candidacy. Courses taken are graduate seminars, independent study courses, and most upper-division courses.

Course Requirements

HIS 200	Methods and Theories of History	5
HIS 201	Directed Research Colloquium	5
HIS 202	Practicing World History	5
HIS 298A	Constructing a Field	5

HIS 200: year 1, fall quarter

HIS 298A: year 1, fall or winter quarter

HIS 201: year 2, winter quarter

HIS 202: year 1

One research seminar during the first four quarters:

HIS 204A	History of Gender Research Seminar	5
HIS 204C	Colonialism, Nationalism and Race Research Seminar	5
HIS 204E	Transnationalism, Borderlands, and History	5

One Proseminar of 2 credits:

HIS 280A	History Graduate Proseminar: Teaching Pedagogy	2

HIS 280A: year 1

Reading seminars in the research area and primary teaching field:

- Graduate students will complete at least five readings seminars in their research area / primary teaching field. These specializations must be defined in consultation with faculty advisors and declared by the end of the student's first year in the Ph.D. program. Students may substitute independent studies with advisors and other faculty members for two of these seminars.

- Course examples, but not limited to: HIS 200B, HIS 209A, HIS 210A, HIS 210B, HIS 217, HIS 244, HIS 263, HIS 265

Second teaching field:

Two courses from among Borderlands and Transnationalism; Critical Race and Indigeneity; East Asia; European; Gender and Sexuality; Latin American; Middle East and North Africa (MENA); Science, Technology and Environment; South Asia; Southeast Asia; U.S.; and World History.

Outside courses:

Two graduate courses outside the History Department, which may be from two different departments.

Foreign Language Requirements

Students whose research centers on a primarily English-speaking part of the world must demonstrate reading competency in at least one foreign language prior to taking the qualifying examination. Students working on all other parts of the world must demonstrate a reading competency in at least two foreign languages prior to taking the qualifying exam; competency in one of the languages must be demonstrated by the end of the sixth quarter of enrollment. Usually, competency will be demonstrated by passing a reading examination administered by a member of the history faculty. Students who are native speakers of the language in question or who believe that they have already demonstrated competency through previous coursework or through their performance on a standardized test should petition the graduate director to waive this language requirement.

Language requirements must be satisfied before taking the qualifying exam.

Teaching Requirements

Pre-Qualifying Requirements

Coursework

Students must successfully complete all required courses.

The M.A. Essay

Students are required to produce a substantial research essay grounded in original research in primary historical documents. A successful essay will reflect a general understanding of the field of inquiry along with a critical grasp of the scholarship that currently defines the field; deep knowledge of the specific subject under investigation; the application of appropriate analytical models; and a well-supported interpretation of the materials explored. This essay could (but need not) be a segment of a larger project; but it must be a complete, self-contained essay in and of itself.

Students enroll in HIS 201, Directed Research Colloquium, the winter quarter of their second year. The final essay (pdf copy) must be submitted to the graduate program coordinator by the spring quarter deadline.

Qualifying Examination (QE) Dossier Requirements

The QE dossier includes three sections, each of which students will prepare in consultation with their primary academic adviser and with the advice of the examiners. The dossier must include at least one field statement (and, ideally, more than one), two annotated syllabi drawn respectively from the primary and secondary teaching fields, and a 10-15-page dissertation prospectus. Specific requirements for the contents of the dossier may vary by geographic and thematic areas of emphasis. These requirements should be discussed with and agreed upon by the primary advisor and other members of the QE committee at least one full quarter prior to the oral exam date. Complete bibliographies must be appended to each piece of the QE dossier.

A commonly used model for dossiers in the department is the following:

1. Three field statement essay(s). The first and longest essay (25-30 pages) should review the state of the scholarship in students' main area of teaching expertise, broadly defined and reflecting primary fields of employment within the discipline. One of the two shorter essays (roughly 15-20 pages each) should survey the historiography on the student's more specific area of research. The other should focus either on interdisciplinary theoretical or methodological literature related to the student's program of study or a second area of geographical or thematic specialization (or both). The field statements should demonstrate students' broad competence in subject matter as well as mastery of the theoretical issues and historiographic debates in their designated research and teaching of expertise.

2. Two annotated syllabi that demonstrate students' preparation to teach undergraduate courses in their primary and secondary teaching fields. The syllabi should be annotated to show how each class session would be prepared: principal sources for lectures, principal questions for discussion, reasons for assigning particular readings, etc.

3. A 10 -15-page dissertation prospectus that includes an evaluative survey of the literature relevant to your proposed research topic, an explicit statement of research questions, a detailed discussion of the archival sources, and a consideration of the theoretical issues to be engaged. **Note:** Although no specific section of the dossier focuses upon the coursework completed outside the History Department, it is expected that this work will be incorporated into different sections of the portfolio, particularly the theoretical or methodological literature and the dissertation prospectus.

Qualifying Examination

The qualifying examination (QE) emphasizes field mastery, integration of material from different fields, and focused preparation for dissertation research. The QE culminates in a three-hour meeting during which a student presents and discusses a dossier that has been submitted to the student's committee at least three weeks in advance. The examination is taken by the spring quarter of the third year. Prior to taking

the QE, all incomplete notations (I) must be cleared from the student's record and students must take and pass their language examination(s). Additionally, the student must be registered the quarter the examination is taken.

The four exam fields are designed in consultation with your QE committee members. You will prepare for the exam through regularly offered courses and independent readings courses sponsored by your examiners. You are required to take at least five courses in research and primary teaching fields combined. You are also required to take at least two courses in the secondary teaching and outside fields. The fields are as follows:

- Research Field: In consultation with their faculty advisors, students will designate a primary field for research and teaching, defined by their temporal, geographical, and thematic or methodological interests, by the end of their first year in the program.
- Primary Field of Teaching: In consultation with their faculty advisors, students will designate a primary field for research and teaching, defined by their temporal, geographical, and thematic or methodological interests, by the end of their first year in the program. The link will include a current but not exhaustive list of these specializations.
- Second Teaching Field: Each Ph.D. student also prepares a second teaching field different from the primary area of research interest and can choose from among Borderlands and Transnationalism, East Asian, European, Critical Race and Indigeneity, Gender and Sexuality, Latin American, Middle East and North Africa (MENA), Science, Technology and Environment, U.S., and World History.
- Outside Field: One field outside history, such as anthropology, literature, feminist studies, politics, sociology, or history of consciousness. You will select a field of topical, thematic, or methodological relevance to your dissertation. Your faculty adviser must approve the outside field.

A pass or fail will be given after the examination based on the student's knowledge and research preparation as demonstrated by their dossier and their performance at the meeting. In order to pass the QE, students must receive passing marks from each member of the committee. Immediately following the exam, the QE committee chair will complete the Report on Qualifying Examination form and submit it to the History Department. If a student does not pass the QE the first time, they may retake only those sections not passed. No one will be permitted to take the QE more than twice.

Post-Qualifying Requirements

M.A. Degree

The master of arts (M.A.) degree is awarded to all Ph.D. students after two years in residence, successful completion of 12 courses of 5 credits each and the Teaching Pedagogy proseminar (HIS 280A) of 2 credits, demonstrated competency in at least one foreign language (for those whose research centers upon a part of the world whose primary language is not English), removal of all Incomplete notations (I) on record, and approval of a M.A. essay (average word count of 8000-10000, excluding footnotes and bibliography) grounded in original research in primary historical documents.

Dissertation

The dissertation represents an extensive, book-length project grounded in research in original historical documents. A successful dissertation will reflect a broad and deep understanding of the field of inquiry, a mastery of the scholarship that currently defines the field, detailed knowledge of the subject of study growing out of dedicated research, and the incorporation of appropriate interpretive models. The dissertation plan is laid out in the prospectus submitted with the qualifying examination, and it is expected that students remain in dialogue with their advisor and committee members about progress and any revisions to the original plan.

Dissertation Defense

Academic Progress

Evaluation of Academic Progress

Each spring, the History Department reviews the academic progress of all continuing students. All first-year students are required to meet with the Graduate Committee to discuss academic goals and progress.

Time to Degree

During your time in the graduate program, you will become familiar with the terms "normative time" or "timely progress." It is important to progress within expected timetables as it affects many aspects of financial support as well as good academic standing. Additional Information can be found in our Graduate Student Handbook.

Applying for Graduation

Degree Application

By the end of the first week of the quarter you intend to finish, an Application for Doctor of Philosophy Degree form, which requires dissertation adviser(s) and graduate director signatures, must be filed with the Graduate Division.

Dissertation Completion

The dissertation should be submitted to the dissertation reading committee before the end of the fifth week of the quarter in which the degree is to be conferred. As a courtesy to the committee, students should provide a hard copy draft unless the committee is willing to accept an electronic copy.

A copy of the **signed** title page along with a PDF of the dissertation must be filed with graduate program coordinator and one copy must be filed online with the Graduate Division by the deadline in the quarter in which the degree is to be conferred (see Academic and Administrative Calendar).

HISTORY COURSE LIST

Concentration Regions

The following is a summary list of undergraduate history courses and how they may apply to the different geographic regions of concentration. Questions about this list or how to apply courses to the history major should be directed to the history undergraduate program coordinator.

Americas and Africa

HIS 2A	The World to 1500	5
HIS 2B	The World Since 1500	5
HIS 4	History of the Present: Investigating the Historical Origins of Contemporary Problems	5
HIS 9	Introduction to Native American History	5
HIS 9C	California Indian History	5
HIS 10A	United States History to 1877	5
HIS 10B	United States History, 1877 to 1977	5
HIS 11A	Latin America: Colonial Period	5
HIS 11B	Latin America: National Period	5
HIS 12	Introduction to Latino American History	5
HIS 13	Introduction to American Religious Culture	5
HIS 15	The United States of America from its Founding through Our Time	5
HIS 20	U.S. Popular Music Movements	5
HIS 31A	African History to 1900	5
HIS 32A	Islam in Africa and the African Diaspora	5
HIS 80X	History of the Modern Civil Rights Movement	5
HIS 80Y	World War II Memories in the U.S. and Japan	5
HIS 82	California Gold Rush in Global History	5
HIS 90A	Nuclear Pacific	5
HIS 101C	Oceans in World History	5
HIS 101E	Global 1930s	5
HIS 101H	The Horse in World History	5
HIS 104C	Celluloid Natives: American Indian History on Film	5
HIS 104D	Museums and the Representation of Native American History, Memory, and Culture	5
HIS 106A	Vietnam War Memories	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 109A	Race, Gender, and Power in the Antebellum South	5
HIS 110A	Colonial America, 1500-1750	5
HIS 110B	Revolutionary America, 1740-1815	5
HIS 110D	The Civil War Era	5
HIS 110E	Rise of the Machines: Technology, Inequality, and the United States, 1877 to 1914	5
HIS 110F	World War USA: The United States from 1914 through 1945	5
HIS 110G	Strange Days: The USA and its National Security State, 1945-1991	5
HIS 110H	Greater Reconstruction: Race, Empire, and Citizenship in the Post-Civil War United States	5
HIS 112	American Feminist Thought, 1750-1950	5
HIS 113C	Women and American Religious Culture	5
HIS 114	Market Revolution in Antebellum U.S.	5
HIS 116	Slavery Across the Americas	5
HIS 116A	Unchained Memory: Slavery and the Politics of the Past	5
HIS 117	Wired Nation: Broadcasting & Telecommunications in the US from the Telegraph to the Internet	5
HIS 117A	From the Player Piano to Pandora	5
HIS 118	The Global Cold War, 1945-1991	5
HIS 118A	Conspiracy Planet: How Conspiracies, Conspiracy Theories, and Conspiracy Scandals Shape History	5
HIS 119	Indigenous Feminisms	5
HIS 120	W.E.B. Du Bois	5
HIS 121A	African American History to 1877	5
HIS 121B	African American History, 1877 to the Present	5
HIS 122A	Jazz and United States Cultural History, 1900-1945	5
HIS 122B	Jazz and United States Cultural History, 1945 to the Present	5
HIS 123	Immigrants and Immigration in U.S. History	5
HIS 124A	Panama Canal and U.S. Empire	5
HIS 128	Chicana/Chicano History	5
HIS 130	History of Modern Cuba	5
HIS 131	Women in Colonial Latin America	5
HIS 134A	Colonial Mexico	5
HIS 134B	History of Mexico, 1850 to Present	5
HIS 137E	Literary Culture in Africa	5
HIS 139C	Queer Pasts: A Radical Telling of LGBTQ History in the United States	5
HIS 151A	Medicine and the Body in the Colonial World	5
HIS 151B	Drugs in World History	5

HIS 158A	The Escapes of David George: Biographical Research on Slavery and Early America	5
HIS 158C	Slavery in the Atlantic World: Historical and Archaeological Perspectives	5
HIS 158D	The Atlantic Slave Trade, 1520-1866	5
HIS 177A	Slaves, Soldiers, and Scientists: History of the Tropics	5
HIS 181B	Africa and Britain in an Imperial World	5
HIS 185C	Communism, Nationalism, and Zionism: Comparative Radical Jewish Politics	5
HIS 185I	Latin American Jewish History in the Modern Period	5
HIS 190A	Slavery and Race in Latin America	5
HIS 190B	Race and the Nation in Latin America	5
HIS 190D	Asian and Latino Immigration Since 1875	5
HIS 190E	Topics in Chicana/o History	5
HIS 190F	Research Seminar in the Americas	5
HIS 190G	Comparative History of Redress and Reparations	5
HIS 190H	History of Time	5
HIS 190J	Mexican History in the Archives	5
HIS 190K	Wired Planet: Readings on the Global History of Broadcasting and Telecommunications	5
HIS 190N	Topics in African History	5
HIS 190P	Early American Society and Culture	5
HIS 190Q	The Novel and History	5
HIS 190R	Research in the History of American Religions	5
HIS 190T	Latin America in the Cold War	5
HIS 190U	Power, Culture, and the Federal Bureau of Investigation	5
HIS 190W	U.S. Civil War and Reconstruction	5
HIS 190X	History of the Atlantic World, 1492-1824	5
HIS 190Y	The Atlantic Slave Trade	5
HIS 190Z	The Long Civil Rights Movement	5
HIS 194N	Urbanites in the Global South, 18th Century to the Present	5
HIS 194V	Fascism and Anti-Fascism: The Global Spanish Civil War	5
HIS 194Y	Memories of WWII in the U.S. and Japan	5
HIS 196H	Sex and the City--The History of Sexuality in Urban Areas Around the Globe	5

Asia and the Pacific

HIS 2A	The World to 1500	5
HIS 2B	The World Since 1500	5
HIS 40A	Early Modern East Asia	5
HIS 40B	The Making of Modern East Asia	5
HIS 44	Modern South Asia, 1500 to Present	5
HIS 80C	Global China	5
HIS 80Y	World War II Memories in the U.S. and Japan	5
HIS 81	Science in the Colonial World	5
HIS 90A	Nuclear Pacific	5
HIS 101C	Oceans in World History	5
HIS 101D	World History of Science	5
HIS 101E	Global 1930s	5
HIS 101F	Global Environmental History	5
HIS 101H	The Horse in World History	5
HIS 105	Nations and Nationalism	5
HIS 106A	Vietnam War Memories	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 118	The Global Cold War, 1945-1991	5
HIS 140B	History of Qing China, 1644-1911	5
HIS 140C	Revolutionary China 1895-1960	5
HIS 140D	Recent Chinese History	5
HIS 140E	Women in China's Long 20th Century	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
HIS 143B	History of the Philippines, 1815 to the Present	5
HIS 146A	Colonial South Asia 1750-1947	5
HIS 147A	History of Premodern India	5
HIS 147B	Political and Social History of Modern South Asia	5
HIS 147C	South Asia in the 20th Century	5
HIS 147D	Intellectual History of South Asia	5
HIS 147E	Imperial Sport: Cricket in South Asia, 1800s to the Present	5
HIS 149	Plants, People, and the Making of Modern Southeast Asia	5
HIS 149F	Southeast Asian Histories, Societies and Politics in Nine Tasty Foods	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 150B	Tokugawa Japan	5

HIS 150C	Inventing Modern Japan: The State and the People	5
HIS 150D	The Japanese Empire, 1868-1945	5
HIS 150E	History and Memory in the Okinawan Islands	5
HIS 150F	Engendering Empires: Women in Modern Japan and Korea	5
HIS 150G	History of Disabilities in East Asia	5
HIS 190D	Asian and Latino Immigration Since 1875	5
HIS 190G	Comparative History of Redress and Reparations	5
HIS 194C	Topics in Modern Chinese History	5
HIS 194E	Women in Japanese History	5
HIS 194K	Topics in the History of Southeast Asia	5
HIS 194M	Literati, Samurai, and Yangban: Comparative History of State and Elite in East Asia, 1600-1900	5
HIS 194N	Urbanites in the Global South, 18th Century to the Present	5
HIS 194O	South Asia in the Twentieth Century	5
HIS 194P	Urban South Asia	5
HIS 194T	Worlds of Labor in Asia	5
HIS 194U	The Cold War and East Asia	5
HIS 194Y	Memories of WWII in the U.S. and Japan	5
HIS 196H	Sex and the City--The History of Sexuality in Urban Areas Around the Globe	5

Europe and the Mediterranean World

HIS 2A	The World to 1500	5
HIS 2B	The World Since 1500	5
HIS 4	History of the Present: Investigating the Historical Origins of Contemporary Problems	5
HIS 5B	Cult, Church, Empire: History of Early Christianity, 0-431 C.E.	5
HIS 5C	The Bible in History, Culture, and Controversy	5
HIS 5D	Religions of Abraham	5
HIS 41	The Making of the Modern Middle East	5
HIS 50	When Pharaohs Reigned: The History of Ancient Egypt	5
HIS 51	Pyramids of Earth: Religion and Symbol in the Ancient World	5
HIS 58	From Pirates to Refugees: The History of the Modern Mediterranean	5
HIS 61	Classical Mythology	5
HIS 62A	Classical World: Greece	5
HIS 62B	Classical World: Rome	5
HIS 65B	Plagues, Peasants, and Pirates: Late Medieval Europe, 1000-1500	5
HIS 70A	Modern European History, 1500-1815	5
HIS 70B	Modern European History, 1815-present	5
HIS 74	Introduction to Jewish History and Cultures	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 74B	Introduction to Middle Eastern and North African Jewish History, 1500-2000	5
HIS 75	Film and the Holocaust	5
HIS 76	Introduction to the Holocaust	5
HIS 78	Modern Authoritarianism in Europe and Beyond	5
HIS 81	Science in the Colonial World	5
HIS 101C	Oceans in World History	5
HIS 101D	World History of Science	5
HIS 101E	Global 1930s	5
HIS 101F	Global Environmental History	5
HIS 101H	The Horse in World History	5
HIS 105	Nations and Nationalism	5
HIS 118	The Global Cold War, 1945-1991	5
HIS 149	Plants, People, and the Making of Modern Southeast Asia	5
HIS 151	Keywords in the History of Science and Medicine	5
HIS 151A	Medicine and the Body in the Colonial World	5
HIS 151B	Drugs in World History	5
HIS 154	Post-Colonial North Africa	5
HIS 155	History of Modern Israel	5
HIS 156	Interrogating Politics in the Post-Colonial Middle East	5
HIS 156A	Art, Culture, and Mass Media in the Arab Middle East	5
HIS 156B	Modern Arab Thought	5
HIS 157	The Ottoman Empire	5
HIS 159A	Cleopatra to Constantine: Greek and Roman Egypt	5
HIS 159B	Women and Gender in Ancient Egypt	5
HIS 159C	Temple and City: The Egyptian New Kingdom and the City of Thebes	5
HIS 159D	When Cities Were New: the Rise of Urbanism in the Ancient Near East and Mediterranean	5
LIT 159M	The Curse of the Mummy	5
HIS 160A	Athenian Democracy	5
HIS 160C	Topics in Greek History	5

HIS 161B	Topics in Roman History	5
HIS 163B	Genesis: A History	5
HIS 163C	Jesus in History and Film	5
HIS 165A	Medieval History and Architecture	5
HIS 166	Northern Ireland: Communities in Conflict	5
HIS 167A	The First World War	5
HIS 167B	The Second World War in Europe	5
HIS 169	Dutch and Belgian History, 1500 to Present	5
HIS 170A	French History: Old Regime and Revolution	5
HIS 170B	French History: The 19th Century	5
HIS 170C	Mediterranean France: The History and Politics of Immigration	5
HIS 172A	German History	5
HIS 172B	German Film, 1919-1945	5
HIS 172C	History of German Film, 1945 to Present	5
HIS 174	Spies: History and Culture of Espionage	5
HIS 176	Eastern Europe, 1848-2000	5
HIS 177A	Slaves, Soldiers, and Scientists: History of the Tropics	5
HIS 178A	European Intellectual History: The Enlightenment	5
HIS 178B	European Intellectual History: The 19th Century	5
HIS 178C	European Intellectual History, 1870-1970	5
HIS 178E	Modern Jewish Intellectual History	5
HIS 181	Modern Britain and the British Empire	5
ANTH 110O	Postcolonial Britain and France	5
HIS 181B	Africa and Britain in an Imperial World	5
HIS 184B	Racism and Antiracism in Europe: From 1870 to the Present	5
HIS 185C	Communism, Nationalism, and Zionism: Comparative Radical Jewish Politics	5
HIS 185J	The Modern Jewish Experience	5
HIS 185K	Jewish Life in Eastern Mediterranean Port Cities	5
HIS 185L	Where Civilizations Met--Jews, Judaism, and the Iberian Peninsula	5
HIS 185M	Zionism: An Intellectual History	5
HIS 185O	The Holocaust and the Arab World	5
HIS 190G	Comparative History of Redress and Reparations	5
HIS 190H	History of Time	5
HIS 194L	Exile, Diaspora, and Displacement: Jewish Lives from North Africa to the Middle East	5
HIS 194N	Urbanites in the Global South, 18th Century to the Present	5
HIS 194Q	Making Space in the Colonial and Post-Colonial World	5
HIS 194S	Special Topics in Ancient Egyptian History	5
HIS 194V	Fascism and Anti-Fascism: The Global Spanish Civil War	5
HIS 194W	Social Movements in the Modern Middle East	5
HIS 196E	Modern Irish History	5
HIS 196F	Topics in European Environmental History	5
HIS 196G	Topics in Modern Germany and Europe	5
HIS 196H	Sex and the City--The History of Sexuality in Urban Areas Around the Globe	5
HIS 196I	The French Revolution	5
HIS 196K	Studies in European Intellectual History	5
HIS 196M	Shtetl: Eastern European Jewish Life	5
HIS 196N	Eastern European Jewish Social History	5
HIS 196Q	Europe and the World During the Cold War	5
HIS 196S	Special Topics in Ancient History	5
HIS 196Z	Europe from the Margins: Outside Influences on Modern European Thought and Culture	5

Chronological Distribution

The following is a list of undergraduate history courses and how they may apply to the chronological distribution requirement. Questions about this list or how to apply courses to the history major should be directed to the history undergraduate program coordinator.

Pre 600 C.E.

HIS 2A	The World to 1500	5
HIS 5B	Cult, Church, Empire: History of Early Christianity, 0-431 C.E.	5
HIS 5C	The Bible in History, Culture, and Controversy	5
HIS 5D	Religions of Abraham	5
HIS 50	When Pharaohs Reigned: The History of Ancient Egypt	5
HIS 51	Pyramids of Earth: Religion and Symbol in the Ancient World	5

HIS 61	Classical Mythology	5
HIS 62A	Classical World: Greece	5
HIS 62B	Classical World: Rome	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 159A	Cleopatra to Constantine: Greek and Roman Egypt	5
HIS 159B	Women and Gender in Ancient Egypt	5
HIS 159C	Temple and City: The Egyptian New Kingdom and the City of Thebes	5
HIS 159D	When Cities Were New: the Rise of Urbanism in the Ancient Near East and Mediterranean	5
LIT 159M	The Curse of the Mummy	5
HIS 160A	Athenian Democracy	5
HIS 160C	Topics in Greek History	5
HIS 161B	Topics in Roman History	5
HIS 163B	Genesis: A History	5
HIS 163C	Jesus in History and Film	5
HIS 194S	Special Topics in Ancient Egyptian History	5
HIS 196S	Special Topics in Ancient History	5

Pre 1800 C.E.

HIS 2B	The World Since 1500	5
HIS 10A	United States History to 1877	5
HIS 11A	Latin America: Colonial Period	5
HIS 13	Introduction to American Religious Culture	5
HIS 31A	African History to 1900	5
HIS 32A	Islam in Africa and the African Diaspora	5
HIS 40A	Early Modern East Asia	5
HIS 65B	Plagues, Peasants, and Pirates: Late Medieval Europe, 1000-1500	5
HIS 70A	Modern European History, 1500-1815	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 81	Science in the Colonial World	5
HIS 101D	World History of Science	5
HIS 101F	Global Environmental History	5
HIS 101H	The Horse in World History	5
HIS 110A	Colonial America, 1500-1750	5
HIS 110B	Revolutionary America, 1740-1815	5
HIS 116	Slavery Across the Americas	5
HIS 121A	African American History to 1877	5
HIS 131	Women in Colonial Latin America	5
HIS 134A	Colonial Mexico	5
HIS 137E	Literary Culture in Africa	5
HIS 140B	History of Qing China, 1644-1911	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
HIS 147A	History of Premodern India	5
HIS 149	Plants, People, and the Making of Modern Southeast Asia	5
HIS 149F	Southeast Asian Histories, Societies and Politics in Nine Tasty Foods	5
HIS 150B	Tokugawa Japan	5
HIS 151	Keywords in the History of Science and Medicine	5
HIS 151A	Medicine and the Body in the Colonial World	5
HIS 151B	Drugs in World History	5
HIS 157	The Ottoman Empire	5
HIS 158A	The Escapes of David George: Biographical Research on Slavery and Early America	5
HIS 158C	Slavery in the Atlantic World: Historical and Archaeological Perspectives	5
HIS 158D	The Atlantic Slave Trade, 1520-1866	5
HIS 165A	Medieval History and Architecture	5
HIS 169	Dutch and Belgian History, 1500 to Present	5
HIS 170A	French History: Old Regime and Revolution	5
HIS 177A	Slaves, Soldiers, and Scientists: History of the Tropics	5
HIS 178A	European Intellectual History: The Enlightenment	5
HIS 185L	Where Civilizations Met--Jews, Judaism, and the Iberian Peninsula	5
HIS 190A	Slavery and Race in Latin America	5
HIS 190P	Early American Society and Culture	5
HIS 190X	History of the Atlantic World, 1492-1824	5
HIS 190Y	The Atlantic Slave Trade	5
HIS 194M	Literati, Samurai, and Yangban: Comparative History of State and Elite in East Asia, 1600-1900	5
HIS 194L	Exile, Diaspora, and Displacement: Jewish Lives from North Africa to the Middle East	5

Pre-Approved Interdisciplinary Courses

The following is a list of undergraduate courses outside of History which may be substituted for the one 5-credit upper-division elective requirement. Questions about this list or how to apply courses to the history major should be directed to the history undergraduate program coordinator.

Cowell

COWL 158A	Special Topics: Oral History	5

Economics

ECON 125	Economic History of the U.S	5
ECON 149	The Economies of East and Southeast Asia	5

History of Art and Visual Culture

HAVC 127A	Buddhist Visual Worlds	5
HAVC 137A	Northern Renaissance Art	5
HAVC 151	Greek Myths Antiquity to the Present	5
HAVC 155	Constructing Cleopatra: Power, Sexuality, and Femininity Across the Ages	5
HAVC 157B	Italian Renaissance: Art and Architecture	5
HAVC 160A	Indigenous American Visual Culture Before 1550: Mexico	5
HAVC 162A	Special Studies in Early Indigenous American Visual Culture: The Ancient Maya	5
HAVC 170	Art of the Body in Oceania	5

Literature

LIT 118A	Hebrew Bible	5
LIT 130B	Travel Writing and Intercultural Relations in the Middle Ages	5
LIT 133D	Topics in the Literatures and Cultures of Southern Asia	5
LIT 141A	Early Mediterranean Cultures	5
LIT 141D	Classical Arabic Literature and Islamic Civilization	5
LIT 141E	Post-Classical Arabic Literature and Culture	5
LIT 141G	Granada: The Moor's Last Sigh and the Muslim's Frontier: The City in the Mediterranean Imagination	6
LIT 149C	The 1960s	5
LIT 168A	The Culture of Islamic Law	5
LIT 168B	Islamic Law and Society	5

Philosphy

PHIL 100A	Ancient Greek Philosophy	5

Politics and Legal Studies

POLI 105A	Ancient Political Thought	5
POLI 105B	Early Modern Political Thought	5
POLI 120A	Congress, President, and the Court in American Politics	5
POLI 140D	Politics of East Asia	5
POLI 141	Politics of China	5

Sociology

SOCY 105A	Classical Social Theory	5

History of Consciousness

315 Humanities 1
(831) 459-4324
https://histcon.ucsc.edu

PROGRAMS OFFERED

History of Consciousness Minor (p. 203)

History of Consciousness Ph.D. (p. 203)

History of Consciousness Designated Emphasis (p. 204)

OTHER PROGRAMS OF INTEREST

Critical Race and Ethnic Studies B.A. (p. 149)

Feminist Studies B.A. (p. 159)

History of consciousness is an interdisciplinary graduate program centered in the humanities, with links to the social sciences and the arts. It is concerned with forms of expression and social action as they are manifested in specific historical, cultural, and political contexts. The program stresses flexibility and originality. Interest is focused on problems rather than disciplines. Although students are prepared to teach in particular fields, the emphasis is on questions that span a number of different approaches.

History of consciousness fosters problem-driven research vital to new forms of knowledge and intelligibility and to meet the challenges of imagining new modes of scholarship for the arts, social sciences, and humanities. The department emphasizes a variety of topics in its seminars and research pursuits. These areas of research include studies at the intersection of race, sexuality, and gender; global capitalism and cultural processes; psychoanalytic and semiotic theories of the image; science and technology studies; theories and histories of religion; social movements; and literary studies and poetics. Seminars are regularly offered in these and other areas of ongoing faculty research.

History of consciousness facilitates its expansive intellectual and pedagogical mission by maintaining strong cooperative relations with affiliated faculty from other campus programs who offer seminars and participate in advising, qualifying examinations, and dissertation committees. The formal list of affiliated faculty is a non-exhaustive indication of advising possibilities beyond the program’s core faculty. Campus research organizations, such as the UCSC Center for Cultural Studies, the Humanities Institute, critical race and ethnic studies, the Science and Justice Research Center, and the

Research Center for the Americas, also provide venues for collaborative work.

GRADUATE PROGRAM

Over almost 60 years of existence, the history of consciousness graduate program has become widely recognized as a leader of interdisciplinary scholarship. Program graduates are influential scholars at prominent universities, and their dissertations have been published by important trade and academic presses. Graduates currently find academic employment in a wide range of disciplines, including literature, feminist studies, science studies, anthropology, sociology, American studies, cultural studies, ethnic studies, communications, the study of religion, and philosophy. In addition, history of consciousness graduates work as filmmakers, museum researchers, free-lance writers, postdoctoral researchers, and academic administrators.

Since the curriculum concentrates on theoretical and methodological issues and is concerned with the integration of disciplines, candidates for admission are expected to have a relatively clear idea of the project they wish to pursue. Experience of advanced work in one or more fields is preferred, but not required.

Students also have the option of doing advanced work in a traditional discipline and receiving a designated emphasis in that specialization. In such cases, students must satisfy the appropriate department's criteria (see designated emphases for information).

HISTORY OF CONSCIOUSNESS MINOR

Course Requirements

Lower-Division Courses

Students take one of the following courses. Students may petition for approval of an alternative departmental lower-division course.

HISC 1	Introduction to History of Consciousness	5
HISC 12	Historical Introduction to Philosophy	5

Upper-Division Courses

Students are required to take five 5-credit, upper-division history of consciousness courses numbered HISC 100-199.

Students may, with permission of the instructor, petition the department to substitute a 5-credit graduate seminar for one of the required upper-division courses. In addition, students may petition to substitute an upper-division course offered by affiliated faculty in other departments.

Students must complete all requirements for the minor with a grade of P, C (2.0), or better.

HISTORY OF CONSCIOUSNESS

PH.D.

Introduction

Detailed information for prospective graduate students, including procedures for application and admission to graduate studies, examinations, and requirements for the doctor of philosophy degree, is available from the Division of Graduate Studies and on the department website.

Applications

The deadline for applications to the history of consciousness (HISC) program usually falls in the second week of December. Please check the Graduate Admissions page for the specific date each year. Admissions information and application materials are available online. Applications are invited from students with backgrounds and interests in the humanities, arts, and social sciences and are especially encouraged from individuals with a clear idea of the project they wish to undertake. Strong preference is given to applicants working in areas for which the faculty resources in history of consciousness are appropriate and available. Graduate Record Examination (GRE) scores are optional. A writing sample is required of no more than 10 pages. Admission is for the fall quarter only.

It is important to note that in light of California's elimination of affirmative action as an admissions criterion, the History of Consciousness Department reaffirms its commitment to the principles of affirmative action. This means a commitment to diversity, equal opportunity, and outreach to underrepresented communities. Further, this commitment underlines our understanding that the very fabric and quality of our scholarship depends on the representation and interplay of diverse experience and perspectives. So defined, affirmative action is reflected in every aspect of the history of consciousness program, including scholarship, teaching, admissions, hiring, and the process of departmental governance.

Advancement to Candidacy

Course Requirements

The common requirements are:
• HISC 203A, Approaches, to be taken in fall quarter of the first year;
• HISC 240, Pedagogy of Teaching/Teaching Assistant Training, to be taken in the fall quarter of the first year;
• HISC 203B, the writing-intensive version of Approaches, to be taken in spring quarter of the first year;
• A minimum of five history of consciousness graduate seminars to be taken during the first two years (HISC 203A and four additional HISC seminar classes, not including HISC 203B);
• HISC 291, a two-credit advising course, to be taken each quarter;

Students register for a minimum of two courses (5 credits each) plus HISC 291 (2 credits) per quarter until after Advancement to Candidacy, at which time they may register for one course per quarter (normally HISC 299A) plus the 2-

credit HISC 291 in order to qualify for full-time enrollment. With the exception of HISC 203A, HISC 203B, HISC 240 and the five required history of consciousness seminars, courses taken to fulfill the university enrollment requirements may include not only history of consciousness seminars but also independent study courses with specific faculty and graduate seminars offered in other departments.

HISC 203A	Approaches to History of Consciousness	5
HISC 203B	Approaches to History of Consciousness	5
HISC 240	Basic Principles of University-Level Pedagogy	2
HISC 291	Advising	2

Minimum of five HISC grad seminars

A minimum of five history of consciousness graduate seminars during the first two years (HISC 203A and four additional HISC seminar classes, not including HISC 203B).

Foreign Language Requirements

Students must demonstrate a proficiency in a language other than English (as demonstrated by an undergraduate degree in the language, taking a translation examination, completing coursework, or petitioning for exemption).

Teaching Requirement

Students must complete three quarters of supervised teaching experience.

Pre-Qualifying Requirements

Qualifying Examination

The qualifying examination includes a written and oral component. The written component consists of a qualifying essay (normally drafts of one to two chapters of the proposed dissertation) that demonstrates the candidate's ability to do extended, dissertation-level research, analysis, and writing on an original topic. The written component also includes a dissertation prospectus. The oral examination focuses on the student's qualifying essay, dissertation prospectus, and relevant fields of scholarship.

Post-Qualifying Requirements

Advancement to Candidacy

Students are encouraged to advance to candidacy in their third year. In order to remain within normative time they must advance by the end of their fourth year in the program. In order to advance to candidacy, students must complete their coursework; demonstrate proficiency in a second language (by taking a translation examination, completing coursework, or petitioning for exemption), be in good academic standing, and complete and pass the written and oral portion of the qualifying examination.

[Optional Catchall]

Dissertation

After advancement to candidacy, students concentrate on dissertation writing. The current normative time to degree limit of seven years means that a student usually has a minimum of three years after advancement to candidacy for completion of the dissertation. Students register for one course per quarter (normally HISC 299A) plus the 2-credit HISC 291 which qualifies as full-time enrollment.

Dissertation Defense

A formal dissertation defense is optional. Please consult with the department if you want to pursue this option.

Academic Progress

In order to remain within normative progress, students must advance by the end of their fourth year in the program.

A student who has been advanced to candidacy for more than nine quarters is not considered to be making satisfactory progress.

For a complete list of Academic Requirements and Standards, visit the Graduate Division website.

Applying for Graduation

For information on how to apply for graduation, visit the Graduate Division website.

[Optional Catchall]

HISTORY OF CONSCIOUSNESS DESIGNATED EMPHASIS

Introduction

To receive a designated emphasis in history of consciousness, graduate students from other departments must complete the requirements in addition to degree requirements for the doctorate in their home department. Guidelines and application forms are available on the history of consciousness website.

Requirements

Committee Composition and Departmental Approvals

The student must have a faculty graduate advisor from core faculty in history of consciousness, who serves both on the qualifying exam committee and the dissertation reading committee. To obtain the designated emphasis in history of consciousness:

- The request for a designated emphasis must originate in the degree-granting department.
- The student should complete an application, obtain the history of consciousness advisor's signature and submit with supporting documentation (copies of the QE and

dissertation committee nomination forms) to the History of Consciousness Department office.

- The History of Consciousness Department will notify the student and the home department of approval for the designated emphasis.

Course Requirements

The student must take four graduate courses in history of consciousness. With the approval of the history of consciousness advisor, one of the four required graduate courses may be an independent study. Students are strongly encouraged to take courses offered by at least two different core history of consciousness faculty toward their DE requirements.

Writing, Research and/or Teaching Requirements

[Optional Catchall]

Languages and Applied Linguistics

Revised: 7/21/2025

Department of Languages and Applied Linguistics
218 Cowell College
(831) 459-2054
https://language.ucsc.edu

PROGRAMS OFFERED

Applied Linguistics and Multilingualism B.A. (p. 208)

Spanish Studies B.A. (p. 213)

Spanish Studies Minor (p. 218)

Teaching English as a Second or Other Language (p. 219)

OTHER PROGRAMS OF INTEREST

Language Studies B.A. (p. 227)

Linguistics B.A. (p. 221)

Language is an intellectual tool basic to all disciplines. In today's communities, multicultural and global, learning a second language is not a refinement but a necessity—the key to understanding and communicating with others near and far. The goal of the Department of Languages and Applied Linguistics at UC Santa Cruz is to allow students to achieve a substantial level of proficiency in languages other than English. Since such proficiency always includes cultural as well as linguistic comprehension, our courses examine the complex relationship between language and culture.

The Department of Languages and Applied Linguistics offers rigorous training by professional instructors. Most courses are taught in the target language from the very beginning. Currently, we offer courses in Arabic, Chinese, French, Hebrew, Italian, Japanese, Punjabi, Spanish, Spanish for heritage speakers, and Yiddish.

Students with previous language preparation who wish to continue in that language take a placement examination to determine the course level appropriate for them. Each language's placement examination format is described in the quarterly Schedule of Classes, along with the date ,time, and location of the examination.

Our upper-division courses further expand students' understanding of language in its social contexts, focusing on linguistic, historical, literary, sociological and cultural issues, among others.

Students may also use language courses for the following majors and minors that have a language requirement: classical studies, East Asian studies, global economics, human biology, Italian studies, Jewish studies, Latin American and Latino studies, linguistics, language studies, and literature.

Students of language who are interested in theater have the opportunity to participate in the annual International Playhouse, which presents highly successful programs every spring. To date, pieces have been performed in Chinese, French, German, Hebrew, Italian, Japanese, Latin, Punjabi, Russian, and Spanish.

Study abroad is an important component of language study at UCSC. Language students have various opportunities to study abroad, for a summer, quarter, semester, or year. Students may choose to study abroad through the Division of Global Engagement through the UCSC Summer Abroad Program, or through affiliate programs around the globe. The Division of Global Engagement offers programs in Argentina, Australia, Barbados, Botswana, Brazil, Canada, Chile, China, Costa Rica, Denmark, Egypt, France, Germany, Ghana, Hong Kong, India, Ireland, Israel, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Russia, Singapore, South Africa, Spain, Sweden, Taiwan, Tanzania, Thailand, Turkey, United Kingdom, and Vietnam. There are programs available for students of all levels of language ability, including Language and Culture programs for beginner or intermediate speakers, to full immersion programs for students with advanced language skills. For a list of current programs and requirements, please visit the following Global Engagement website.

UNDERGRADUATE PROGRAM

The department houses two vibrant majors, in applied linguistics and multilingualism, and in Spanish studies**,** as well as a minor in Spanish studies. The applied linguistics and multilingualism major is designed for students who wish to pursue the study of a particular language and, at the same time, gain an in-depth understanding of language use in bilingual and multilingual settings. Applied linguistics courses are taught in English and cover topics such as language and gender, second-language teaching, bilingualism, discourse analysis, and intercultural communication. In Spanish studies, the major and minor are both interdisciplinary programs that promote advanced linguistic proficiency in Spanish studies as well as a broad understanding of the historical and cultural developments of the Spanish-speaking world.

PLACEMENT EXAMS

Information about this topic can be found under the Department of Languages and Applied Linguistics website in the "placement" tab located in the navigation bar at the top of the page.

ACADEMIC ENGLISH

The Department of Languages and Applied Linguistics offers a series of courses in Academic English (ACEN) designed specifically for students whose native language is not English, and who would benefit academically by improving their English language skills. The main objective of these courses is to raise the linguistic, academic, and cultural competence of international students who are currently pursuing various majors at UCSC. ACEN courses help students develop and refine their knowledge of English usage, advanced grammar, vocabulary and idiomatic expressions, while at the same time developing their listening, oral communication, and academic reading and writing skills. The specific content of each course varies per quarter, and thus, none of the courses are prerequisites to the others.

ARABIC

Students interested in acquiring proficiency in Modern Standard Arabic can enroll in language courses from beginning to intermediate levels (ARBC 1 - ARBC 4). The curriculum aims to build a solid foundation in speaking, listening, reading, and writing, as well as imparting an understanding of culture and society in the modern Arabic-speaking world**.** Other courses at UC Santa Cruz that may be of interest to students of Arabic are detailed here**.**

Study Abroad

Students may apply to spend time in Jordan or Morocco, visit the Division of Global Engagement website for information about current programs.

CHINESE

Students interested in acquiring proficiency in Chinese can enroll in language courses from beginning to advanced levels. Only those with no prior experience with the language may enroll in CHIN 1, which is only offered fall quarter. Heritage learners and those with prior instruction are required to take a placement exam. In addition, students may select from among the following programs: a major in applied linguistics and multilingualism, a major in language studies or linguistics, a minor in East Asian studies through the History Department, an individual major in East Asian studies through their college, a major in literature with an emphasis in Chinese literature, or a major in global economics.

The sequence of lower-division courses CHIN 1–CHIN 6 is aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing skills. Instruction takes place mostly in Chinese from the second half of the first quarter. Students interested in studying abroad or in Chinese culture knowledge can enroll in CHIN 80, which is taught primarily in English and wish to learn a few phrases in Chinese Mandarin. Upper-level courses include CHIN 103, Language and Society; CHIN 104, Readings in Chinese Literature; CHIN 105, Readings in Chinese History; CHIN 107, Introduction to Classical Chinese Prose; and CHIN 108, Introduction to Classical Poetry.

Study Abroad

Students may apply to study intensive Chinese language at universities—in Taipei, Hong Kong, or Beijing—for periods ranging from a summer up to a full year through the Division of Global Engagement. Courses taken abroad can, with approval of an adviser, be applied to major requirements. For a list of current programs and requirements, visit the Division of Global Engagement website. For information on credit applied to a major, please contact the appropriate department.

FRENCH

Students interested in acquiring proficiency in French can enroll in language courses from beginning to advanced levels. In addition, students may select from among the following programs: a major in applied linguistics and multilingualism, a major in language studies, a major in literature with an emphasis in French literature, or a major in global economics.

Lower-division FREN 1–FREN 6 are taught entirely in French and prepare students for advanced study either on campus or abroad. They are designed to help students develop proficiency in aural comprehension, speaking, reading, and writing skills, and to introduce student to French and Francophone cultures. Upper-division courses, also taught in French, are offered on topics such as French phonetics, advanced grammar and composition, French civilization, French linguistics, history of the French language, French for professions, and French social activism through song.

Study Abroad

The Division of Global Engagement offers both semester and one-year programs in many regions of France, including Bordeaux, Lyon, Grenoble, Toulouse, and Paris. With the approval of an adviser, some French courses taken abroad may be applied to major requirements. For a list of current programs and requirements, visit the Division of Global Engagement website.

HEBREW

Students interested in acquiring proficiency in modern Hebrew can enroll in language courses from beginning to intermediate levels. In addition, credits from these courses may be counted toward the major or minor in Jewish studies. Lower-division courses are aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing. Attention is also given to developing an understanding of the culture, history, and religion that have been expressed through the Hebrew language from antiquity until today. HEBR 1, HEBR 2, and HEBR 3 (or equivalency) are required for the major in Jewish studies, and other Hebrew

courses are encouraged. In addition, credits from modern or biblical Hebrew courses may be counted toward the minor in Jewish studies.

ITALIAN

Students interested in acquiring proficiency in Italian can enroll in language courses from beginning to advanced levels. In addition, students may select from among the following programs: a major in applied linguistics and multilingualism, a minor in Italian studies, a major or minor in language studies, a major in global economics.

The sequence of lower-division courses ITAL 1–ITAL 6 is aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing. The ITAL 1, ITAL 2, ITAL 3 sequence starts once a year in the fall quarter. Classes are taught in Italian from the beginning level.

Students interested in Italian Culture Through Cinema can enroll in ITAL 80.

Upper-division courses, also taught in Italian, are offered on topics such as Advanced Italian Composition and Conversation, Italian Culture Through Food, and Italian Culture Through Film.

Study Abroad

The Division of Global Engagement sponsors programs of study in Italy. For a list of current programs and requirements, visit the Global Engagement website.

JAPANESE

Students interested in acquiring proficiency in Japanese can enroll in language courses from beginning (JAPN 1, JAPN 2, JAPN 3, JAPN 4, JAPN 5, JAPN 6) to advanced levels (JAPN 103, JAPN 104, JAPN 105, JAPN 106, JAPN 109). Only those with no prior experience with the language may enroll in JAPN 1, which is only offered fall quarter. Heritage learners and those with prior instruction are required to take a placement exam. See the placement website for more information.

The curriculum aims to build a solid foundation in all four aspects of linguistic skills (speaking, listening, reading, and writing) as well as sociolinguistic competence and cultural knowledge. Instruction takes place mostly in Japanese from the second half of the first quarter.

Students may use Japanese courses for the following majors and minors: a major in applied linguistics and multilingualism, a major in language studies (and minor), a major in linguistics (and minor), an East Asian minor, a major in global economics, or a major in literature (and a minor).

See the department's Japanese website for more information about the Japanese program.

Study Abroad

The Division of Global Engagement has information on study in Japan. There are study abroad—programs at many universities, including Doshisha, Hitotsubashi, ICU, Keio, Meiji Gakuin, Osaka, Tsuru, and Waseda. Courses taken abroad can, with approval of an adviser, be applied to major requirements. For a list of current programs and requirements, visit the Division of Global Engagement website. For information on credit applied to a major, contact the appropriate department.

PUNJABI

Students interested in acquiring proficiency in Punjabi can enroll in PUNJ 1, PUNJ 2, and PUNJ 3. These courses are intended for both heritage and non-heritage learners and are aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing. Attention is also given to developing an understanding of the culture that has been expressed through the Punjabi language. This program is part of Sikh and Punjabi studies at UCSC. Punjabi language courses are offered every other academic year.

SPANISH AND SPANISH FOR HERITAGE SPEAKERS

Students interested in acquiring proficiency in Spanish can enroll in a wide range of Spanish language or Spanish for heritage speakers (SPHS) courses, from beginning to advanced levels. The language and culture sequence of lower-division courses (SPAN 1-SPAN 6 as well as SPHS 4–SPHS 6) and upper-division series (SPAN 114, SPHS 115, SPAN 140-SPAN 142, SPAN 150-SPAN 155, and SPAN 156, and SPAN 157-SPAN 158 courses) are aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing as well as meta-linguistic and cultural competence. Students are strongly encouraged to finish year-long sequences without interruption and, if possible, to study in Spanish-speaking countries. Students can pursue a major in Spanish Studies or a minor in Spanish. Other programs that require some coursework in Spanish include a major or minor in language studies, a major in literature with an emphasis in Spanish/Latin American/Latino literatures, a major in Latin American and Latino studies, and a major in global economics.

SPANISH

Students interested in taking Spanish classes are required to take the placement examination to enroll in the appropriate level. Students finishing the first year of instruction in Spanish (SPAN 1–SPAN 2–SPAN 3) are encouraged to continue on to second-year (intermediate-level) by taking SPAN 4, SPAN 5, and SPAN 6.

Declared human biology majors have priority enrollment in SPAN 5M, Medical Spanish, but others may enroll if there is space availability. Students are also encouraged to continue with the third-year SPAN 114, SPHS 115, SPAN 140-SPAN 142, SPAN 150-SPAN 155, the SPAN 156 series, and SPAN

157-SPAN 158 in which a wide variety of topics are covered. For more information on the courses offered in Spanish, please see the course descriptions.

SPANISH FOR HERITAGE SPEAKERS

SPHS has been developed for heritage speakers who, although raised in Spanish-speaking communities or households, are not yet fully proficient in Spanish. SPHS courses take into account the experiences and influences of bilingual and bicultural upbringing.

SPHS students are encouraged to attend a group tutoring session once a week in addition to the regular class meetings. Some lower-division and all upper-division courses can fulfill requirements for several majors or departments, such as education, global economics, language studies, and Latin American and Latino studies.

Heritage speakers who are planning to continue with the Spanish studies major are strongly encouraged to take the SPHS 4–SPHS 5–SPHS 6 sequence of courses. Keep in mind that this is a sequence which starts in the fall.

STUDY ABROAD

The Division of Global Engagement offers programs ranging one quarter or one academic year in Buenos Aires; Argentina, Santiago, Chile; San Jose and Monteverde, Costa Rica; Morelia and Monterrey, Mexico, and Cordoba, Madrid, Alcala, Barcelona, and Granada, Spain. Generally, students must have completed SPAN 6 or SPHS 6 by the end of the sophomore year to qualify for a junior year abroad. Courses taken abroad can, with approval of an adviser, be applied to major requirements. For more information, see the Division of Global Engagement website. For information on credit applied to a particular major, contact the appropriate department.

YIDDISH

Students interested in acquiring proficiency in Yiddish can enroll in beginning language courses. In addition, some credit from these courses may be counted toward the major or minor in Jewish studies; consult with the Jewish studies program. Lower-division courses are aimed at enabling students to gain proficiency in aural comprehension, speaking, reading, and writing. Attention is also given to developing an understanding of the culture that has been expressed through the Yiddish language.

APPLIED LINGUISTICS AND MULTILINGUALISM B.A.

Information and Policies

Introduction

Applied linguistics is an interdisciplinary field that seeks to understand how languages are learned (first and second language acquisition), how more than one language is represented and accessed in the mind of the individual (bilingualism), the ways in which language and society intersect (sociolinguistics), how people from different cultural and linguistic backgrounds interact (intercultural communication), and methods and principles of language teaching (pedagogy).

The major in applied linguistics and multilingualism is designed for students who wish to pursue the study of a particular language (e.g., Chinese, French, Italian, Japanese, or Spanish), and at the same time, gain an in-depth understanding of language use in bilingual and multilingual settings. Coursework for the major presupposes some familiarity with theoretical linguistics, and thus majors are required to take three foundational courses offered in the Linguistics Department (LING 50 and LING 100; LING 111 or LING 112) in addition to APLX 80, the introductory course to applied linguistics. Since applied linguistics is integrally connected to other disciplines such as cognitive and developmental psychology, education, anthropology, and sociology, students have the option of taking some elective courses in these areas. Finally, majors are encouraged to pursue the study of more than one language in order to reflect on and enhance their understanding of the process of second language acquisition.

Program Learning Outcomes

Graduates from the applied linguistics and multilingualism studies bachelor of arts program should:

- **Demonstrate proficiency in a second language.** Students who successfully complete the applied linguistics and multilingualism major will reach an Intermediate-high level of proficiency in their second language (L2) as described in the scale of the American Council of Teachers of Foreign Languages (ACTFL). This is similar to the B2 level on the Common European Framework of Reference. Speakers who complete additional course work through study abroad (an aspect of the major that is very much encouraged) may reach the advanced level in their L2.
- **Be able to analyze critically the contexts and processes of (second and other) language acquisition.** Students will develop an in-depth understanding of processes of and issues relating to the acquisition of more than one language, bilingualism and multilingualism, including social, psycholinguistic and metalinguistic aspects of these processes.
- **Be able to analyze critically the contexts and uses of language in society.** Students will gain an in-depth understanding of social aspects of bilingualism and multilingualism, and issues of language in social contexts. Students will also develop an understanding of how different disciplines work together to make sense of human communication in multilingual contexts.
- **Demonstrate research skills appropriate for the field of applied linguistics, such as collecting and**

analyzing data. Students will develop the receptive and productive skills necessary for becoming members of this community of practice. Specifically, they will develop the disciplinary skills to summarize, interpret and critique both quantitative and qualitative research studies in applied linguistics. Through this process, students will develop the ability to engage in independent reading of scientific texts and research articles, to design basic research projects as well as to collect, analyze, and write about applied linguistic data.

- **Demonstrate effective written and oral communication appropriate for the discipline of applied linguistics.** Students will learn how to review and report on relevant applied linguistic research critically, using discipline-appropriate conventions in written and oral presentations (i.e., expected content, organization, register, and language).

Academic Advising for the Program

218 Cowell College
831-459-2054
languages@ucsc.edu

The earlier you declare your major in your academic career the better you will be able to plan your courses and the fulfillment of the requirements. If you declare your major early, you will receive more guidance, useful advice and close follow-up.

The Department of Languages and Applied Linguistics provides extensive orientation for the undergraduate major in applied linguistics and multilingualism. It is very important you plan the prerequisite and requisite courses in the appropriate sequence so as to complete your studies in the expected time.

Orientation is provided in two ways: large-group informational session at the beginning of fall quarter, and small-group or individual meetings with a faculty and/or staff advisor throughout the academic year.

Transfer students: Please also consult the Transfer Information and Policy section.

Getting Started in the Major: Frosh

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to the University of California, Santa Cruz.

Transfer students are strongly advised to complete courses that will satisfy the campus general education requirements, the Intersegmental General Education Transfer Curriculum (IGETC), or the California General Education Transfer Curriculum (CalGETC). In addition, transfer students are strongly advised to complete two years of language study in accredited two and four year institutions. While two years of prior language study is strongly advised, transfer students should be able to complete the applied linguistics and multilingualism major in normative time as long as they place into language Level 4 (Level 5 for students entering UC Santa Cruz in the winter term) upon arrival at UC Santa Cruz.

Getting Started in the Major: Transfer Students

Transfer students may declare at any time after completing Level 4 of a non-English language with a grade of B- or better, following the process in "How to Declare a Major." Transfer students who place into Level 5 or higher of their language when they enter UC Santa Cruz can declare the major immediately.

Transfer students should consult an academic advisor at languages@ucsc.edu as soon as possible to learn about language placement tests and other information about the major.

Major Qualification Policy and Declaration Process

Major Qualification

To declare the major, students must have completed Level 4 of a non-English language (e.g., ARBC 4, CHIN 4, FREN 4, ITAL 4, JAPN 4, SPAN 4, SPHS 4) with a grade of B- or better, or place into Level 5 or higher via placement exam. Levels 1-3 may be taken P/NP. Please see the Letter Grade Policy section below for more details.

If your native language is other than English, please consult with the faculty director to discuss alternative options for meeting this requirement.

Transfer students: Please also consult the Transfer Information and Policy section.

ARBC 4	Second-Year Arabic	5
CHIN 4	Second-Year Chinese	5
FREN 4	Second-Year French	5
ITAL 4	Second-Year Italian	5
JAPN 4	Second-Year Japanese	5
SPAN 4	Second-Year Spanish	5
SPHS 4	Spanish for Heritage Speakers	5

Appeal Process

Students notified that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair within 15 working days from the date of notification. Within 15 working days of receipt of the student's appeal, the department will notify the student and their college of its decision regarding the appeal.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification (MQ) requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e. in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g. completion of some courses with certain

grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification (MQ) courses.

Students must meet major qualification requirements prior to declaring the major.

To declare the major, students must first meet with the faculty advisor and then with the academic advisor. Please contact languages@ucsc.edu for further information.

Letter Grade Policy

A maximum of two courses that are used to satisfy the major requirements may be taken for a Pass/No Pass. Please note that the Level 4 course in the student's chosen language and APLX 190 must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Study Abroad

The Division of Global Engagement sponsors programs of study. Students who wish to major in applied linguistics and multilingualism are strongly encouraged to study abroad. For a list of current programs and requirements, visit Global Engagement.

Students who participate in study abroad may petition to apply up to three courses (up to 15 upper-division credits) toward the major.

Honors

Students who wish to be considered for honors should meet the deadline posted by the Office of the Registrar for declaring the intent to graduate. Determination of honors is based on the student’s grades for all courses relevant to the major and other factors relevant to an assessment of academic excellence, such as research papers of professional quality. Generally, honors in the major are awarded only to students with a GPA of 3.75 or higher in relevant coursework. Only those students whose performance in coursework is excellent will qualify. Highest honors are awarded only to students whose performance in relevant coursework is outstanding (GPA of 3.90 and above) and who have completed an outstanding original research paper.

[Optional Catchall]

Requirements and Planners

Course Requirements

There are a total of 65 credits (50 upper-division and 15 lower-division) required for the applied linguistics and multilingualism major. See below for a breakdown of the credit requirements.

Lower-Division Courses

All of the following courses:

APLX 80	Introduction to Applied Linguistics	5
LING 50	Introduction to Linguistics	5

Language Study: Completion of Level 6 is Required

CHIN 6	Second-Year Chinese	5
FREN 6	Second-Year French	5
ITAL 6	Second-Year Italian	5
JAPN 6	Second-Year Japanese	5
SPAN 6	Second-Year Spanish	5
SPHS 6	Spanish for Heritage Speakers	5

These courses have Level 1 to Level 5 language prerequisites that have to be completed or placed out of.

Upper-Division Courses

Foundation Courses

Take the following courses:

APLX 101	Second-Language Acquisition	5
LING 100	Sounds of the World's Languages: Phonetics I	5

and one of the following courses:

LING 111	Syntactic Structures	5
LING 112	Syntax I	5

Advanced Language Proficiency Courses

(10 credits total)

Students must take a minimum of two courses from the following list in the student’s target language (Arabic, Chinese, French, Italian, Japanese, or Spanish). The complete Advanced Language Proficiency course list is posted on the department’s web page. Courses used to fulfill the advanced language proficiency requirement cannot be counted toward the APLX electives. Students may petition to have other 5-credit, upper-division courses offered in the student’s target language count toward the advanced language proficiency requirement.

Although languages and applied linguistics does not currently offer upper-division coursework in Arabic students who have completed the two-year sequence in this language (or demonstrate equivalent proficiency) have the option to, and are welcome to, complete approved upper-division coursework in Arabic through the Division of Global Engagement in order to satisfy the upper-division language requirement for the major in applied linguistics and multilingualism. The department wants to accommodate students having studied Arabic and satisfaction of the upper-division courses via study abroad is one option to do so. However, participation in study abroad is not a requirement: If students are unable to participate in study abroad for any reason, they are able to choose to fulfill the upper-division language requirement in the Applied Linguistics and

Multilingualism major by studying a language that the Languages and Applied Linguistics Department offers at the upper-division level.

CHIN 103	Advanced Chinese: Language and Society	5
CHIN 104	Advanced Chinese: Readings in Literature	5
CHIN 105	Advanced Chinese: Readings in History	5
CHIN 107	Introduction to Classical Chinese Prose	5
CHIN 108	Introduction to Classical Chinese Poetry	5
FREN 108	French Cinema	5
FREN 111	Stylistics	5
FREN 114	French Phonetics	5
FREN 120	French Linguistics	5
FREN 121	History of the French Language	5
FREN 125A	French Civilization: 19th Century	5
FREN 125B	French Civilization: 20th Century	5
FREN 130	French for Professions	5
FREN 136	La Francophonie	5
FREN 131	Social Activism in France: The Tradition of Chanson Française Engagée	5
ITAL 100	Advanced Italian Composition and Conversation	5
JAPN 103	Advanced Japanese	5
JAPN 104	Advanced Japanese	5
JAPN 105	Advanced Japanese	5
JAPN 109	Japanese Language, Culture, and Society	5
LALS 171	Brazil in Black and White	5
SPAN 114	Advanced Conversation and Composition	5
SPHS 115	El ensayo lectura, análisis y redacción	5
SPAN 140	Sounds of Spanish	5
SPAN 141	Advanced Spanish Grammar	5
SPAN 142	El mundo de las palabras. Spanish Morphology and Lexicon	5
SPAN 150	Topics in Hispanic Linguistics: Introduction to Hispanic Linguistics	5
SPAN 151	Topics in Hispanic Linguistics: Varieties of Spanish	5
SPAN 152	Topics in Hispanic Linguistics: Spanish in the U.S.	5
SPAN 153	Spanish Language Teaching	5
SPAN 154	Topics in Hispanic Linguistics: Spanish Pragmatics	5
SPAN 155	Topics in Hispanic Linguistics: Language Contact in the Spanish Speaking World	5
SPAN 156A	The Language of Latin America Cinema	5
SPAN 156E	Spanish Culture	5
SPAN 156F	El Humor en Espanol	5
SPAN 156J	Contemporary Central America	5
SPAN 156K	Spanish Discourse Analysis	5
SPAN 156L	Society and Sustainability in Latin America	5
SPAN 157	Spanish Sociolinguistics	5
SPAN 158	Spanish in the U.S.-Mexico Borderlands	5

Electives

(20 credits total)

Four upper-division (5-credit) electives from the following list are required, at least three of which must be APLX courses. Additional courses can be considered, pending approval by the APLX faculty director. Courses used to fulfill the advanced language proficiency requirement cannot be counted toward the APLX electives.

ANTH 139	Language and Culture	5
ANTH 143	Performance and Power	5
APLX 102	Bilingualism	5
APLX 103	Second Language Speech	5
APLX 105	Language Loss	5
APLX 112	Language and Gender	5
APLX 113	Inter-Cultural Communication	5
APLX 116	Discourse Analysis: Language Use and Context	5
APLX 115	Language and Power	5
APLX 122	Linguistic Diversity & Social Justice	5
APLX 124	Second Language Variation and Sociolinguistics	5
APLX 135	Second Language Teaching	5
APLX 136	Second Language Assessment	5
APLX 138	English Grammar for TESOL	5
EDUC 141	Bilingualism and Schooling	5
LING 117	Pragmatics	5
LING 154	Language and Social Identity	5
LING 155	Language and Cognition	5
LING 171	Psycholinguistics I	5
LING 181	Structure of Romance Languages	5
LING 183	Structure of French	5
LIT 101	Theory and Interpretation	5
LIT 102	Translation Theory	5
SOCY 142	Language and Social Interaction	5
SPAN 140	Sounds of Spanish	5
SPAN 150	Topics in Hispanic Linguistics: Introduction to Hispanic Linguistics	5
SPAN 151	Topics in Hispanic Linguistics: Varieties of Spanish	5

SPAN 152	Topics in Hispanic Linguistics: Spanish in the U.S.	5
SPAN 153	Spanish Language Teaching	5
SPAN 154	Topics in Hispanic Linguistics: Spanish Pragmatics	5
SPAN 156K	Spanish Discourse Analysis	5
SPAN 156L	Society and Sustainability in Latin America	5

Disciplinary Communication (DC) Requirement

The Disciplinary Communication requirement (DC) is satisfied by successfully completing:

APLX 190	Research Seminar in Applied Linguistics	5

Comprehensive Requirement

(5 credits total)

In their senior year, applied linguistics and multilingualism majors must satisfy the senior exit requirement with:

APLX 190	Research Seminar in Applied Linguistics	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Planner

Year	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	Language 1	Language 2	Language 3	
	College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	Language 4	Language 5	Language 6	
	WRIT 2*			
3rd (junior)	APLX 80	APLX 101	LING 111 or LING 112	
	LING 50	LING 100 or 101	APLX elective	
4th (senior)	Adv Language course	Adv Language course	APLX 190	
	APLX elective	APLX elective	Non-APLX elective	

In addition to the specific courses shown in the planner, students must complete the ER, SR, IM, TA, PE, and PR general education requirements. Some electives may satisfy some of these requirements.

*WRIT 2 should be taken in or before spring quarter of the second year.

Transfer Planner

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T
				Summer Edge (optional)
1st (junior)	APLX 80	APLX 101	LING 111 or LING 112	
	LING 50	LING 100 or 101	APLX elective	
	Language 4	Language 5	Language 6	
2nd (senior)	Adv Language course	Adv Language course	APLX 190	
	APLX elective	APLX elective	Non-APLX elective	

This planner assumes that a student has completed most general education requirements before coming to UC Santa Cruz, and places into Level 4 or higher of the language they are studying when they enter UC Santa Cruz.

SPANISH STUDIES B.A.

Information and Policies

Introduction

The interdisciplinary major in Spanish studies is designed to offer students advanced linguistic proficiency in Spanish as well as a broad understanding of the historical and cultural developments of the Spanish-speaking world.

The Spanish studies major at UC Santa Cruz combines the strengths of language and applied linguistics with those of literary and cultural studies. The sequence of courses first exposes students to the academic registers of Spanish, a critical component for both heritage speakers and second language learners. Students then develop academic literacy in the language while gaining familiarity with the methods of analysis in different fields. The configuration of the major affords students flexibility in following their particular interests by choosing one of two tracks: (1) literature and culture or (2) language and linguistics.

These pathways within the major prepare students for a range of career possibilities that involve working with the Spanish-speaking public in a variety of professions (e.g., law, business, public service). Students may also pursue further training in teaching Spanish as a second language at the high school or university level.

Program Learning Outcomes

Graduates from the Spanish studies B.A. program should be able to demonstrate:

- **Advanced-level oral proficiency in Spanish.** Students will have the ability to use all the major timeframes (past, present, and future) in their speech and will be able to produce connected discourse of paragraph length. They will be able to satisfy the demands of work and/or school situations in Spanish with both accuracy and fluency.
- **Academic language and literacy skills in Spanish.** Students will be able to read and understand a wide range of authentic texts (e.g., academic articles, journalistic texts) in Spanish, including those with historical, sociological, and literary content. Students will be able to clearly explain their ideas in writing, demonstrating the ability to summarize, interpret, and substantiate an opinion or argument.
- **Metalinguistic awareness.** Students will be able to describe the main features of the Spanish language (e.g., the sound system, the structure of sentences) and will be able to identify the main regional varieties of Spanish. Students will be able to articulate some of the main differences between English and Spanish using precise terminology.
- **Critical analysis.** Students will be able to comment with critical insight on a range of topics and cultural productions (e.g., literary texts, film, music) of the U.S., Latin America, and Spain. They will be able to read closely in order to evaluate historical ideas, arguments, and points of view.
- **Cultural and historical competency.** Students will be able to compare and contrast multiple interpretations of the same phenomena in different cultures. Students will be able to recognize and reflect on the social, cultural, economic, and political changes that connect Latin America, Spain, and U.S. and Latina/o communities.

Academic Advising for the Program

218 Cowell College
831-459-2054
languages@ucsc.edu

The earlier you declare your major in your academic career, the better you will be able to plan your courses and the fulfillment of the requirements. If you declare your major early, you will receive more guidance, useful advice and close follow-up.

The Department of Languages and Applied Linguistics provides extensive orientation for the undergraduate major in Spanish studies. It is very important you plan the prerequisite and requisite courses in the appropriate sequence so as to complete your studies in the expected time.

Orientation is provided in two ways: quarterly large-group informational sessions, and small-group or individual meetings with a faculty and/or staff advisor.

Transfer students: Please also consult the Transfer Information and Policy section.

Getting Started in the Major: Frosh

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz.

Transfer students are strongly advised to complete courses that will satisfy the campus general education requirements, the Intersegmental General Education Transfer Curriculum (IGETC), or the California General Education Transfer Curriculum (CalGETC). In addition, transfer students are strongly encouraged to complete two years of Spanish language study at an accredited two- or four-year institution. While two years of prior Spanish language study is strongly advised, transfer students should be able to complete the Spanish studies major in normative time as long as they place

into Spanish language Level 4 (Level 5 for students entering UC Santa Cruz in the winter term) upon arrival at UC Santa Cruz.

Getting Started in the Major: Transfer Students

Transfer students may declare at any time after completing SPAN 4 or SPHS 4 with a grade of C or better, following the process in "How to Declare a Major." Transfer students who place into Spanish Level 5 or higher when they enter UC Santa Cruz can declare the major immediately.

Transfer students should consult an academic advisor at languages@ucsc.edu as soon as possible to learn about language placement tests and other information about the major.

Major Qualification Policy and Declaration Process

Major Qualification

To declare the Spanish Studies B.A., students must either: 1) complete SPAN 4 or SPHS 4 at UC Santa Cruz with a grade of C or better; 2) place into level 5 or higher via placement exam; or 3) demonstrate proficiency at this level.

Transfer students: Please also consult the Transfer Information and Policy section.

SPAN 4	Second-Year Spanish	5
SPHS 4	Spanish for Heritage Speakers	5

Appeal Process

Students notified that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair within 15 working days from the date of notification. Within 15 working days of receipt of the student's appeal, the department will notify the student and their college of its decision regarding the appeal.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petition when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

Students must meet major qualification requirements prior to declaring the major.

To declare the major, students must first meet with the faculty advisor and then with the academic advisor. Please contact languages@ucsc.edu for further information.

Letter Grade Policy

Courses used to satisfy major requirements may be taken for a Pass/No Pass or letter grade, with the exception that the Level 4 Spanish course and senior comprehensive course must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Study Abroad

Spanish studies encourages students to take advantage of the Division of Global Engagement. Some programs do not require prior language study while others have language prerequisites. Many of these programs provide students with the language skills needed to participate in regular university courses taught in the language of the host country. Study abroad opportunities in Spanish include Argentina, Chile, Mexico, Spain, and Costa Rica.

Students who participate in study abroad may petition to apply up to three courses (up to 15 upper-division credits) from study abroad toward the major.

Honors

Students who wish to be considered for honors should meet the deadline posted by the Office of the Registrar for declaring the intent to graduate. Determination of honors is based on the student’s grades for all courses relevant to the major and other factors relevant to an assessment of academic excellence, such as research papers of professional quality. Generally, honors in the major are awarded only to students with a GPA of 3.75 or higher in relevant coursework. Only those students whose performance in coursework is excellent will qualify. Highest honors are awarded only to students whose performance in relevant coursework is outstanding (GPA of 3.90 and above) and who have completed an outstanding original research paper.

[Optional Catchall]

Requirements and Planners

Course Requirements

There are a total of 45 upper-division credits required for the Spanish studies major. See Program Major Requirements below for a breakdown of the credit requirements.

Lower-Division Courses

Either six courses in the regular track

SPAN 1	First-Year Spanish	5
SPAN 2	First-Year Spanish	5
SPAN 3	First-Year Spanish	5
SPAN 4	Second-Year Spanish	5
SPAN 5	Second-Year Spanish	5
SPAN 6	Second-Year Spanish	5

Or equivalent proficiency. SPAN 5M may substitute for SPAN 5.

Or three courses in the Spanish for Heritage Speakers (SPHS) track

SPHS 4	Spanish for Heritage Speakers	5
SPHS 5	Spanish for Heritage Speakers	5
SPHS 6	Spanish for Heritage Speakers	5

Or equivalent proficiency

Plus the following course:

LING 50	Introduction to Linguistics	5

Plus one of the following courses:

HIS 11A	Latin America: Colonial Period	5
HIS 11B	Latin America: National Period	5
HIS 12	Introduction to Latino American History	5

Upper-Division Courses

Four required Spanish studies core courses (20 credits total). Though some courses may be able to satisfy multiple requirements of the major, no course taken may count toward more than one requirement.

Literature: (5 credits)

Choose one of the following courses:

LIT 189A	De la conquista a Sor Juana	5
LIT 189B	El Siglo XIX en América Latina: cultura, política y sociedad	5

Spanish Studies: (5 credits)*

LIT 189C	Introducción a Spanish Studies	5

Linguistics: (5 credits)

SPAN 150	Topics in Hispanic Linguistics: Introduction to Hispanic Linguistics	5

Spanish Language: (5 credits)

Choose one of the following courses:

SPAN 114	Advanced Conversation and Composition	5
SPHS 115	El ensayo lectura, análisis y redacción	5

*LIT 189C/SPAN 105 and SPAN 150 must be taken prior to enrollment in or in conjunction with concentration courses.

Choice of Concentrations

Students must choose either the Languages and Linguistics Concentration or the Literature and Culture Concentration. The choice of concentration will dictate which concentration courses are taken below, as well as which capstone courses are available.

Languages and Linguistics Concentration

Three courses from the following list that are not used as an elective or capstone:

SPAN 140	Sounds of Spanish	5
SPAN 141	Advanced Spanish Grammar	5
SPAN 142	El mundo de las palabras. Spanish Morphology and Lexicon	5
SPAN 151	Topics in Hispanic Linguistics: Varieties of Spanish	5
SPAN 152	Topics in Hispanic Linguistics: Spanish in the U.S.	5
SPAN 153	Spanish Language Teaching	5
SPAN 154	Topics in Hispanic Linguistics: Spanish Pragmatics	5
SPAN 155	Topics in Hispanic Linguistics: Language Contact in the Spanish Speaking World	5
SPAN 156A	The Language of Latin America Cinema	5
SPAN 156E	Spanish Culture	5
SPAN 156F	El Humor en Espanol	5
SPAN 156J	Contemporary Central America	5
SPAN 156K	Spanish Discourse Analysis	5
SPAN 156L	Society and Sustainability in Latin America	5
SPAN 156M	Mexico and the Southwest	5
SPAN 157	Spanish Sociolinguistics	5
SPAN 158	Spanish in the U.S.-Mexico Borderlands	5

Other 5-credit Spanish-language courses numbered SPAN 100-SPAN 189, SPAN 199 (except SPAN 114, SPAN 150, SPHS 115, and LIT 189C/SPAN 105) may be accepted with the permission of the Spanish studies director (or faculty advisor).

Literature and Culture Concentration

Three 5-credit literature courses numbered LIT 188-LIT 189, LIT 199. Current courses within this range are listed below.

The courses LIT 189C/SPAN 105, LIT 189A, and LIT 189B may not be taken as a concentration or elective course if used as a core course.

LIT 188A	Literatura medieval	5
LIT 188B	Literatura peninsular: de los orígenes al siglo XVIII	5

LIT 188E	Teatro del Siglo de Oro español	5
LIT 188G	Literaturay vida en Don Quijote y otros textos cervantinos	5
LIT 188H	Erotismo y Mistica	5
LIT 188I	La novela picaresca	5
LIT 188M	Literatura peninsular: siglos XIX y XX	5
LIT 189F	Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish	5
LIT 189G	Cine y Literatura	5
LIT 189H	La Globalizacion en/del Cine Latin/o Americano	5
LIT 189I	Literatura e indigeneidad	5
LIT 189L	Poesía latinoamericana	5
LIT 189M	Prosa contemporánea hispanoamericana	5
LIT 189N	Latinoamericano testimonio	5
LIT 189O	El Cuento Hispanoamericano: Variedades esteticas de la literatura breve en America Latina	5
LIT 189Q	Ficción y marginalidad	5
LIT 189S	La cultura popular en la narrativa latinoamericana	5
LIT 189T	Historia de la lectura y los lectores: Recepcion y consumo cultural en el mundo Latino Americano	5
LIT 189U	Modernidad y literatura: El Boom de la novela latinoamericana	5
LIT 189V	Andean Indigenismo	5
LIT 189X	Estudios mediaticos	5

Electives

Choose one course from the list below or from the Languages and Linguistics or Literature and Culture Concentration lists above.

ANTH 130L	Ethnographies of Latin America	5
ANTH 130M	Inside Mexico	5
ANTH 176B	Meso-American Archaeology	5
APLX 101	Second-Language Acquisition	5
APLX 102	Bilingualism	5
APLX 103	Second Language Speech	5
APLX 105	Language Loss	5
APLX 112	Language and Gender	5
APLX 113	Inter-Cultural Communication	5
APLX 115	Language and Power	5
APLX 116	Discourse Analysis: Language Use and Context	5
APLX 122	Linguistic Diversity & Social Justice	5
APLX 124	Second Language Variation and Sociolinguistics	5
APLX 135	Second Language Teaching	5
APLX 138	English Grammar for TESOL	5
FMST 115	Gender, Sexuality, and Transnational Migration Across the Americas	5
FMST 175	Gender and Sexualities in Latina/o America	5
HAVC 143C	Latin American Modern Architecture	5
HAVC 160A	Indigenous American Visual Culture Before 1550: Mexico	5
HAVC 160B	Indigenous American Visual Culture Before 1550: The Andes	5
HAVC 162A	Special Studies in Early Indigenous American Visual Culture: The Ancient Maya	5
HAVC 162B	Special Studies in Early Indigenous American Visual Culture: The Inka	5
HAVC 163	The Native in Colonial Spanish America	5
HAVC 191B	The Virgin of Guadalupe: Images and Symbolism in Spain, Mexico, and the U.S	5
LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 122	Media and Nationalism	5
LALS 127	Genero, Nacion Y Modernidad En El Cine	5
LALS 133	Latina/o Art and Representation	5
LALS 144	Mexicana/Chicana Histories	5
LALS 145	Grassroots Social Change in Latin America	5
LALS 152	Consumer Cultures Between the Americas	5
LALS 155	Latin American and Latino Youth Movements	5
LALS 157	Revoluciones Sociales	5
LALS 165	Contemporary Peru	5
LALS 172	Visualizing Human Rights	5
LALS 175	Migration, Gender, and Health	5
LING 182	Structure of Spanish	5
LIT 155E	Cinema and Social Change in Latin America	5
POLI 140C	Latin American Politics	5
SOCY 156	U.S. Latinx Identities: Centers and Margins	5
SOCY 177A	Latinos/as and the American Global City	5

Disciplinary Communication (DC) Requirement

The Disciplinary Communication requirement (DC requirement) is satisfied by successfully completing one of the following courses:

SPAN 114	Advanced Conversation and Composition	5
SPHS 115	El ensayo lectura, análisis y redacción	5

Comprehensive Requirement

The senior comprehensive requirement is satisfied by completing one capstone course in the student's concentration listed below. The course must be taken senior year after completion of at least three of the four core courses. Courses used for the capstone requirement cannot be used for the elective or concentration requirements.

Languages and Linguistics Capstone Courses

SPAN 151	Topics in Hispanic Linguistics: Varieties of Spanish	5
SPAN 152	Topics in Hispanic Linguistics: Spanish in the U.S.	5
SPAN 153	Spanish Language Teaching	5
SPAN 154	Topics in Hispanic Linguistics: Spanish Pragmatics	5
SPAN 155	Topics in Hispanic Linguistics: Language Contact in the Spanish Speaking World	5
SPAN 157	Spanish Sociolinguistics	5
SPAN 158	Spanish in the U.S.-Mexico Borderlands	5

Literature and Culture Capstone Course

LIT 190X	Temas de la literatura y cultura espanolas y latinoamericanas	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Planner for Non-Spanish Heritage Speakers

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	SPAN 1 College 1	SPAN 2 WRIT 1/WRIT 1E (if needed)	SPAN 3	
2nd (soph)	SPAN 4 LING 50 WRIT 2*	SPAN 5 HIS 12	SPAN 6	
3rd (junior)	SPAN 105/LIT 189C SPAN 114 or SPHS 115	SPAN 150 Elective	LIT 189A or 189B	
4th (senior)	Concentration 1 Concentration 2	Concentration 3 Capstone **		

*WRIT 2 should be taken in or before spring quarter of the second year.

**Depending on the student's choice of concentration and capstone course, the term in which the course is taught will vary.

Four-Year Planner for Spanish Heritage Speakers

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	SPHS 4	SPHS 5 WRIT 1/WRIT 1E (if needed)	SPHS 6	
2nd (soph)	LING 50 WRIT 2*	HIS 12	SPAN 114 or SPHS 115	

3rd (junior)	SPAN 105/LIT 189C	SPAN 150	LIT 189 A or LIT 189 B
		Elective	
4th (senior)	Concentration 1	Concentration 3	
	Concentration 2	Capstone **	

* WRIT 2 should be taken in or before spring quarter of the second year.

** Depending on the student's choice of concentration and capstone course, the term in which the course is taught will vary.

Transfer Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T
				Summer Edge
				(optional)
1st (junior)	SPHS 4/SPAN 4	SPHS 5/SPAN 5	SPHS 6/SPAN 6	
	LING 50	HIS 12		
2nd (senior)	SPAN 105/ LIT 189C	LIT 189A or LIT 189B	Elective	
	SPAN 114 or SPHS 115	Concentration 1	Concentration 3	
	SPAN 150	Concentration 2	Capstone	

This planner assumes that a student places into Level 4 or higher of the language they are studying when they enter UCSC.

SPANISH STUDIES MINOR

Course Requirements

Complete the following courses. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Either six courses in the regular track

SPAN 1	First-Year Spanish	5
SPAN 2	First-Year Spanish	5
SPAN 3	First-Year Spanish	5
SPAN 4	Second-Year Spanish	5
SPAN 5	Second-Year Spanish	5
SPAN 6	Second-Year Spanish	5

Or equivalent proficiency. SPAN 5M may substitute for SPAN 5.

Or three courses in the Spanish for Heritage Speakers (SPHS) track

SPHS 4	Spanish for Heritage Speakers	5
SPHS 5	Spanish for Heritage Speakers	5
SPHS 6	Spanish for Heritage Speakers	5

or equivalent proficiency

Plus the following course

LING 50	Introduction to Linguistics	5

Upper-Division Courses

There are a total of 25 upper-division credits required for the Spanish studies minor. Four required Spanish studies core courses (20 credits total), in addition to one upper-division Spanish studies elective course (5 credits total):

Literature (5 credits)

Choose one of the following courses:

LIT 189A	De la conquista a Sor Juana	5
LIT 189B	El Siglo XIX en América Latina: cultura, política y sociedad	5

Spanish Studies (5 credits)

LIT 189C	Introducción a Spanish Studies	5

Linguistics (5 credits)

SPAN 150	Topics in Hispanic Linguistics: Introduction to Hispanic Linguistics	5

Spanish Language (5 credits)

Choose one of the following courses:

SPAN 114	Advanced Conversation and Composition	5
SPHS 115	El ensayo lectura, análisis y redacción	5

Spanish Elective (5 credits)

Choose one of the following courses:

LIT 188A	Literatura medieval	5
LIT 188B	Literatura peninsular: de los orígenes al siglo XVIII	5
LIT 188E	Teatro del Siglo de Oro español	5
LIT 188F	Cuentos del Siglo de Oro español	5
LIT 188G	Literaturay vida en Don Quijote y otros textos cervantinos	5
LIT 188H	Erotismo y Mistica	5
LIT 188I	La novela picaresca	5
LIT 188L	Literatura de la guerra civil española	5
LIT 188M	Literatura peninsular: siglos XIX y XX	5
LIT 188R	Humanidades Ambientales	5
LIT 188Z	Literatura de España	5
LIT 189D	Sor Juana Ines de la Cruz	5
LIT 189E	Cuba	5
LIT 189F	Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish	5
LIT 189G	Cine y Literatura	5
LIT 189H	La Globalizacion en/del Cine Latin/o Americano	5
LIT 189I	Literatura e indigeneidad	5
LIT 189K	El ensayo latinoamericano	5
LIT 189L	Poesía latinoamericana	5
LIT 189M	Prosa contemporánea hispanoamericana	5
LIT 189N	Latinoamericano testimonio	5
LIT 189O	El Cuento Hispanoamericano: Variedades esteticas de la literatura breve en America Latina	5
LIT 189P	Las mujeres en la literatura latinoamericana	5
LIT 189Q	Ficción y marginalidad	5
LIT 189R	La Novela de la Dictadura	5
LIT 189S	La cultura popular en la narrativa latinoamericana	5
LIT 189T	Historia de la lectura y los lectores: Recepcion y consumo cultural en el mundo Latino Americano	5
LIT 189U	Modernidad y literatura: El Boom de la novela latinoamericana	5
LIT 189V	Andean Indigenismo	5
LIT 189X	Estudios mediaticos	5
LIT 189Z	Literatura de Chile	5
SPAN 140	Sounds of Spanish	5
SPAN 141	Advanced Spanish Grammar	5
SPAN 151	Topics in Hispanic Linguistics: Varieties of Spanish	5
SPAN 152	Topics in Hispanic Linguistics: Spanish in the U.S.	5
SPAN 153	Spanish Language Teaching	5
SPAN 154	Topics in Hispanic Linguistics: Spanish Pragmatics	5
SPAN 155	Topics in Hispanic Linguistics: Language Contact in the Spanish Speaking World	5
SPAN 156A	The Language of Latin America Cinema	5
SPAN 156E	Spanish Culture	5
SPAN 156F	El Humor en Espanol	5
SPAN 156J	Contemporary Central America	5
SPAN 156K	Spanish Discourse Analysis	5
SPAN 156L	Society and Sustainability in Latin America	5
SPAN 156M	Mexico and the Southwest	5
SPAN 157	Spanish Sociolinguistics	5
SPAN 158	Spanish in the U.S.-Mexico Borderlands	5

Teaching English to Speakers of Other Languages

The TESOL (Teaching English to Speakers of Other Languages) Certificate Program is designed to help prepare students who wish to teach English as second or additional language, whether overseas or in certain contexts in the United States. This certificate is an entry-level credential that serves as evidence for future employers that students' have received training in the theory and practice of English language teaching.

The TESOL certificate is not limited to applied linguistics and multilingualism majors. Students from any major are welcome to earn this certificate. The certificate requires the completion of six courses (LING 50, APLX 101, APLX 113, APLX 135, APLX 136, and APLX 138), and typically takes two academic years to complete.

In order to begin working toward the TESOL certificate, students should make an appointment with the faculty director of the applied linguistics and multilingualism major (https://language.ucsc.edu/) as early as possible in their academic career, as the coursework typically requires two academic years to complete.

REQUIRED COURSES

There are six required courses for this certificate (prerequisites in parentheses):

1. LING 50: Introduction to Linguistics
2. APLX 101: Second Language Acquisition (APLX 80 or LING 50)
3. APLX 113: Intercultural Communication (junior or senior standing)
4. APLX 135: Second Language Teaching (junior or senior standing)
5. APLX 136: Second Language Assessment (APLX 135)
6. APLX 138: English Grammar for TESOL (APLX 80 or LING 50)

Linguistics

239 and 241 Stevenson College
(831) 459-4765 (graduate)
(831) 459-4988 (undergraduate)
https://linguistics.ucsc.edu

PROGRAMS OFFERED

Linguistics B.A. (p. 221)

Linguistics Minor (p. 227)

Language Studies B.A. (p. 227)

Language Studies Minor (p. 234)

Contiguous Bachelor's/Master's Pathway (p. 234)

Linguistics M.A. (p. 235)

Linguistics Ph.D. (p. 236)

OTHER PROGRAMS OF INTEREST

Applied Linguistics and Multilingualism B.A. (p. 208)

Cognitive Science B.S. (p. 843)

Computer Science B.S. (p. 577)

Computer Science B.A. (p. 583)

Natural Language Processing M.S. (p. 603)

Linguistics is an exact and structured discipline that examines human language. It has connections to many other fields in the humanities (philosophy, literature), the social sciences (anthropology, psychology, sociology), the natural sciences (biology, neuroscience, acoustics), computer science, computer engineering, and artificial intelligence.

The central areas of linguistics investigate the knowledge that speakers of a language have about its structure. Syntax is concerned with the rules that combine words into larger units of phrases and sentences. Semantics is the study of the meanings of linguistic units and how they are combined to form the meanings of sentences. Phonetics deals with the physical properties of language sounds. Phonology investigates the sound systems of particular languages and across languages. Morphology investigates the ways in which words are formed from prefixes, roots, and suffixes. Pragmatics is the study of language use. Psycholinguistics is concerned with the cognitive mechanisms by which we produce and perceive language.

The faculty in the Linguistics Department have primary research and teaching interests in one or more of these areas. Other perspectives on language study represented include computational and corpus linguistics, sociolinguistics, the study of poetic language, and the study of language change.

The programs offered by the Linguistics Department are designed to acquaint students with the central aspects of linguistic structure and the methodologies and perspectives of the field. The department offers two undergraduate majors, linguistics and language studies, and a graduate program in theoretical linguistics. The linguistics major leads to a bachelor of arts (B.A.) degree in linguistics; the language studies major leads to a B.A. degree in language studies (see Language Studies). The graduate program leads to the master of arts (M.A.) and doctor of philosophy (Ph.D.) degrees in linguistics.

The department also offers a combined B.A./M.A. pathway, which makes it possible for certain well-qualified, highly motivated students to complete the requirements for both degrees in five years rather than the usual six.

COURSES FOR NON-MAJORS

LING 50, Introduction to Linguistics, an introduction to the major areas, problems, and techniques of modern linguistics. (Gen Ed: SI)

LING 53, Semantics 1, introduction to the logical foundations of natural language semantics. A basic literacy course in the language of logical representation. (Gen Ed: MF)

LING 80C, Language, Society and Culture, the study of language from a sociological perspective. Multilingualism, language change and variation, pidgins and creoles, the origin and diversification of dialects. (Gen Ed: CC)

LING 80D, Language and Mind, a critical overview of the research program initiated by Noam Chomsky and its implications for theories of the human mind and brain. (Gen Ed: PE-H)

LING 80K, Invented Languages, explores invented languages, including Elvish and Klingon, as well as lesser-known ones that tackle ethical, social, or cognitive concerns. (Gen Ed: TA)

LING 80M, Language and Indigeneity in Mesoamerica, explores indigenous experiences in Mesoamerica, focusing on the role of language in the formation of indigenous identities, both historically and in contemporary society. (Gen Ed: ER)

LING 80S, The Science of Language, an introduction to linguistics for non-majors. (Gen Ed: SI)

LING 80V, Structure of the English Vocabulary, explores the historical origin and development of word elements, as well as their sound, meaning, and function in the contemporary language.

LING 100, Sounds of the World's Languages: Phonetics I, provides a comprehensive introduction to the sounds of human language.

LING 131, Spanglish, an investigation of Spanglish as a linguistic and cultural phenomenon. (Gen Ed: ER)

LING 133, Language OnLine (LOL): Communication in the digital era, an investigation of the language of memes and social media. (Gen Ed: PE-T)

LINGUISTICS B.A.

Information and Policies

Introduction

Linguistics is an exact and structured discipline that examines human language. It has connections to many other fields in the humanities (philosophy, literature), the social sciences (anthropology, psychology, sociology), the natural sciences (biology, neuroscience, acoustics), computer science, computer engineering, and artificial intelligence.

The central areas of linguistics investigate the knowledge that speakers of a language have about its structure. Syntax is concerned with the rules that combine words into larger units of phrases and sentences. Semantics is the study of the meanings of linguistic units and how they are combined to form the meanings of sentences. Phonetics deals with the physical properties of language sounds. Phonology investigates the sound systems of particular languages and across languages. Morphology investigates the ways in which words are formed from prefixes, roots, and suffixes. Pragmatics is the study of language use. Psycholinguistics is concerned with the cognitive mechanisms by which we produce and perceive language.

Program Learning Outcomes

The program learning outcomes for the linguistics major are the following:

1. **Analytical Thinking**
   Students will formulate testable hypotheses, and present them clearly and completely. Students will accurately and insightfully use relevant evidence to evaluate hypotheses and determine routes for future investigation.

2. **Writing**
   Students will formulate well-organized written arguments. At the micro-level, sentences will be grammatical, follow appropriate conventions, and strike an appropriate balance of clarity and complexity. At the macro-level, sentences will be linked together into paragraphs, and paragraphs into logical sections of a larger document.

3. **Properties of Language**
   Students will apply analytical techniques to identify general properties of language, including but not limited to sound structure, word structure, sentence structure, meaning, use, and language processing. Students will explain the significance of relevant universal properties in some domain.

4. **Linguistic Theory and Investigation**
   Students will demonstrate an active command of linguistic theory and linguistic investigation in at least one area of linguistic theory, including but not limited to morphology, phonetics, phonology, pragmatics, psycholinguistics, syntax, and semantics.

5. **Second Language Proficiency or Mathematics Competency**
   Linguistics majors will demonstrate either competence in the mathematical foundations of theories used in linguistics **or** proficiency in a second language at or above the intermediate-high level.

Academic Advising for the Program

241 Stevenson College
(831) 459-4988
ling@ucsc.edu

Undergraduate Advisor

The undergraduate advisor can advise you about requirements for the major, about prerequisites, and about many other aspects of your academic progress. During the academic year, there are regular drop-in office hours available and posted on the department website.

If none of the drop-in office hours work for you, email the undergraduate advisor at ling@ucsc.edu for an appointment.

Transfer students, please also refer to **Transfer Information and Policy.**

Peer Advisors

During the academic year, the department has a peer advising program to provide an additional advising resource for undergraduate majors. The peer advisors are advanced students in the major who can offer guidance and advice to other students. They hold regular office hours and provide one-on-one advising in the Linguistics Department office at Stevenson College (STEV 245). Peer advisors do not have signature authority on forms (i.e., Declaration of Major Petitions and study abroad planning forms). Students must see the undergraduate advisor for any forms requiring a department signature. We encourage any prospective and current linguistics majors to stop by during the peer advisors' office hours if they have questions about the linguistics program.

Faculty

You should feel free to meet with any faculty member for advising, but it may make sense to speak with the undergraduate advisor first, to find out which faculty member might be best placed to advise you about your interests or concerns. You can find the current office hours for all faculty members in the faculty directory. For issues specifically related to the undergraduate program, you can turn to the undergraduate program director.

Getting Started in the Major: Frosh

This major is not highly course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required.

Here are four tips to keep in mind when embarking on your major in linguistics:

- Meet with a peer advisor to create your academic plan and get questions answered about your major.
- Determine how many language courses you need in order to fulfill your language competency requirement, as specified in the **Requirements and Planners** section. Begin any necessary language instruction as soon as possible. Visit the Languages and Applied Linguistics Department website to find out about language placement, articulation and course offerings. Many language placement exams take place just before classes start in September. You may opt to satisfy the mathematics/computer science requirement instead.
- Take at least one introductory linguistics course in your first year, and plan to take at least syntax and phonology in your second year. (Junior transfers: take all of these courses in your first year.) If linguistics is not for you, you should find this out early in order to consider a change in your plans.
- Plan to complete the bulk of your general education requirements early on. The sophomore, junior, and senior years can fill up quickly with major requirements (especially if you are planning to study abroad). Also, as general education courses are often lower-division courses, it can be frustrating to have to take them in the final quarters of your career when you would like to take more advanced courses.

Transfer Information and Policy

Transfer Admission Screening Policy

No major preparation courses are required prior to transfer for consideration of admission to UC Santa Cruz.

While not required for selection, transfer students are strongly encouraged to complete as much preparation as possible in the foreign language of their choosing. Transfer students admitted to UC Santa Cruz for the winter term who do not place into Level 2 or higher in a language placement test when they enter UC Santa Cruz may not be able to complete the major in a timely manner. Bear in mind that placement exams, and the resulting credit for the major, are only available for languages taught at UC Santa Cruz.

Prospective students are also encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or to complete all UC Santa Cruz general education requirements before matriculation.

Getting Started in the Major: Transfer Students

Consult with the undergraduate advisor before enrolling for your first term to create a two-year plan. Some required courses are only offered once a year, and careful planning is essential. Plan to take LING 50 and LING 53 in your first quarter, along with a language course. If you expect to test out of level 5 in your chosen language or plan to complete the Mathematics/Computer Science competency requirement, you need not enroll in a language course. Transfer students can declare the major in their second quarter after completing two gateway courses with a C+ or better.

Major Qualification Policy and Declaration Process

Major Qualification

The Linguistics Department has adopted a major qualification policy for linguistics majors that is intended to encourage students to take their performance in the gateway courses seriously and to help them lay a solid foundation for further course work in the major.

Transfer students, please also refer to **Transfer Information and Policy.**

In order to qualify for the linguistics major, a student must pass two gateway courses, with a grade of C+ or better in each:

LING 50	Introduction to Linguistics	5

And one of the following courses

LING 53	Semantics I	5
LING 101	Phonology I	5
LING 112	Syntax I	5
LING 171	Psycholinguistics I	5

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal the decision within 15 days from the date the notification was sent. They should do this by submitting a formal letter, addressed to the department's undergraduate program director, to the Linguistics Department office (Stevenson 241 or 243 or by email to ling@ucsc.edu). This letter should explain any extenuating circumstances that influenced performance in the gateway courses. Within 15 days of receipt of the appeal, the department will notify the student of the decision. The department may set conditions to be fulfilled within one quarter from the date of the appeal, such as achieving a minimum grade in a particular class.

How to Declare a Major

You should formally declare your major as early as possible in your academic career. Doing so will mean you get helpful advising. It will require you to plan out all the courses of the major. This means you will know you have time to meet all the necessary requirements for linguistics before you graduate.

Once you have successfully completed the two gateway courses, and/or you have reached your declaration deadline, you should do the following:

1) Please meet with the department advisor or a peer advisor, to complete or update your **academic plan**. If you are declaring a second major, please first complete an academic planning form with the advisor for your declared major. Major Degree Checklists are useful resources, which you may want to look over prior to the declaration session. You can find them in the Major Requirements section for the linguistics major on the department website.

2) **Petition to declare your major**. Log into MyUCSC and navigate to the Student Homepage. Select the Undergraduate Student eForms tile > Petition for Major/Minor. If you are already logged in to MyUCSC, you can simply use this link: Petition for Major/Minor via MyUCSC. The petition will automatically be routed to the department.

3) Attend one of the department's **Declaration Information Sessions**. These sessions are held in the first month of each quarter. Invitations to sign up for a declaration session are sent out by the first week of the quarter to all proposed majors through the Navigate/Slug Success system. If you have completed the gateway courses, and you do not receive an invitation by Week 2, please contact the department advisor for assistance. Please sign up well in advance, as these meetings tend to fill quickly.

The campus undergraduate advising website has further helpful information about declaring a major.

Letter Grade Policy

The two courses used for major qualification must be taken for a letter grade with a grade of C+ or better. All other courses used toward major requirements may be taken for a letter grade or pass/no pass. There is a campuswide requirement that you need to be aware of and to keep track of (no more than 25 percent of all of your UC Santa Cruz courses can be taken on a Pass/No Pass basis). Further information about campus letter grade policy is available at the website of the Office of the Registrar.

[Optional Catchall]

Course Substitution Policy

Students may substitute up to three outside courses for the upper-division electives requirement. These courses include Senior Thesis (LING 195), Independent Study (LING 199), courses from other UC Santa Cruz departments, and courses from other institutions. Substitutions must be upper-division courses and fit into a coherent program of study. A list of pre-approved outside courses is available for reference. Students should contact the department to inquire about using courses not on this list. Students may apply up to two quarters of LING 195 or one quarter of LING 199, but not both.

Double Majors and Major/Minor Combinations Policy

A student may **not** double major or major/minor in linguistics and language studies, as there is too much overlap between the two programs.

Study Abroad

Students majoring in linguistics should consider studying abroad in the course of their degree program. Studying abroad is a good way to cultivate and enhance your language skills, as well as to gain rich life experiences. Linguistics students have various opportunities to study abroad, for a summer, quarter, semester, or year. There are programs available for students of all levels of language ability, from language and culture programs for beginning or intermediate speakers, to full immersion programs for students with advanced language skills.

Study abroad does require careful planning, especially for those who wish to pursue a year-long program, or who wish to study abroad during the senior year. Meeting with your major advisor early and often throughout the study abroad planning process is encouraged. Before being approved for UC Education Abroad Program (EAP), you must declare your major. Also, majors must complete LING 101, and either LING 111 or LING 112, before they leave for any Global Learning programs that take place during the academic year. The department does not place any restrictions on summer study abroad.

If you plan to study abroad during your senior year and do not plan to return to UC Santa Cruz before graduating, your plan will be approved only when all major requirements have been completed prior to departure, and/or when it is clear that any remaining requirements can be satisfactorily completed abroad. Please consult with the undergraduate advisor before the end of your sophomore year if you are considering this option.

Most importantly: Students who wish to have a study-abroad course count toward the major must bring back syllabi, completed papers, and course evaluations to the department, so that the department can make a decision about whether the course satisfies a major requirement. Ideally, students should have courses pre-approved for the major before they go abroad. Students can visit the UCSC Campus Credit Abroad database to find pre-approved courses. A maximum of three outside courses may be used toward the major.

Students who are interested in studying abroad should contact the Global Learning Office (105 Classroom Unit, 459-2858). Global Learning staff can provide detailed information concerning Global Learning selection criteria and application procedures. The first step in preparing to study abroad is to set up a profile on the Global Learning website.

Honors

Students who wish to be considered for honors should meet the deadline posted by the Office of the Registrar for declaring the intent to graduate. It is important to minimize the number of major courses you take on a Pass/No Pass basis. Determination of honors is based on the student's

grades for all courses relevant to the major and other factors relevant to an assessment of academic excellence, such as research papers of professional quality. Generally, honors in the major are awarded only to the top 10 percent of those graduating in the major. Only those students whose performance in coursework is excellent will qualify. Highest honors are rarely awarded, and then only to students whose performance in coursework is outstanding and who have completed an outstanding senior thesis.

Preparation for the UC Santa Cruz Master's Degree

Every year, UC Santa Cruz undergraduates in the final year of their linguistics major can apply to be admitted into the graduate program to pursue the M.A. in theoretical linguistics. Interested students should discuss the possibility with one or more faculty members and formally apply online to the graduate program during the fall quarter of the senior year. For up-to-date information about the application process, consult the Linguistics Department's website; and see the Graduate Advisor and Program Coordinator. The combined B.A./M.A. program provides another pathway to the M.A. program.

Information About Linguistics Courses

The 80-level courses have no prerequisites. Although most of them will fulfill a general education requirement, they do not fulfill any requirements for the major. They are intended to introduce the concepts of linguistics through their relation to other areas of general interest.

LING 50, Introduction to Linguistics, introduces the subfields of the discipline. LING 53, Semantics 1; LING 100, Phonetics 1; LING 101, Phonology 1; LING 112, Syntax 1; and LING 171, Psycholinguistics 1, serve as entry courses to the specialized upper-division sequences. Upper-division courses often have at least two of these courses as prerequisites.

A variety of upper-division elective courses are offered each quarter. For a list of the current offerings, please see the department website.

To enroll in the graduate (200-level) courses, undergraduates need special permission from the instructor. Permission is usually granted only to especially motivated undergraduates who have completed all the named requirements for the major with excellent performance.

[Optional Catchall]

Requirements and Planners

Course Requirements

Lower-Division Courses

Take the following courses

LING 50	Introduction to Linguistics	5
LING 53	Semantics I	5

Foreign Language/Mathematics/Computer Science Requirement

Linguistics majors are required to demonstrate competency in either foreign language or mathematics/computer science. Choose one of the following options:

Foreign Language

Students opting to complete this requirement using foreign language may do so in one of the following three ways:

1. Demonstrate level 5 proficiency of a single language by completing one of the following courses or its equivalent: ARBC 5, CHIN 5, FREN 5, GERM 5, ITAL 5, JAPN 5, SPAN 5, SPHS 5. Each of these courses has prerequisites of levels 1-4 or their equivalent.

2. For languages at UCSC which are not offered through level 5 (Hebrew, Persian, Portuguese, Punjabi, or Yiddish), demonstrate level 3 proficiency by completing one of the following courses (or equivalent): HEBR 3, PERS 3, PORT 3, PUNJ 3, YIDD 3.
   In addition, students must complete level 3 of a second language. Level 3 of any language mentioned in options 1 or 2 are allowable for the second language. Each of these courses has prerequisites of levels 1 and 2 or their equivalent.

3. Demonstrate proficiency in Greek or Latin by completing either GREE 1, GREE 2, and one course from the LIT 184 series OR LATN 1, LATN 2, and one course from the LIT 186 series

Mathematics/Computer Science

Students with a strong formal background can choose to satisfy the mathematics/computer science competency requirement by demonstrating sufficient preparation in mathematics for advanced formal work in linguistics. This requirement is satisfied by passing two courses chosen from the following list:

CSE 5J	Introduction to Programming in Java	5
CSE 10	Introduction to Computer Science	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
CSE 140	Artificial Intelligence	5
MATH 100	Introduction to Proof and Problem Solving	5
MATH 160	Mathematical Logic I	5
MATH 161	Mathematical Logic II	5
PHIL 9	Introductory Symbolic Logic	5

PHIL 108	Phenomenology	5
PHIL 123	Philosophy of Language	5
PSYC 100	Research Methods in Psychology	7
STAT 5	Statistics	5
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 131	Introduction to Probability Theory	5

CSE 20 has a test-out option which will be accepted for one of the two required courses.

STAT 7 has a required lab, STAT 7L. The linguistics major requires successful completion of the lecture, STAT 7. Successful completion of the lab, STAT 7L will count as credits toward total degree requirements.

Any course which has one of the courses listed above as a prerequisite may also be used toward the mathematics/computer science competency requirement.

PSYC 2 or SOCY 3B may substitute for STAT 5 in this requirement. These courses, however, are typically only available to majors and minors in those departments.

Upper-Division Courses

Students in the linguistics major are required to complete a minimum of 10 upper-division courses (50 upper-division credits) in linguistics and related disciplines, including seven named courses in linguistics:

Take the following courses:

LING 100	Sounds of the World's Languages: Phonetics I	5
LING 101	Phonology I	5
LING 171	Psycholinguistics I	5

Plus one of the following courses:

LING 111	Syntactic Structures	5
LING 112	Syntax I	5

And three of the following courses:

LING 102	Phonology II	5
LING 113	Syntax II	5
LING 116	Semantics II	5
LING 151	Phonetics II	5
LING 172	Psycholinguistics II	5

Electives

The major requires three five-credit courses chosen from LING 102-189 (excluding LING 111, LING 112, and LING 171) and/or LING 200-289 (one of which could satisfy the Senior Comprehensive). The three electives may be any combination of these two options. Students choosing to complete their senior comprehensive with a senior thesis may be able to apply up to two quarters of LING 195 toward their electives. See the Course Substitution Policy in the Information and Policies section for information on this and about using pre-approved outside courses not listed above. Students must receive instructor permission to enroll in graduate level courses.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in linguistics is satisfied by completing:

LING 101	Phonology I	5

Plus one of the following courses:

LING 111	Syntactic Structures	5
LING 112	Syntax I	5

Comprehensive Requirement

In their senior year, and after completing the Disciplinary Communication requirement, linguistics majors must satisfy the senior comprehensive requirement in one of three ways:

Option 1: Capstone course

Students complete a 2-credit senior research course, LING 190. Each instance of LING 190 is taught concurrently with one of the upper-division electives offered in that quarter. Students must enroll in **both** an instance of LING 190 (the **senior research course**) and its associated upper-division elective (the **capstone course**). This capstone course can also serve as one of the three linguistics electives required for the major.

Students must enroll *concurrently* in an upper-division elective and in the corresponding instance of the following course:

LING 190	Senior Research	2

Option 2: Senior thesis

The senior thesis is supervised by a faculty member. The proposal for a senior thesis must be submitted for approval by the department faculty at least three quarters prior to the quarter of graduation.

Students must enroll in the following course:

LING 195	Senior Thesis	5

Option 3: Graduate-level course

By exception, students in their senior year may enroll in a **graduate-level class**, by permission of instructor. This option is for students who have performed exceptionally in the available undergraduate courses in a particular sub-discipline of the field. Under these conditions, a graduate-level course may satisfy the senior exit requirement.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit

requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Linguistics Students

The following planner is a recommended academic plan **for four-year students** who wish to pursue the linguistics major.

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	College 1 LING 50	WRIT 1/WRIT 1E (if needed)	WRIT 2*	
2nd (soph)	LING 53 Foreign language level 1	LING 100 Foreign language level 2	LING 101 Foreign language level 3	
3rd (junior)	LING 111/LING 112 Foreign language level 4	LING 116 or LING 1XX elective Foreign language level 5	LING 113 or LING 1XX elective LING 171	
4th (senior)	LING 102 or LING 1XX elective	LING 1XX upper div elective	LING 190 Senior Research elective	**
	LING 1XX upper-div elective		LING 1XX capstone course or LING 195 Senior Thesis	

* WRIT 2 should be taken in or before spring quarter of the second year. It is a prerequisite for LING 101 and LING 111/LING 112.

**LING 190 is a 2-credit course taken concurrently with a capstone elective. Students who choose to write a thesis or take a graduate-level class need not take LING 190.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the general education requirements. The courses in the four-year planner cover at least the following GE requirements: C, MF, SI, SR.

Linguistics Transfer Students

The following planner is a recommended academic plan **for junior transfer students** who wish to pursue the linguistics major.

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	LING 50 LING 53 Foreign language level 1	LING 111/LING 112 LING 100 Foreign language level 2	LING 101 LING 171 Foreign language level 3	
4th (senior)	LING 102 or LING 1XX elective	LING 116 or LING 1XX elective	LING 113 or LING 1XX elective	

e		
LING 1XX upper-div elective	LING 1XX upper-div elective	LING 1XX capstone course or LING 195 Senior Thesis
Foreign language level 4	Foreign language level 5	LING 190 Senior Research*

*LING 190 is a 2-credit course taken concurrently with a capstone elective. Students who choose to write a thesis or take a graduate-level class need not take LING 190.

This planner assumes that a student has completed any required general education courses—including UC Santa Cruz or community college general education requirements—before coming to UCSC. This can be accomplished by completing the Intersegmental General Education Transfer Curriculum (IGETC).

Additional planning templates are available on the department website.

LINGUISTICS MINOR

Course Requirements

Complete the following requirements for the Linguistics Minor. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

LING 50	Introduction to Linguistics	5
LING 53	Semantics I	5

Upper-Division Courses

Take two of the following courses:

LING 100	Sounds of the World's Languages: Phonetics I	5
LING 101	Phonology I	5
LING 111	Syntactic Structures	5
LING 112	Syntax I	5
LING 171	Psycholinguistics I	5

Students may not apply both LING 111 and LING 112 toward the minor.

Upper-Division Electives

The minor requires three 5-credit courses chosen from LING 100-189 and/or LING 200-289.

The three courses may be any blend of these two options. As noted above, **students may not apply both LING 111 and LING 112 toward the minor**. See the Course Substitution Policy section for information about using pre-approved outside courses not listed above. Students must receive instructor permission to enroll in graduate level courses.

Course Substitution Policy

Students may substitute up to two outside courses for the Upper-Division Electives requirement. These courses include independent study (LING 199), courses from other UC Santa Cruz departments, and courses from other institutions. Substitutions must be upper-division courses and fit into a coherent program of study. A list of pre-approved outside courses is available for reference. Students should contact the department to inquire about using courses not on this list. Students may apply no more than one quarter of LING 199.

LANGUAGE STUDIES B.A.

Information and Policies

Introduction

Language studies is an interdisciplinary major offered by the Linguistics Department. It is designed to equip students with advanced competence in a foreign language and, at the same time, provide them with an understanding of the general nature of human language—its structure and use. The major also provides an opportunity to explore the culture or cultures connected with the language of concentration. The cultural context electives may include courses in art, history, literature or politics. Currently, majors may choose a concentration in Chinese, French, German, Italian, Japanese, or Spanish. Interested students should contact the Linguistics Department office early in their college careers to obtain essential information about requirements. The requirements for the major may also be found in the **Requirements and Planners tab** above.

Students interested in spending a portion of a year or a full year studying abroad should review the UCSC Global Learning website. A senior year abroad is approved only when all of the language proficiency requirements have been satisfied and when it is clear that any remaining courses can be satisfactorily completed abroad. Courses taken abroad may be used to satisfy major requirements only if approved by the undergraduate program director or a designated advisor. A maximum of three outside courses may be used toward the major.

Program Learning Outcomes

The program learning outcomes for this major are the following:

1. **Analytical Thinking**
   Students will formulate testable hypotheses, and present them clearly and completely. Students will accurately and insightfully use relevant evidence to evaluate hypotheses and determine routes for future investigation.

2. **Writing**
   Students will formulate well-organized written arguments. At the micro-level, sentences will be grammatical, follow appropriate conventions, and strike an appropriate balance of clarity and complexity. At the macro-level, sentences will be linked together into paragraphs, and paragraphs into logical sections of a larger document.

3. **Properties of Language**
   Students will apply analytical techniques to identify general properties of language, including but not limited to sound structure, word structure, sentence structure, meaning, use, and language processing. Students will explain the significance of relevant universal properties in some domain.

4. **Linguistics Theory and Investigation**
   Students will demonstrate an active command of linguistic theory and linguistic investigation in at least one area of linguistic theory, including but not limited to morphology, phonetics, phonology, pragmatics, psycholinguistics, syntax, and semantics.

5. **Second Language Proficiency**
   Students will demonstrate proficiency in a second language at an advanced level.

Academic Advising for the Program

241 Stevenson College
(831) 459-4988
ling@ucsc.edu

Undergraduate Advisor

The undergraduate advisor can advise you about requirements for the major, about prerequisites, and about many other aspects of your academic progress. During the academic year, there are regular drop-in office hours available and posted on the department website.

If none of the drop-in office hours work for you, email the undergraduate advisor at ling@ucsc.edu for an appointment.

Transfer students, please also refer to Transfer Information and Policy.

Peer Advisors

During the academic year, the department has a peer advising program to provide an additional advising resource for undergraduate majors. The peer advisors are advanced students in linguistics or language studies who can offer guidance and advice to other students. They hold regular office hours and provide one-on-one advising in the Linguistics Department office at Stevenson College (245 Stevenson). Peer advisors do not have signature authority on forms (i.e., Declaration of Major Petitions and study abroad planning forms). Students must see the undergraduate advisor for any forms requiring a department signature. We encourage any prospective and current language studies majors to stop by during the peer advisors' office hours if they have questions about the program.

Faculty

You should feel free to meet with any faculty member for advising, but it may make sense to speak with the undergraduate advisor first, to find out which faculty member might be best placed to advise you about your interests or concerns. You can find the current office hours for all faculty members in the faculty directory. For issues specifically related to the undergraduate program, you can turn to the undergraduate program director.

Getting Started in the Major: Frosh

This major is not highly course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required.

Here are a few tips to keep in mind when embarking on your major in language studies:

- Meet with a peer advisor to create your academic plan and get questions answered about your major.
- Determine how many language courses you need and begin any necessary language instruction as soon as possible. Visit the Languages and Applied Linguistics Department website to find out about language placement, articulation and course offerings. Many language placement exams take place just before classes start in September.
- Prospective students should declare the major as early as possible so that they can complete the language, linguistics, and context requirements within the allowed period of enrollment. Major requirements are specified in the Requirements and Planners section of this statement.
- Students who wish to include a study abroad experience in their course of study will have to coordinate their choice of time abroad with the scheduling of UC Santa Cruz courses.
- Plan to complete the bulk of your general education requirements early on. The sophomore, junior, and senior years can fill up quickly with major requirements (especially if you are planning to study abroad). Also, as general education courses are often lower-division courses, it can be frustrating to have to take them in the final quarters of your career when you would like to take more advanced courses.

Transfer Information and Policy

Transfer Admission Screening Policy

No major preparation courses are required prior to transfer for consideration of admission to UC Santa Cruz.

While not required for selection, transfer students are strongly encouraged to complete as much preparation as possible in the foreign language of their choosing. Students pursuing the concentration in Japanese or Chinese should place into Level 4 (Level 5 for students entering in the winter term) or higher

when they enter UC Santa Cruz, if they wish to complete the major in two years. Students in other languages may be able to complete the major in two years if they have completed general education requirements. Transfer students admitted to UC Santa Cruz for the winter term who do not place into Level 2 or higher in a language placement test when they enter UC Santa Cruz may not be able to complete the major in a timely manner.

Prospective students are also encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or to complete all UC Santa Cruz general education requirements before matriculation.

Getting Started in the Major: Transfer Students

Consult with the undergraduate advisor before enrolling for your first term to create a two-year plan. Some required courses are only offered once a year, and careful planning is essential. Plan to take LING 50 and LING 53 in your first quarter, along with a language course. Visit the Languages and Applied Linguistics Department website to find out about language placement, articulation, and course offerings. Many language placement exams take place just before classes start in September. Transfer students can declare the major in their second quarter, after completing two gateway courses with a C+ or better.

Major Qualification Policy and Declaration Process

Major Qualification

The Linguistics Department has adopted a major qualification policy for language studies majors that is intended to encourage students to take their performance in the gateway courses seriously and to help them lay a solid foundation for further coursework in the major.

Transfer students, please also refer to **Transfer Information and Policy**

In order to qualify for the language studies major, a student must pass two gateway courses with a grade of C+ or better in each:

LING 50	Introduction to Linguistics	5

And one of the following courses

LING 53	Semantics I	5
LING 101	Phonology I	5
LING 112	Syntax I	5
LING 171	Psycholinguistics I	5

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal the decision within 15 days from the date the notification was sent. They should do this by submitting a formal letter, addressed to the department's undergraduate program director, to the Linguistics Department office (Stevenson 241 or 243 or by email to ling@ucsc.edu). This letter should explain any extenuating circumstances that influenced performance in the gateway courses. Within 15 days of receipt of the appeal, the department will notify the student of the decision. The department may set conditions to be fulfilled within one quarter from the date of the appeal, such as achieving a minimum grade in a particular class.

How to Declare a Major

You should formally declare your major as early as possible in your academic career. Doing so will mean you get helpful advising. It will require you to plan out all the courses of the major. This means you will know you have time to meet all the necessary requirements for language studies before you graduate.

Once you have successfully completed the two gateway courses, and/or you have reached your declaration deadline, you should do the following:

1) Please meet with the department advisor or a peer advisor, to complete or update your **academic plan**. If you are declaring a second major, please first complete an academic planning form with the advisor for your declared major. Major Degree Checklists are useful resources, which you may want to look over prior to the declaration session. You can find them in the Major Requirements section for the language studies major on the department website.

2) **Petition to declare your major**. Log into MyUCSC and navigate to the Student Homepage. Select the Undergraduate Student eForms tile > Petition for Major/Minor. If you are already logged in to MyUCSC, you can simply use this link: Petition for Major/Minor via MyUCSC. The petition will automatically be routed to the department.

3) Attend one of the department's **Declaration Information Sessions**. These sessions are held in the first month of each quarter. Invitations to sign up for a declaration session are sent out by the first week of the quarter to all proposed majors through the Navigate/Slug Success system. If you have completed the gateway courses, and you do not receive an invitation by Week 2, please contact the department advisor for assistance. Please sign up well in advance, as these meetings tend to fill quickly.

The campus undergraduate advising website has further helpful information about declaring a major.

Letter Grade Policy

The two courses used for major qualification must be taken for a letter grade with a grade of C+ or better. All other courses used toward major requirements may be taken for a letter grade or pass/no pass. There is a campuswide requirement that you need to be aware of and to keep track of (no more than 25 percent of all of your UC Santa Cruz courses can be taken on a Pass/No Pass basis). Further information about campus letter grade policy is available at the website of the Office of the Registrar.

Optional Catchall

Course Substitution Policy

Students may substitute up to three outside courses toward the upper-division electives requirement. These courses include

Senior Thesis (LING 195), Independent Study (LING 199), language-focused courses from other UC Santa Cruz departments, and courses from other institutions. Substitutions must be upper-division courses and fit into a coherent program of study. A list of pre-approved outside courses is available for reference. Students should contact the department to inquire about using courses not on this list. Students may apply up to two quarters of LING 195 or one quarter of LING 199, but not both. Advanced language courses taken at UCSC and courses listed as Cultural Context Courses do not count toward the three-course limit.

Double Majors and Major/Minor Combinations Policy

A student may **not** double major or major/minor in linguistics and language studies, as there is too much overlap between the two programs.

Study Abroad

Students majoring in language studies often spend at least one quarter studying abroad in the course of their degree program. Studying abroad is a good way to cultivate and enhance your language skills, as well as to gain rich life experiences. There are programs available for students of all levels of language ability, from language and culture programs for beginning or intermediate speakers, to full immersion programs for students with advanced language skills.

Study abroad does require careful planning, especially for those who wish to pursue a yearlong program, or who wish to study abroad during the senior year. Meeting with your major advisor early and often throughout the Global Learning planning process will help to mitigate lengthening time to degree. Before being approved for the UC Education Abroad Program (EAP), you must declare your major. Also, majors must complete LING 101, and either LING 111 or LING 112, before they leave for any study abroad programs that take place during the academic year. The department does not place any restrictions on summer study abroad.

If you plan to study abroad during your senior year and do not plan to return to UC Santa Cruz before graduating, your plan will be approved only when all major requirements have been completed prior to departure, and/or when it is clear that any remaining requirements can be satisfactorily completed abroad. Please consult with the department advisor before the end of your sophomore year if you are considering this option.

Language studies majors can satisfy certain major requirements in the course of study abroad; for instance, some of the context elective course requirements. No more than three elective course requirements can be satisfied abroad. Students can also make progress in the language component of the language studies major while studying abroad. In order to determine the level of proficiency achieved, they must take a placement exam upon return. Whether a given course requirement in linguistics can be satisfied abroad depends on the course and the study site.

Most importantly: Students who wish to have a study-abroad course count toward the major must bring back syllabi, completed papers, and course evaluations to the department, so that the department can make a decision about whether the course satisfies a major requirement. Ideally, students should have courses pre-approved for the major before they go abroad. Students can visit the UCSC Campus Credit Abroad database to find pre-approved courses. Remember that a maximum of three outside courses may be used toward the major.

Students who are interested in studying abroad should contact the Global Learning Office (105 Classroom Unit, 459-2858). Global Learning staff can provide detailed information concerning Global Learning selection criteria and application procedures. The first step in preparing to study abroad is to set up a profile on the Global Learning website.

Honors

Students who wish to be considered for honors should meet the deadline posted by the Office of the Registrar for declaring the intent to graduate. It is important to minimize the number of major courses you take on a Pass/No Pass basis. Determination of honors is based on the student's grades for all courses relevant to the major and other factors relevant to an assessment of academic excellence, such as research papers of professional quality. Generally, honors in the major are awarded only to the top 10 percent of those graduating in the major. Only those students whose performance in coursework is excellent will qualify. Highest honors are rarely awarded, and then only to students whose performance in coursework is outstanding and who have completed an outstanding senior thesis.

Preparation for the UC Santa Cruz Master's Degree

Every year, UC Santa Cruz undergraduates in the final year of their language studies major can apply to be admitted into the graduate program to pursue the M.A. in theoretical linguistics. Interested students should discuss the possibility with one or more faculty members and formally apply online to the graduate program during the fall quarter of the senior year. For up-to-date information about the application process, consult the Linguistics Department's website; and see the graduate advisor and program coordinator. The combined B.A./M.A. program provides another pathway to the M.A. program.

Information About Linguistics Courses

The 80-level courses have no prerequisites. Although most will fulfill a general education requirement, they do not fulfill any requirements for the major. They are intended to introduce the concepts of linguistics through their relation to other areas of general interest.

LING 50, Introduction to Linguistics, introduces the subfields of the discipline. LING 53, Semantics 1; LING 100, Phonetics 1; LING 101, Phonology 1; LING 112, Syntax 1; and LING 171, Psycholinguistics 1, serve as entry courses to the specialized upper-division sequences. Upper-division courses generally have at least two of these courses as prerequisites.

A variety of upper-division elective courses are offered each quarter. For a list of the current offerings, please see the department website.

To enroll in the graduate (200-level) courses, undergraduates need special permission from the instructor. Permission is usually granted only to especially motivated undergraduates who have completed all the named requirements for the major with excellent performance.

Optional Catchall

Requirements and Planners

Course Requirements

Language studies majors must satisfy course requirements in languages and linguistics and complete elective coursework in linguistics and/or the cultural context of the language of concentration.

Lower-Division

Lower-Division Language Requirements

Students must demonstrate a level of competency in the language of concentration. This is accomplished by completing one of the Level 6 language courses below, or its equivalent. These courses all have prerequisites of levels 1-5 or their equivalent.

CHIN 6	Second-Year Chinese	5
FREN 6	Second-Year French	5
ITAL 6	Second-Year Italian	5
JAPN 6	Second-Year Japanese	5
SPAN 6	Second-Year Spanish	5
SPHS 6	Spanish for Heritage Speakers	5

Lower-Division Linguistics Requirements

LING 50	Introduction to Linguistics	5
LING 53	Semantics I	5

Upper-Division

Students in the language studies major are required to complete a minimum of 10 upper-division courses (50 upper-division credits) in linguistics, cultural context, and advanced language study. The requirements include three named courses in linguistics and at least one upper-division course conducted in the language of concentration.

Advanced Language Course

For students concentrating in French, German, Italian, or Spanish, one 5-credit advanced language course is required. For students concentrating in Chinese or Japanese, two 5-credit advanced language courses are required, the second of which counts toward the upper-division electives requirement. Courses must be within the language of concentration and can be chosen from the following:

- Chinese: CHIN 100-199
- French: FREN 100-199 or from the LIT 182 series
- German: GERM 100-199 or from the LIT 183 series
- Italian: ITAL 100-199 (excluding ITAL 101) or from the LIT 185 series
- Japanese: JAPN 100-199
- Spanish: SPAN 100-199, SPHS 100-199, or from the LIT 188 or 189 series

Note: The LIT courses listed above may only be used to fulfill the Advanced Language requirement if a student has completed or tested out of Level 6 of the corresponding lower-division language prior to taking the class. If Level 6 has not yet been completed in that language, students may use the LIT courses toward the upper-division electives requirement.

Upper-Division Linguistics Requirements

LING 100	Sounds of the World's Languages: Phonetics I	5
LING 101	Phonology I	5

One of the following courses:

LING 111	Syntactic Structures	5
LING 112	Syntax I	5

Plus the Senior Comprehensive requirement

See Comprehensive Requirement section below for details.

Electives

The major requires five 5-credit upper-division elective courses. Courses may be chosen from:

- LING 102-189 (excluding LING 111 and LING 112)
- LING 200-289 (one of which could satisfy the senior comprehensive)
- The list of approved cultural context courses
- Additional advanced language courses listed above

The five electives may be any combination of these four options. Cultural context courses allow students to study disciplines such as literature, history, and politics as they relate to their language of concentration. Cultural context courses and advanced language courses must align with the language of concentration. Students choosing to complete their senior comprehensive with a Senior Thesis may be able to apply up to two quarters of LING 195 toward their electives. See the Course Substitution Policy in the Information and Policies section for information on this and about using pre-approved outside courses not listed above. Students must receive instructor permission to enroll in graduate level courses.

A list of course options being offered in the upcoming quarters is available on the Linguistics Department's Language Studies Major Requirements webpage.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in language studies is satisfied by completing:

LING 101	Phonology I	5

Plus one of the following courses:

LING 111	Syntactic Structures	5
LING 112	Syntax I	5

Comprehensive Requirement

In their senior year, and after completing the Disciplinary Communication requirement, language studies majors must satisfy the senior comprehensive requirement in one of three ways:

Option 1: Capstone Course

Students complete a 2-credit senior research course, LING 190. Each instance of LING 190 is taught concurrently with one of the upper-division linguistics electives offered in that quarter. Students must enroll in **both** an instance of LING 190 and its associated upper-division elective. This elective can also serve as the one linguistics elective required for the major.

Students must enroll **concurrently** in an upper-division elective and in the corresponding instance of the following course:

LING 190	Senior Research	2

Option 2: Senior Thesis

The senior thesis is supervised by a faculty member. The proposal for a senior thesis must be submitted for the approval of the department faculty at least three quarters prior to the quarter of graduation. The senior thesis is an original investigation of the major language in some relevant way, such as the linguistic structure or history of the language or its historical, literary, cultural, sociological, ethnographic, or political context.

Students must enroll in the following course:

LING 195	Senior Thesis	5

Option 3: Graduate-Level Course

By exception, students in their senior year may enroll in a **graduate-level linguistics class**, by permission of the instructor. This option is for students who have performed exceptionally in the available undergraduate courses in a particular sub-discipline of the field. Under these conditions, a graduate-level course may may satisfy the senior exit requirement.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Students

The following is a recommended academic plan for four-year students who wish to pursue the language studies major.

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st(frosh)	College 1 LING 50	WRIT 1/WRIT 1E (if needed)	WRIT 2*	
2nd (soph)	LING 53 Foreign language level 1	LING 100 Foreign language level 2	LING 101 Foreign language level 3	
3rd (junior)	Context 1XX upper-division elective Foreign language level 4	LING 111/LING 112 Foreign language level 5	Context 1XX upper-division elective Foreign language level 6	
4th (senior)			LING 1XX capstone course	

		or LING 195 Senior Thesis
Context 1XX upper-division elective	Context 1XX upper-division elective *or* Foreign language 1XX upper-division language	LING 190 Senior Research **
Foreign language 1XX upper-division language	Context 1XX upper-division elective	

* WRIT 2 should be taken in or before spring quarter of the second year. It is a prerequisite for LING 101 and LING 111/ LING 112.

**LING 190 is a 2-credit course taken concurrently with a capstone elective. Students who choose to write a thesis or take a graduate-level class need not take LING 190.

The second upper-division foreign language course is required only for students with a concentration in Chinese or Japanese. In addition to the specific courses shown in these planners, a student must complete courses satisfying the general education requirements. The courses in the four-year planner cover at least the following general education requirements: C, CC, MF, SI.

Junior Transfer Students, Language Studies

The following is a recommended academic plan for junior transfer students who wish to pursue the language studies major.

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	LING 50 LING 53 Foreign language level 4	LING 100 LING 111/LING 112 Foreign language level 5	LING 101 Context 1XX upper-division elective Foreign language level 6	
2nd (senior)	Context 1XX upper-division elective Foreign language 1XX upper-division language	Context 1XX upper-division elective Context 1XX upper-division elective **or** Foreign language 1XX upper-division language	LING 1XX capstone course or LING 195 Senior Thesis LING 190 Senior Research* Context 1XX upper-division elective	

*LING 190 is a 2-credit course taken concurrently with a capstone elective. Students who choose to write a thesis or take a graduate-level class need not take LING 190.

Note: this major planner presumes that the student enters UC Santa Cruz having already completed three quarters of foreign language or having equivalent proficiency. The second upper-division foreign language course is required only for students with a concentration in Chinese or Japanese. This planner also

assumes that a student has completed any required GE courses — including UC Santa Cruz or community college GE requirements—before coming to UCSC. This can be accomplished by completing the Intersegmental General Education Transfer Curriculum (IGETC).

Additional planning templates are available on the department website.

LANGUAGE STUDIES MINOR

Course Requirements

Complete the following requirements for the language studies minor. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Take the following course:

LING 50	Introduction to Linguistics	5

Lower-Division Language

Students must demonstrate a level of competency in the language of concentration. This is accomplished by completing one of the Level 6 language courses below, or its equivalent. These courses all have prerequisites of levels 1-5 or their equivalent.

CHIN 6	Second-Year Chinese	5
FREN 6	Second-Year French	5
ITAL 6	Second-Year Italian	5
JAPN 6	Second-Year Japanese	5
SPAN 6	Second-Year Spanish	5
SPHS 6	Spanish for Heritage Speakers	5

Upper-Division Courses

The minor requires 25 upper-division credits. These requirements are comprised of two required linguistics courses, one advanced language course, and two electives, as follows:

Take the following course:

LING 100	Sounds of the World's Languages: Phonetics I	5

Plus one of the following courses:

LING 111	Syntactic Structures	5
LING 112	Syntax I	5

Advanced Language Requirement

One 5-credit Advanced Language course is required. Courses must be within the language of concentration and can be chosen from the following:

- Chinese: CHIN 100-199
- French: FREN 100-199 or from the LIT 182 series
- German: GERM 100-199 or from the LIT 183 series
- Italian: ITAL 100-199 (excluding ITAL 101) or from the LIT 185 series
- Japanese: JAPN 100-199
- Spanish: SPAN 100-199, SPHS 100-199, or from the LIT 188 or 189 series

Note: The LIT courses listed above may only be used to fulfill the Advanced Language requirement if a student has completed or tested out of Level 6 of the corresponding lower-division language prior to taking the class. If Level 6 is not yet completed in that language, students may use the LIT courses toward the Cultural Context/Upper-Division Electives Requirement.

Upper-Division Electives

The minor requires two 5-credit upper-division elective courses. Courses may be chosen from:

- LING 101-189 (excluding LING 111 and LING 112)
- LING 200-289
- The list of approved cultural context courses
- Additional Advanced Language Courses listed above

The two courses may be any combination of these four options. Cultural context courses allow students to study disciplines such as literature, history, and politics as they relate to their language of concentration. Cultural context courses and advanced language courses must align with the language of concentration. See the Course Substitution Policy section for information about using pre-approved outside courses not listed above. Students must receive instructor permission to enroll in graduate-level courses.

A list of course options being offered in the upcoming quarters is available.

Course Substitution Policy

Students may substitute up to two outside courses toward the Upper-Division Electives requirement. These courses include independent study (LING 199), language-focused courses from other UC Santa Cruz departments, and courses from other institutions. Substitutions must be upper-division courses and fit into a coherent program of study. A list of pre-approved outside courses is available for reference. Students should contact the department to inquire about using courses not on this list. Students may apply no more than one quarter of LING 199. Advanced language courses taken at UCSC and courses listed as Cultural Context Courses do not count toward the two-course limit.

LINGUISTICS CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

The B.A./M.A. pathway in linguistics is a demanding, selective option that allows students who are well prepared

and well motivated to complete the requirements for both degrees in five years rather than the usual six.

Admission to the pathway has two stages. In the first stage, interested students consult with the undergraduate advisor to learn about the process and request the application form. They also arrange meetings with one or more linguistics faculty members. An application can be successful only if it has benefitted from this consultation with a linguistics faculty member at least once, and ideally more, to discuss the student's goals in linguistics. Students are required to do this before submitting their application.

Applications for the B.A./M.A. pathway in linguistics must be submitted by the last business day of the sixth full week of the first quarter of their junior year. Transfer students must apply by the end of their second quarter of enrollment. In order to be accepted at this first stage, students must have demonstrated outstanding performance across linguistics courses, including excellence in at least three courses that are named requirements for the linguistics major. Students accepted at this initial stage are assigned a faculty mentor who monitors their progress closely.

At the second stage of the admission procedure, students apply in their senior year to be admitted to the M.A. program through UC Santa Cruz's normal graduate admissions process. If accepted, ideally they complete all course requirements and complete and defend the M.A. thesis by the end of the fifth year.

Students in the B.A./M.A. pathway take a number of graduate courses in their senior year which are selected in close consultation with the faculty mentor. Performance in these courses forms a central part of the ongoing evaluation process. If a student's performance does not meet the standards set for the pathway, the student completes the B.A. at the end of the senior year and does not proceed to the M.A.

Graduate courses required for the M.A. are taken partly in the senior year and partly in the fifth year. The M.A. thesis is written in the fifth year. Thus, by the end of the fifth year, students in the pathway will have fulfilled the requirements for both the B.A. and the M.A. degrees. Students who need additional time may remain in the pathway until the M.A. thesis is completed and defended. Students admitted into the B.A./M.A. pathway must complete a minimum of 35 credits as an M.A. student, regardless of the number of graduate courses completed as an undergraduate.

LINGUISTICS M.A.

Introduction

The M.A. degree involves a two-year course of study. It may be completed in one year by students who have a B.A. in linguistics from UC Santa Cruz and who have taken a number of the core graduate courses during their undergraduate career; the combined B.A./M.A. program (p. 234) provides another pathway to the M.A. program.

Every year, UC Santa Cruz undergraduates in the final year of their linguistics or language studies major can apply to be admitted into the graduate program to pursue the M.A. in theoretical linguistics. Interested students should discuss the possibility with one or more faculty members and formally apply online to the graduate program during the fall quarter of the senior year.

For up-to-date information about the application process, consult the Linguistics Department's website; and see the graduate coordinator.

Requirements

Course Requirements

A minimum of 45 credits of graduate-level work.

In addition to the requirements outlined below, students must enroll in the following courses:

- LING 240 (The Pedagogy of Linguistics), to be taken in the fall quarter of years 1 and 2.
- LING 296 (Linguistics Colloquium), to be taken each quarter in the program.

LING 240 and LING 296 do not count toward the required 45 credits.

LING 240	The Pedagogy of Linguistics	1
LING 296	Linguistics Colloquium	2

The following courses must be taken by all students.

LING 211	Phonology A	5
LING 221	Syntax A	5
LING 231	Semantics A	5

All students are required to take two additional core courses drawn from the following list:

LING 212	Phonology B	5
LING 222	Syntax B	5
LING 232	Semantics B	5

Students must take the third core course from the above list of 'B' courses, or one course from the following list:

LING 214	Phonetics	5
LING 257	Psycholinguistics and Linguistic Theory	5
LING 280	Proseminar in Experimental Linguistics	5
LING 282	Field Methods	5

Electives

Additionally students must take **three electives** that form a coherent plan of study, as determined by the student's advisor in consultation with the student. These electives are typically drawn from graduate courses offered by Linguistics and other related disciplines and independent study courses with Linguistics faculty.

The nine required courses must be taken as 5-credit courses.

Foreign Language Requirements

Reading competence in one foreign language, to be demonstrated by examination at the end of the first year of study.

Master's Thesis

Students in the master's program complete a master's thesis in accordance with the thesis capstone (Plan I) curriculum. This thesis often grows out of a promising term paper written by the student, and is read by a committee composed of three faculty members in linguistics. Preparation for research projects should begin far in advance. In general, a good goal for those working on their M.A. thesis is to approach a possible thesis chair by the end of their first academic year.

In consultation with the thesis chair, a committee to read and evaluate the M.A. thesis is appointed by the department, and the department notifies the Graduate Division of the committee's members by the end of the second week of the quarter in which the degree is to be granted. The majority of the three-member thesis reading committee must be members of the Santa Cruz Division of the Academic Senate.

After the student defends the M.A. thesis, they must submit a copy of the completed thesis to the Graduate Division by the last day of the term in which the student expects to receive their degree. The thesis must be formatted according to UC Santa Cruz specifications (see Dissertation and Thesis Preparation Guidelines).

Optional Catchall

Applying for Graduation

See the Graduate Student Handbook for administrative requirements.

See the Academic and Administrative Calendar for Announcement of Candidacy dates.

Note: The completed master's thesis, and cover sheet, should be submitted to the Graduate Division and a pdf copy of the thesis, and cover sheet, should be submitted to the graduate coordinator.

LINGUISTICS PH.D.

Introduction

The graduate program in linguistics at the University of California, Santa Cruz is a small, focused program in linguistic theory leading to Doctor of Philosophy (Ph.D.) or Master of Arts (M.A.) degrees. The research interests of faculty and students draw mostly on the framework of generative grammar, with a primary focus on theoretical and experimental approaches to morphology, phonetics, phonology, pragmatics, psycholinguistics, semantics, and syntax. Research strengths also include the study of various languages, computational methods, and field methods.

While committed to training in theoretical depth, the program makes possible an unusual breadth of theoretical and experimental understanding. Research in syntax focuses on ways in which generative theory and language-particular analysis inform one another. Faculty expertise covers principles and parameters theory, minimalism, and experimental syntax. Research in phonetics and phonology is pursued in various current frameworks, including optimality theory and dispersion theory. The issues covered range from phonetics and the phonetics-phonology interface to prosodic theory, prosodic morphology, and the syntax-phonology interface. Research in semantics applies formal, model-theoretic techniques to illuminate the interface between syntactic structure and interpretation and the role of semantic competence in the pragmatics of utterance interpretation. Experimental research in these areas reaches out to a broad range of issues in psycholinguistics and cognitive science.

The faculty have expertise in a diverse range of languages, including Chamorro, German, Hebrew, Hindi, Hungarian, Irish, Japanese, Kaqchikel Mayan, Uspanteko Mayan, Latin, Northern Paiute, Persian, Polish, Romanian, Russian, Spanish, Turkish, and Zapotec.

From the beginning of their studies, students are engaged in original research and critical evaluation, since the program aims to provide sophisticated training as a foundation for a career in academic research and teaching. The program begins with a sequence of foundation courses in phonetics, phonology, syntax, semantics, and psycholinguistics, addressing both formal and experimental approaches. Subsequent coursework emphasizes depth; it is increasingly centered around the doctoral student's independent research, culminating in the completion of a dissertation.

Undergraduate Preparation

Applications are invited from students who have completed an undergraduate linguistics major or who have demonstrated excellence in some related discipline (psychology, mathematics, computer science, anthropology) and have the equivalent of a minor in linguistics. A student applying for admission to this program should, at a minimum, have a good foundation in at least one of the following: phonetics, phonology, psycholinguistics, morphology, semantics, or syntax. Students entering the program with a deficiency in one or more areas may need to take appropriate undergraduate courses at UC Santa Cruz during the first year of graduate study.

For information on applying and admissions, please consult the Linguistics Department website.

Advancement to Candidacy

Course Requirements

A minimum of 65 credits of graduate-level work.

In addition to the requirements outlined below, students must enroll in the following courses:

- LING 240 (The Pedagogy of Linguistics), to be taken in the fall quarter of years 1 and 2.
- LING 296 (Linguistics Colloquium), to be taken each quarter in the program.

LING 240 and LING 296 do not count toward the required 65 credits.

LING 240	The Pedagogy of Linguistics	1
LING 296	Linguistics Colloquium	2

All students are required to take the following eight core courses:

LING 211	Phonology A	5
LING 212	Phonology B	5
LING 214	Phonetics	5
LING 221	Syntax A	5
LING 222	Syntax B	5
LING 231	Semantics A	5
LING 232	Semantics B	5
LING 257	Psycholinguistics and Linguistic Theory	5

Plus one of the following courses:

LING 280	Proseminar in Experimental Linguistics	5
LING 282	Field Methods	5

Each student must also take four seminars.

One of these must be LING 290 (Research Seminar) and the remaining three seminars or proseminars must form a coherent program of study, as determined by the student's adviser in consultation with the student.

The 13 required courses must be taken as 5-credit courses.

Foreign Language Requirements

Reading competence in one foreign language, to be demonstrated by examination at the end of the first year of study.

Teaching Requirement

Pre-Qualifying Requirements

Two qualifying papers (QP), each in a distinct area, must be separately and orally defended by the end of the third year as part of the requirements for advancement to candidacy.

Qualifying Examination

After a student successfully defends the two qualifying papers, they proceed to prepare for the qualifying exam (QE) in order to advance to candidacy. The function of the qualifying exam is to determine whether the student has achieved sufficient competence in a chosen subfield to be able to proceed to dissertation research. The QE is based on a substantial research paper written by the student and presented to the committee at least two weeks in advance of the exam. The topic of this paper is decided by the QE chair in consultation with the student. In most cases, it will be a revised version of one of the QPs that the student has successfully defended. Whether or not the paper originated as a QP, it must be in the subfield in which the student plans to pursue dissertation research.

Post-Qualifying Requirements

Dissertation Prospectus
The dissertation prospectus lays out the direction of research that the student plans to pursue in the dissertation. It relates the student's planned research to previous relevant research and to the larger questions with which the field is engaged. This milestone can be satisfied by the QE paper at the discretion of the faculty adviser.

[Optional Catchall]

Dissertation

Dissertation

The final requirement for the Ph.D. degree is the completion of a dissertation representing a significant contribution in some central area of linguistic research. At the dissertation stage, students enroll each quarter in LING 299A (Thesis Research) and LING 296 (Linguistics Colloquium).

Dissertation Defense

Once a student has completed the dissertation, they defend it at a public dissertation defense that is generally attended by graduate students and faculty in linguistics. The candidate first presents the results of the dissertation and then responds to questions, first from committee members, and then, time permitting, from the audience. Afterwards, the committee confers privately and decides either to accept the dissertation, reject it, or accept it provisionally, pending specific revisions. Following the defense, the candidate will revise the dissertation according to the committee's recommendations and then submit the final copy to the Graduate Division and graduate coordinator. See the Graduate Handbook for administrative requirements.

A copy of the completed dissertation, formatted according to UC Santa Cruz specifications, should be electronically submitted to the Graduate Division office (see Dissertation and Thesis Submission Guidelines) and an original, signed cover sheet should be submitted to the Graduate Division office as well. In addition, a pdf copy of the dissertation and physical copy of the cover sheet should be submitted to the graduate coordinator.

Academic Progress

The Linguistics Department faculty meet at the end of spring quarter each year to ensure that all graduate students are making timely progress in the program. Students may receive letters from the faculty based on this discussion.

To remain in good academic standing, a student must make timely progress toward degree completion and satisfactorily meet the following standards of scholarship established by the Graduate Council. Please see the Graduate Division handbook for details about 'Academic Good Standing' and 'Time to Degree,'

Applying for Graduation

See the Graduate Handbook for administrative requirements.

See the Academic and Administrative Calendar for Announcement of Candidacy dates.

NOTE: The completed dissertation, and cover sheet, should be submitted to the Graduate Division and a pdf copy of the dissertation, and cover sheet, should be submitted to the graduate coordinator.

[Optional Catchall]

LANGUAGE STUDIES CULTURAL CONTEXT ELECTIVES COURSE LIST

Cultural Context Electives

Cultural Context Electives

Chinese Language Concentration Electives

ANTH 130C	Politics and Culture in China	5
ANTH 130G	Asian Americans in Ethnography and Film	5
CHIN 103	Advanced Chinese: Language and Society	5
CHIN 104	Advanced Chinese: Readings in Literature	5
CHIN 105	Advanced Chinese: Readings in History	5
CHIN 107	Introduction to Classical Chinese Prose	5
CHIN 108	Introduction to Classical Chinese Poetry	5
ECON 149	The Economies of East and Southeast Asia	5
FILM 165D	Asian Americans and Media	5
HAVC 122A	Sacred Geography of China	5
HAVC 122B	Constructing Lives in China: Biographies and Portraits	5
HAVC 122C	Writing in China	5
HAVC 122D	Chinese Landscape Painting	5
HAVC 122E	Art and Propaganda in China	5
HAVC 122F	Bodies in Chinese Culture	5
HAVC 127A	Buddhist Visual Worlds	5
HAVC 127B	Buddhist Pure Lands	5
HAVC 127C	Ritual in Asian Religious Art	5
HAVC 127D	Storytelling in Asian Art	5
HAVC 127F	The Politics of Exclusion: Asian American Visual Culture	5
HIS 101D	World History of Science	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 139G	Herbs, Potions, and Viruses: History of Medicine and Public Health in Modern China	5
HIS 140B	History of Qing China, 1644-1911	5
HIS 140C	Revolutionary China 1895-1960	5
HIS 140D	Recent Chinese History	5
HIS 140E	Women in China's Long 20th Century	5
HIS 142	History of Hong Kong and Taiwan: Two Peripheries of China	5
HIS 150G	History of Disabilities in East Asia	5
HIS 194M	Literati, Samurai, and Yangban: Comparative History of State and Elite in East Asia, 1600-1900	5
LIT 133E	Contemporary Chinese Society, Culture, and Politics	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
LIT 162A	Asian American Literature	5
LIT 162B	Literature of the Asian Diaspora	5
LIT 162C	So Many Little Lives: Representations of Trauma in Asian American Literature	5
LIT 167H	Disability in Transnational Asian American Studies	5
POLI 140D	Politics of East Asia	5
POLI 141	Politics of China	5
POLI 161	The Rise of China	5
THEA 100A	Asian Theater/Dance and Global Impacts	5
THEA 100C	Courts, Courtesans, Shamans, and Clowns: Asian Drama	5

French Language Concentration Electives

ANTH 110O	Postcolonial Britain and France	5
FILM 168F	Francophone African Cinema	5
FREN 108	French Cinema	5
FREN 111	Stylistics	5
FREN 114	French Phonetics	5
FREN 120	French Linguistics	5
FREN 121	History of the French Language	5
FREN 125A	French Civilization: 19th Century	5
FREN 125B	French Civilization: 20th Century	5
FREN 130	French for Professions	5
FREN 131	Social Activism in France: The Tradition of Chanson Française Engagée	5
FREN 136	La Francophonie	5

HAVC 135D	Art, Revolt, and Revolution in Europe 1750-1850	5
HAVC 135P	Paris, Capital of the 19th Century	5
HAVC 190P	Death and Patriotism: The Case of the French Revolution	5
HIS 170A	French History: Old Regime and Revolution	5
HIS 170B	French History: The 19th Century	5
HIS 170C	Mediterranean France: The History and Politics of Immigration	5
LIT 116F	Knights, Ladies, and Werewolves: Medieval French Literature in Translation	5
LIT 125C	Great French Novels	5
LIT 125J	French Science Fiction	5
LIT 137C	Imagining Paris	5
LIT 182A	Le Moyen Age	5
LIT 182E	Etudes de Poésie	5
LIT 182F	Le théâtre	5
LIT 182H	Auteur et culture	5
LIT 182I	Littérature d'expression française hors de France	5
LIT 182J	Theorie	5
LIT 182K	Textes et contextes	5
LIT 182L	Science-Fiction Française	5
PHIL 108	Phenomenology	5

German Language Concentration Electives

HAVC 135B	German Art, 1905-1945	5
HIS 167B	The Second World War in Europe	5
HIS 172A	German History	5
HIS 172B	German Film, 1919-1945	5
HIS 172C	History of German Film, 1945 to Present	5
HIS 196G	Topics in Modern Germany and Europe	5
LIT 112I	Kafka	5
LIT 114D	Goethe's Faust	5
LIT 125D	Modern and Contemporary German Literature	5
LIT 132A	Germany in War and Peace	5
LIT 149A	Behind the Berlin Wall	5
LIT 155C	New German Cinema	5
LIT 164G	Literature and the Holocaust	5
LIT 183A	Einführung in der deutschen Literatur	5
LIT 183B	Themen in deutscher Literatur und Kultur	5
LIT 183D	Die deutsche Romantik	5
LIT 183F	Die deutsche Novelle	5
LIT 183G	Deutsche Komödie	5
LIT 183H	Das deutsche Drama	5
LIT 183I	Deutscher Film: Geschichte, Kultur, Gesellschaft	5
LIT 183K	Moderne deutsche Literatur und Film	5
LIT 183M	Moderne deutsche Fiktion	5
LIT 183N	Modern Deutsche Lyrik	5
LIT 183P	Fremdenangst: Ausländerfeindlichkeit in der deutschen Literatur und Kultur	5
LIT 190Z	Topics in German Literature and Culture	5
PHIL 106	Kant	5

Italian Language Concentration Electives

HAVC 157B	Italian Renaissance: Art and Architecture	5
HAVC 157C	High Renaissance	5
HAVC 157D	Art of the Venetian Renaissance	5
ITAL 100	Advanced Italian Composition and Conversation	5
ITAL 101	Italian Culture through Food	5
ITAL 106	Italian Culture Through Film	5
LIT 114A	Orlando Furioso	5
LIT 114C	Dante's Divine Comedy	5
LIT 114E	One Way Ticket to Hell … and Back: Exploring Dante's Inferno	5
LIT 114F	Finding Dante: A Reader's Guide to Getting Out of Hell	5
LIT 125A	Ancient Novel	5
LIT 155D	Italian Cinema and Literature	5
LIT 166C	Early Modern Italian Women Writers	5
LIT 185B	Letteratura e cultura italiana	5
LIT 185H	L'Opera italiana	5
LIT 185I	Teatro italiano	5
LIT 185J	Poesia moderna	5
LIT 185L	La novella italiana	5
LIT 185M	Fascismo e resistenza	5
LIT 185N	Le donne nell'Italia moderna	5
LIT 185O	"I need a hero:" Ariosto's (Un)Epic Renaissance	5
LIT 185P	Boccaccio: Decameron	5
LIT 185Q	Dante: Divina Commedia	5
LIT 185S	Petrarca	5
LIT 185Z	Italian Studies Writing in the Discipline	1

Japanese Language Concentration Electives

ANTH 130G	Asian Americans in Ethnography and Film	5
CRES 112	AsianAm Enviro Justice	5
ECON 149	The Economies of East and Southeast Asia	5
FILM 165D	Asian Americans and Media	5
HAVC 127A	Buddhist Visual Worlds	5
HAVC 127C	Ritual in Asian Religious Art	5
HAVC 127D	Storytelling in Asian Art	5

HAVC 127E	Modern/Contemporary Architecture of the Asia Pacific	5
HAVC 127F	The Politics of Exclusion: Asian American Visual Culture	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 150B	Tokugawa Japan	5
HIS 150C	Inventing Modern Japan: The State and the People	5
HIS 150D	The Japanese Empire, 1868-1945	5
HIS 150E	History and Memory in the Okinawan Islands	5
HIS 150F	Engendering Empires: Women in Modern Japan and Korea	5
HIS 150G	History of Disabilities in East Asia	5
HIS 194E	Women in Japanese History	5
HIS 194M	Literati, Samurai, and Yangban: Comparative History of State and Elite in East Asia, 1600-1900	5
HIS 194Y	Memories of WWII in the U.S. and Japan	5
JAPN 103	Advanced Japanese	5
JAPN 104	Advanced Japanese	5
JAPN 105	Advanced Japanese	5
JAPN 106	Advanced Japanese	5
JAPN 109	Japanese Language, Culture, and Society	5
LIT 133C	Modern Japanese Novel	5
LIT 133I	Global Japan: Literatures of the Japanese Diaspora	5
LIT 160I	Race, Militarism, and Empire in Asia and the Pacific	5
LIT 162A	Asian American Literature	5
LIT 162B	Literature of the Asian Diaspora	5
LIT 162C	So Many Little Lives: Representations of Trauma in Asian American Literature	5
LIT 167H	Disability in Transnational Asian American Studies	5
POLI 140D	Politics of East Asia	5
SOCY 128	Law and Politics in Contemporary Japan and East Asian Societies	5
THEA 100A	Asian Theater/Dance and Global Impacts	5
THEA 161D	Asian Theater: An Anthropological Approach	5

Spanish Language Concentration Electives

ANTH 110G	Westside Stories: Race, Place and the California Imaginary	5
ANTH 130J	Politics and Statemaking in Latin America	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130M	Inside Mexico	5
ANTH 130P	Ethnography of Southern Cone Chile and Argentina	5
ANTH 130U	Central America	5
ANTH 176B	Meso-American Archaeology	5
ANTH 176D	Colonial Encounters in the Americas	5
CRES 160	Latina/o/x Geographies	5
ENVS 154	Amazonian Cultures and Conservation	5
FILM 165E	Chicana/o Cinema, Video	5
FMST 115	Gender, Sexuality, and Transnational Migration Across the Americas	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 175	Gender and Sexualities in Latina/o America	5
HAVC 140D	Chicano/Chicana Art: 1970-Present	5
HAVC 143C	Latin American Modern Architecture	5
HAVC 144A	Latin American Art and Visual Culture	5
HAVC 160A	Indigenous American Visual Culture Before 1550: Mexico	5
HAVC 160B	Indigenous American Visual Culture Before 1550: The Andes	5
HAVC 162A	Special Studies in Early Indigenous American Visual Culture: The Ancient Maya	5
HAVC 162B	Special Studies in Early Indigenous American Visual Culture: The Inka	5
HAVC 163	The Native in Colonial Spanish America	5
HAVC 165	Indigenous Artists and the Borderland Missions	5
HAVC 190T	Topics in Pre- and Post-Columbian Visual Culture	5
HAVC 191B	The Virgin of Guadalupe: Images and Symbolism in Spain, Mexico, and the U.S	5
HIS 124A	Panama Canal and U.S. Empire	5
HIS 128	Chicana/Chicano History	5
HIS 130	History of Modern Cuba	5
HIS 131	Women in Colonial Latin America	5
HIS 134A	Colonial Mexico	5
HIS 134B	History of Mexico, 1850 to Present	5
HIS 139M	Murderers, Witches, and Rebels: Depicting Difference in Colonial Latin America	5
HIS 185I	Latin American Jewish History in the Modern Period	5

HIS 185L	Where Civilizations Met--Jews, Judaism, and the Iberian Peninsula	5
HIS 190A	Slavery and Race in Latin America	5
HIS 190B	Race and the Nation in Latin America	5
HIS 190D	Asian and Latino Immigration Since 1875	5
HIS 190T	Latin America in the Cold War	5
HISC 136	Latin American Thought	5
LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 100A	Research in LALS	5
LALS 112	Immigration and Assimilation	5
LALS 122	Media and Nationalism	5
LALS 126	Digit@l Americ@s/Digit@l Latin@s	5
LALS 127	Genero, Nacion Y Modernidad En El Cine	5
LALS 128	Latino Media in the U.S	5
LALS 129	America Latina: Cine, Dictadura y Memoria	5
LALS 129S	Memoria en Las Americas	5
LALS 131	Latino Literatures: Assimilation and Assimilability	5
LALS 133	Latina/o Art and Representation	5
LALS 135	El Salvador: Expresiones Culturales	5
LALS 137	Speculative Fiction and Chicanafuturism	5
LALS 143	Race and Ethnicity	5
LALS 144	Mexicana/Chicana Histories	5
LALS 145	Grassroots Social Change in Latin America	5
LALS 147	Violencia Cotidiana en las Americas	5
LALS 149	Whiteness in Latin America	5
LALS 150	Afro-Latinos/as: Social, Cultural, and Political Dimensions	5
LALS 151	Race & Mobility	5
LALS 152	Consumer Cultures Between the Americas	5
LALS 154	Juventud in Latin America	5
LALS 155	Latin American and Latino Youth Movements	5
LALS 156	Human Rights and Transitional Justice in the Americas	5
LALS 157	Revoluciones Sociales	5
LALS 158	Latin American Political Economy	5
LALS 163	The Amazon: Cultures and Perspectives	5
LALS 165	Contemporary Peru	5
LALS 168	Inter-American Solidarities	5
LALS 169	South America: History, Society, and Culture	5
LALS 170	Indigenous Struggles in the Americas	5
LALS 172	Visualizing Human Rights	5
LALS 175	Migration, Gender, and Health	5
LALS 177	Migrant Health and Social Justice	5
LALS 178	Gender, Transnationalism, and Globalization	5
LALS 180	Borders: Real and Imagined	5
LALS 194A	Immigrant Storytelling	5
LALS 194B	Global Migration and Displacement	5
LALS 194G	Chile: Social and Political Change	5
LALS 194H	Central America and the United States	5
LALS 194R	Latinx Science Fiction	5
LIT 114B	Don Quixote de la Mancha	5
LIT 124B	The Contemporary Latin American Short Story	5
LIT 141G	Granada: The Moor's Last Sigh and the Muslim's Frontier: The City in the Mediterranean Imagination	6
LIT 149F	Contemporary Mexican Narrative	5
LIT 155E	Cinema and Social Change in Latin America	5
LIT 165A	Chicanx/Mexican American Literature	5
LIT 165B	Latino Fictions of the Americas	5
LIT 165C	Mesoamerican Indigenous/Indigenista Literature	5
LIT 188A	Literatura medieval	5
LIT 188B	Literatura peninsular: de los orígenes al siglo XVIII	5
LIT 188E	Teatro del Siglo de Oro español	5
LIT 188F	Cuentos del Siglo de Oro español	5
LIT 188G	Literaturay vida en Don Quijote y otros textos cervantinos	5
LIT 188H	Erotismo y Mistica	5
LIT 188I	La novela picaresca	5
LIT 188L	Literatura de la guerra civil española	5
LIT 188M	Literatura peninsular: siglos XIX y XX	5
LIT 188R	Humanidades Ambientales	5
LIT 188Z	Literatura de España	5
LIT 189A	De la conquista a Sor Juana	5
LIT 189B	El Siglo XIX en América Latina: cultura, política y sociedad	5
LIT 189C	Introducción a Spanish Studies	5
LIT 189D	Sor Juana Ines de la Cruz	5
LIT 189E	Cuba	5
LIT 189F	Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish	5
LIT 189G	Cine y Literatura	5
LIT 189H	La Globalizacion en/del Cine Latin/o Americano	5
LIT 189I	Literatura e indigeneidad	5

LIT 189K	El ensayo latinoamericano	5
LIT 189L	Poesía latinoamericana	5
LIT 189M	Prosa contemporánea hispanoamericana	5
LIT 189N	Latinoamericano testimonio	5
LIT 189O	El Cuento Hispanoamericano: Variedades esteticas de la literatura breve en America Latina	5
LIT 189P	Las mujeres en la literatura latinoamericana	5
LIT 189Q	Ficción y marginalidad	5
LIT 189R	La Novela de la Dictadura	5
LIT 189S	La cultura popular en la narrativa latinoamericana	5
LIT 189T	Historia de la lectura y los lectores: Recepcion y consumo cultural en el mundo Latino Americano	5
LIT 189U	Modernidad y literatura: El Boom de la novela latinoamericana	5
LIT 189V	Andean Indigenismo	5
LIT 189X	Estudios mediaticos	5
LIT 189Z	Literatura de Chile	5
LIT 190X	Temas de la literatura y cultura espanolas y latinoamericanas	5
POLI 140C	Latin American Politics	5
POLI 144	Andean Politics	5
POLI 190V	States in the Global South	5
PSYC 144	Latinx Psychology	5
SOCY 156	U.S. Latinx Identities: Centers and Margins	5
SOCY 177A	Latinos/as and the American Global City	5
SPAN 114	Advanced Conversation and Composition	5
SPAN 140	Sounds of Spanish	5
SPAN 141	Advanced Spanish Grammar	5
SPAN 142	El mundo de las palabras. Spanish Morphology and Lexicon	5
SPAN 150	Topics in Hispanic Linguistics: Introduction to Hispanic Linguistics	5
SPAN 151	Topics in Hispanic Linguistics: Varieties of Spanish	5
SPAN 152	Topics in Hispanic Linguistics: Spanish in the U.S.	5
SPAN 153	Spanish Language Teaching	5
SPAN 154	Topics in Hispanic Linguistics: Spanish Pragmatics	5
SPAN 155	Topics in Hispanic Linguistics: Language Contact in the Spanish Speaking World	5
SPAN 156A	The Language of Latin America Cinema	5
SPAN 156E	Spanish Culture	5
SPAN 156F	El Humor en Espanol	5
SPAN 156J	Contemporary Central America	5
SPAN 156K	Spanish Discourse Analysis	5
SPAN 156L	Society and Sustainability in Latin America	5
SPAN 156M	Mexico and the Southwest	5
SPAN 157	Spanish Sociolinguistics	5
SPAN 158	Spanish in the U.S.-Mexico Borderlands	5
SPHS 115	El ensayo lectura, análisis y redacción	5
THEA 161P	Theater in the Chicano Power Movement	5

LINGUISTICS BA AND MINOR PRE-APPROVED OUTSIDE ELECTIVES COURSE LIST

Pre-Approved Outside Electives Course List

The following courses are pre-approved outside courses for the linguistics B.A. and minor, and the language studies B.A. and minor. See the Course Substitution Policy for the respective programs for information on using these courses.

Courses

ANTH 139	Language and Culture	5
APLX 101	Second-Language Acquisition	5
APLX 102	Bilingualism	5
APLX 103	Second Language Speech	5
APLX 105	Language Loss	5
APLX 112	Language and Gender	5
APLX 113	Inter-Cultural Communication	5
APLX 115	Language and Power	5
APLX 116	Discourse Analysis: Language Use and Context	5
APLX 122	Linguistic Diversity & Social Justice	5
APLX 124	Second Language Variation and Sociolinguistics	5
APLX 135	Second Language Teaching	5
APLX 138	English Grammar for TESOL	5
CSE 103	Computational Models	5
CSE 110A	Fundamentals of Compiler Design I	5
CSE 140	Artificial Intelligence	5
CSE 143	Introduction to Natural Language Processing	5
EDUC 141	Bilingualism and Schooling	5
FMST 150	Mediating Desire	5
FREN 114	French Phonetics	5
FREN 120	French Linguistics	5
FREN 121	History of the French Language	5
JAPN 109	Japanese Language, Culture, and Society	5
LIT 102	Translation Theory	5
PHIL 117	Non-Classical Logic	5
PHIL 119	Intermediate Logic	5
PHIL 123	Philosophy of Language	5

PSYC 125	Psychology of Language	5
PSYC 133	Bilingualism from a Cognitive Perspective	5
SOCY 142	Language and Social Interaction	5
SPAN 140	Sounds of Spanish	5
SPAN 150	Topics in Hispanic Linguistics: Introduction to Hispanic Linguistics	5
SPAN 151	Topics in Hispanic Linguistics: Varieties of Spanish	5
SPAN 152	Topics in Hispanic Linguistics: Spanish in the U.S.	5
SPAN 153	Spanish Language Teaching	5
SPAN 154	Topics in Hispanic Linguistics: Spanish Pragmatics	5
SPAN 155	Topics in Hispanic Linguistics: Language Contact in the Spanish Speaking World	5
SPAN 158	Spanish in the U.S.-Mexico Borderlands	5

Literature

303 Humanities 1
(831) 459-4778
https://literature.ucsc.edu/

PROGRAMS OFFERED

Literature B.A. (p. 244)

Literature Minor (p. 256)

Italian Studies Minor (p. 257)

Literature M.A. (p. 258)

Literature Ph.D. (p. 259)

Literature Designated Emphasis (p. 260)

OTHER PROGRAMS OF INTEREST

Ancient Studies

Critical Race and Ethnic Studies (p. 148)

East Asian Studies (p. 185)

Feminist Studies

History (p. 169)

History of Art and Visual Culture (p. 74)

History of Consciousness (p. 202)

Jewish Studies (p. 187)

Languages and Applied Linguistics (p. 205)

Language Studies (p. 227)

Latin American and Latino Studies (p. 793)

Linguistics (p. 220)

Middle Eastern and North African Studies (p. 264)

Philosophy (p. 266)

Spanish Studies (p. 213)

The study of literature at UCSC is organized as an interdisciplinary field coordinated through a single Department of Literature, including modern and ancient literatures in the original language and in translation, literary theory, and creative writing. This structure fosters innovative and comparative approaches to literature among both faculty and students. Courses in the department encompass traditional literary history and interpretation, cross-cultural inquiry and current theoretical debates, and new media. The Literature Department also sponsors the Italian studies minor.

UNDERGRADUATE PROGRAM

Literature majors learn to read, think, and write critically. These skills have wide applicability, and offer pathways into related disciplines such as history, philosophy, psychology, sociology, anthropology, politics, and the history of art and visual culture. Literature majors enter a variety of careers ranging from law and journalism to management, government, non-profits, international studies, publishing, technical writing, and teaching at all levels. The literature major prepares students for careers in digital storytelling and electronic media; film, television, and video; theater and the visual arts; and many other fields.

The Literature Department faculty requires that all literature majors have basic proficiency in a second language. Proficiency in more than one language enhances understanding of any literature and culture. Graduate programs in literature and other humanities disciplines generally require competence in at least one language other than English.

GRADUATE PROGRAM

The graduate program in literature is relatively small, and students work closely with an internationally recognized faculty throughout their graduate careers. Graduate students are able to take advantage of a rich array of intellectual and cultural events, to participate in collaborative research clusters, and to attend lectures by scholars whose work is transforming the discipline. The goal of the program is to develop scholars who will be qualified to teach in departments of national and comparative literatures, cultural studies, ethnic studies, and interdisciplinary programs.

Graduate study in literature includes Ph.D. and free-standing M.A. programs. M.A. students typically take two years to complete the degree and are well prepared to continue in a doctoral program elsewhere. Normative time for the Ph.D. is

seven years, and graduates go on to teach at institutions of higher learning across the world or work in many of the fields mentioned above. Ph.D. students are required to be able to read proficiently in at least two languages that are integral to their intellectual work, one of which may be English. Within these guidelines students create their own programs of study, with dissertations on a range of comparative, translingual and interdisciplinary projects. (See list of recent titles.)

COURSES FOR NON-MAJORS

The Literature Department invites students from all disciplines to take LIT 1 and courses in the LIT 60/LIT 61, LIT 80/LIT 81 and LIT 109-LIT 169 series.

LITERATURE B.A.

Information and Policies

Introduction

The Literature Department at UC Santa Cruz fosters innovative and comparative approaches to reading and interpretation in courses in a variety of languages that encompass traditional literary history, cross-cultural inquiry, current theoretical debates, and new media.

Literature prepares us to understand and explore how we think, feel, and see the world; what we are and what we want to be, for ourselves and in relation to others. Literature is crucial for freedom and its manyfold expressions, as seen in multiple fields for which the exploration and critical analysis of effective and transformational thought, feeling, and communication is key. Professional fields for which the study of literature is advantageous include careers in the teaching sector at its multiple levels, from primary school to college; the new technologies sector, such as game design and discourse and data analysis; governmental and non-profit work such as in municipalities, public service, and foundations; publishing and journalism; publicity and marketing in the old and new media contexts, and many more.

The Literature Department faculty requires that all literature majors have basic proficiency in a second language. Proficiency in more than one language enhances understanding of one's own culture and can be the access point to other literatures and cultures. Graduate programs in literature and other humanities disciplines generally require competence in at least one language other than English.

Program Learning Outcomes

Following is a summary of the program learning outcomes for the Literature B.A.:

Students who complete the literature major should emerge with the following knowledge and skills:

1. A capacity for critical analysis of texts that is attentive to:
    - the formal structures, genres, and rhetorical strategies of different kinds of writing, public discourse, and media;
    - the historical and social contexts of such texts;
    - the role cultural and linguistic differences play in the interpretation of texts read in translation and in a language not one's own.
2. Effective written communication that demonstrates the following abilities:
    - to evaluate multiple interpretations of texts;
    - to write effective argumentative prose;
    - to situate texts in relation to a critical/theoretical tradition;
    - to design and initiate a substantive independent project of research or creative activity.
3. Experience reading a variety of texts:
    - from a breadth of world cultures and traditions;
    - from different historical periods, including the pre-modern;
    - originally written in languages other than English.

4. The ability to clearly conceptualize and formulate a research problem or issue

- historically, by understanding the trajectory of the problem thus conceived;
- theoretically, by considering alternative approaches to the problem and their implications and relevance for the proposed analysis'
- conceptually, by meta critically interrogating the central concepts involved in the formulation of the problem (i.e. their origins, implications, premises, limitations, etc.).

Academic Advising for the Program

Staff advisors are available by appointment; advising appointments may be made through the Navigate app, or online at Navigate Slug Success. Students are encouraged to consult with an advisor once per quarter.

Transfer students should also consult the section Transfer Information and Policy.

Questions about the literature program can be directed to litdept@ucsc.edu, (831) 459-4778, or by visiting the Literature Department office in Humanities 1, room 303.

Getting Started in the Major: Frosh

All students considering a literature major or minor should consult with staff and/or faculty advisors at the Literature Department office as early as possible, and declare the major

or minor before the end of their sophomore year. Transfer students are urged to declare their major or minor during their first quarter at UC Santa Cruz, and should also consult the section Transfer Information and Policy.

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply to UC Santa Cruz in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz.

Students transferring from California community colleges may use an articulated equivalent of LIT 1 to satisfy the LIT 1 course requirement. Students transferring from other colleges may petition to use an introduction to literature course to satisfy the LIT 1 course requirement. Another literature course may be applied toward the LIT 60/LIT 61 or the LIT 80/LIT 81 course requirement. LIT 61W, Writing and Research Methods, is a course designed for transfer and any other students who feel the need for strengthening fundamental writing, interpretation, and basic research skills.

Transfer students planning to major in literature are strongly recommended to complete the equivalent of one year of college-level study of a language other than English before entering UC Santa Cruz.

Transfer students planning to major in literature with a language literature concentration are strongly recommended to have completed two years of college-level language study (or have comparable ability) to allow for a two-year graduation.

Getting Started in the Major: Transfer Students

Transfer students may declare the literature major or minor after completing LIT 1 or its transfer equivalent, and are urged to declare the major during their first quarter at UC Santa Cruz.

For information about declaring the literature major or minor, please see the section How to Declare a Major.

A student may receive credit toward the lower-division requirements of the major or minor for up to two courses taken at other institutions.

Students who attend another campus of the University of California may petition to apply a maximum of three upper-division courses toward the literature major, or two upper-division courses toward the literature minor.

Students may not use upper-division coursework taken at non-UC colleges or universities to satisfy upper-division literature major or minor credit.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete LIT 1 or its transfer equivalent in order to declare the literature major.

Transfer students should also consult the section Transfer Information and Policy.

Appeal Process

Students notified that they are not eligible to declare the literature major may appeal this decision by submitting a letter to the department chair within 15 working days from the date of notification. Within 15 working days of receipt of the student's appeal, the department will notify the student and their college of its decision regarding the appeal.

How to Declare a Major

Students must complete LIT 1 or its transfer equivalent in order to declare the literature major. In order to declare the major, students meet with a department advisor to complete an Academic Planning Form and Declaration of Major/Minor petition. All students considering a major should consult with a department advisor as early as possible to make an academic plan.

Students who have not completed LIT 1 or its transfer equivalent and who are approaching the campus declaration deadline (their sixth quarter, for students admitted as frosh) may petition to declare the literature major. The petition will be approved or denied, or the student will be provided with conditions (completion of LIT 1 or its equivalent with a grade of C or better) that must be resolved within one additional quarter of enrollment.

Letter Grade Policy

Students in all concentrations, including both the intensive and non-intensive options, must take at least seven courses counting toward the upper-division requirements for a letter grade. The Comprehensive Requirement must be taken for a letter grade.

Optional Catchall

Course Substitution Policy

Students may substitute up to four upper-division courses. A maximum of three combined courses may come from another University of California campus and/or a UC Education Abroad Program. A maximum of one course may come from another UC Santa Cruz department. Courses taken at other four-year institutions will be handled on a case-by-case basis.

In order to petition for a course from another department to substitute for a literature elective, students should submit a current course syllabus to the literature undergraduate program coordinator by email (litdept@ucsc.edu). Courses accepted from other departments may not be used to satisfy the literature distribution requirements.

Double Majors and Major/Minor Combinations Policy

Study Abroad

A variety of study abroad opportunities are available and can be discovered through the campus office of Global

Engagement. Multiple UC providers are featured, including UCSC's summer Global Seminars, UC's Education Abroad Program (UCEAP), as well as programs run by other UC campuses. (Non-UC run programs are also a possibility). This means hundreds of opportunities are available for students to choose from. Students who participate in any of these programs may petition to apply up to three 5 credit or greater upper-division courses (in literature or a related discipline) toward the literature major, or two 5-credit or greater upper-division courses (in literature or a related field) toward the literature minor. UCSC Global Seminars are considered UCSC courses (currently, one literature offering is available and doesn't require petition).

Honors

Honors in the literature major are awarded to graduating seniors who have earned a 3.70 to 3.89 grade-point average in their upper-division literature courses. Highest honors in the literature major are awarded to graduating seniors who have earned a 3.90 or higher grade-point average in their upper-division literature courses. Honors are not awarded in the minor.

Language Proficiency and Exam Options

Students of all three concentrations must demonstrate Level 3 reading proficiency in a non-English language in one of the following ways:

- Pass a literature language proficiency exam
- Take a Language Placement Assessment and place into level 4 or higher
- Complete one of the following courses:

ARBC 3	First-Year Arabic	5
CHIN 3	First-Year Chinese	5
FREN 3	First-Year French	5
GREE 2	Elementary Ancient Greek	5
HEBR 3	First-Year Hebrew	5
ITAL 3	First-Year Italian	5
JAPN 3	First-Year Japanese	5
LATN 2	Elementary Latin	5
PUNJ 3	First-Year Punjabi 3	5
SPAN 3	First-Year Spanish	5
YIDD 3	First-Year Yiddish	5

These courses have prerequisites of levels 1 and/or 2 or their equivalent. Completion of GERM 1B is equivalent to GERM 3. Completion of ITAL 1B is equivalent to ITAL 3. Greek and Latin are both accelerated tracks which only require two courses.

Creative Writing Courses

Any qualified student may take creative writing courses for credit toward graduation. Only students accepted into the creative writing concentration, however, may use Literature/Creative Writing courses LIT 179A, LIT 179B, LIT 190V, LIT 190W, and LIT 195C to satisfy major requirements.

Senior Survey

Three quarters before anticipated graduation, all literature majors will receive a Senior Survey. The purpose of the survey is for students to self-assess progress toward graduation and the satisfaction of all major requirements. A department advisor will review the survey and meet with the student to discuss any pending requirements.

Credit for Repeated Courses

Courses that vary significantly in material or methodology from one presentation to the next may be repeated for credit and are so designated in the course description in the UC Santa Cruz General Catalog.

Individual Study Credit for the Major

Students may apply a maximum of two of the following courses–LIT 195 (Senior Essay), LIT 198 (Group Tutorial), and/or LIT 199 (Tutorial)–for satisfaction of literature major requirements. LIT 195 may be used only once for satisfaction of literature major requirements.

Intensive Literature Major Option

Students in each concentration may elect to pursue an intensive option. The intensive option is especially useful for students who plan to apply to graduate programs in literature and other humanities disciplines, or for students going into international and multilingual professional schools; those programs typically require students to do academic work in at least two languages.

The intensive option for each concentration requires students to take two additional upper-division electives in a second-language literature. For students in the General or Creative Writing concentration, these would be two non-English literature courses. For students in the Language Literature concentration, these may be additional courses in the language of concentration or courses in a different language, including English. See the Intensive Option section of each concentration for more details.

Optional Catchall

General Literature Concentration

Course Requirements

The general literature concentration of the Literature major requires: (1) basic proficiency in a second language; and (2) 12 courses in literature.

- Basic language proficiency: One year (three quarters or equivalent) of college-level study of a non-English language or demonstrated reading ability at this level.
- The 12 required courses must include two lower-division and 10 upper-division courses.

Lower-Division Requirements

Lower-division courses are introductions to critical reading and writing. Students should complete their lower-division coursework before beginning upper-division work.

Language Proficiency

Students must demonstrate Level 3 reading proficiency in a non-English language. Information on how to satisfy this requirement, as well as exam options, are in the Language Proficiency and Exam Options section of the Information and Policies.

Plus the following course:

LIT 1	Literary Interpretation	5

LIT 1 is a writing-intensive course

Plus one of the following options:

- One course from the LIT 60 or LIT 61-series, or
- One course from the LIT 80 or LIT 81-series

LIT 60/LIT 61-series courses focus on categories, methodologies, and problems of literary study.

LIT 80/LIT 81-series courses focus on topical, thematic, and comparative studies of literary and filmic texts.

LIT 60/LIT 61 and LIT 80/LIT 81 courses are also recommended for non-majors.

Upper-Division Requirements

The General Literature major consists of 10 upper-division courses; two required courses, seven electives, and the comprehensive requirement. Students pursuing the intensive option will take two additional upper-division electives, for a total of 12 courses. See the Intensive Option section below.

Take the following courses:

LIT 101	Theory and Interpretation	5
LIT 102	Translation Theory	5

Students must successfully complete the language proficiency requirement before enrolling in LIT 102.

Students may substitute one upper-division non-English literature course (numbered LIT 182-189) studied in the original language for LIT 102. Such a course may not fulfill any other major requirements.

Plus the Comprehensive Requirement

The comprehensive requirement is satisfied by one senior seminar (LIT 190 series) or a senior thesis (LIT 195A or 195B). See the Comprehensive Requirement section below for more details.

Upper-Division Literature Electives

Students take seven 5-credit upper-division literature electives numbered 109-189. Independent studies and internships may also count toward this requirement with department approval. Among these seven courses, students fulfill the Distribution Requirements specified below. One course may fulfill more than one requirement.

Upper-division courses provide detailed treatment of literary and theoretical problems, themes, and periods. Students are strongly encouraged to take courses across chronological periods and national boundaries, and to balance small seminars with lecture courses.

A list of annual course offerings indicating distribution codes for each course is available in the department office and on the Literature Department website.

Distribution Requirements

Students should consult the Distribution Requirements Course List to find courses which satisfy one or more of the following requirements:

- Two courses on literature written before 1750
- One course on Non-Western literature or literature from a global perspective
- One course on poetry and poetics

General Literature Intensive Option

Students wishing to complete the intensive option of the general Literature B.A. must take two additional upper-division electives, for a total of nine electives. These two courses must be in non-English literature, and may be chosen from any of the following:

- Ancient Literature (courses in the LIT 181 series)
- French Literature (courses in the LIT 182 series)
- German Literature (courses in the LIT 183 series)
- Greek Literature (courses in the LIT 184 series)
- Italian Literature (courses in the LIT 185 series)
- Latin Literature (courses in the LIT 186 series)
- Spanish/Latin American/Latino Literatures (courses in the LIT 188-LIT 189 series, LIT 190X)

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. Literature majors must satisfy the disciplinary communication requirement by passing:

LIT 101	Theory and Interpretation	5

Comprehensive Requirement

Students must successfully complete LIT 101 before taking any comprehensive requirement.

Seniors must select one of the following options to satisfy the campus exit requirement:

Senior Seminar

Students take one senior seminar. These are courses in the LIT 190 series. Several senior seminars are offered each quarter; extensive writing is required in all seminars.

Senior Thesis

Students who wish to propose a senior thesis (30–40 pages) must apply to a Literature Department faculty sponsor at least two quarters before the projected date of graduation. The application must include a proposed subject, a brief outline, a bibliography, and a sample of previous written work. Only those students who have received written permission from a faculty supervisor may complete a thesis to satisfy the senior exit requirement. Students enroll in one of the following courses:

LIT 195A	Senior Essay	5
LIT 195B	Senior Essay	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements (p. 1438) for more information.

Four-Year Major Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	LIT 60/LIT 61 or LIT 80/LIT 81 College 1	LIT 60/LIT 61 or LIT 80/LIT 81 (optional) WRIT 1/WRIT 1E (if needed)	WRIT 2	
2nd (soph)	Upper-division LIT course	LIT 101 (if LIT 1 completed)	Upper-division LIT course	
	Language Level 1	Language Level 2	Language Level 3	
	LIT 1			
3rd (junior)	Upper-division LIT course (global distribution requirement)	LIT 102	Upper-division LIT course (poetry/poetics distribution requirement) Upper-division LIT course (pre-1750 distribution requirement)	
4th (senior)	Upper-division LIT course (pre-1750 distribution requirement)	LIT 190 (senior seminar)	Upper-division LIT course	

Courses required for the major fulfill the TA General Education requirement. Other GE requirements may be fulfilled depending on the choice of electives. The MF, SI and SR requirements are never fulfilled.

Transfer Student Planner #1 (for transfer students who have completed literature's lower-division and one-year language requirement at the time of transfer)

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optio

				nal)
3rd (junior)	Upper-division LIT course (pre-1750 distribution requirement)	LIT 102	LIT 101	
	Upper-division LIT course (poetry distribution requirement)	Upper-division LIT course (global distribution requirement)	Upper-division LIT course (pre-1750 distribution requirement)	
4th (senior)	Upper-division LIT course	LIT 190 (senior seminar)	Upper-division LIT course	
	Upper-division LIT course			

Transfer Student Planner #2 (for transfer students who have completed no literature requirements or language coursework at the time of transfer, but have completed most general education requirements)

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	LIT 1	LIT 101	Upper-division LIT course (poetry distribution requirement)	
	LIT 60/LIT 61 or LIT 80/LIT 81	Upper-division LIT course (pre-1750 distribution requirement)	Upper division LIT course (global distribution requirement)	
	Language Level 1	Language Level 2	Language Level 3	
4th (senior)	Upper-division LIT course (pre-1750 distribution requirement)	LIT 102	LIT 190 (senior seminar)	
	Upper-division LIT course	Upper-division LIT course	Upper-division LIT course	

Language Literature Concentration

The language literature concentration examines literature within the frameworks of particular languages or national and regional traditions, and requires that texts be read in the original language. Enrollment in upper-division language literature courses normally requires completion of two years of college-level language coursework, or the equivalent.

Course Requirements

The language literature concentration of the literature major requires: (1) completion of two years of college-level language coursework, or the equivalent; and (2) 12 courses in literature.

- The 12 required courses must include two lower-division and 10 upper-division courses.

Lower-Division Requirements

Lower-division courses are introductions to critical reading and writing. Students should complete their lower-division coursework before beginning upper-division work.

Language Proficiency

Students must demonstrate Level 3 reading proficiency in a non-English language. Information on how to satisfy this requirement, as well as exam options, are in the Language Proficiency and Exam Options section of the Information and Policies.

Students pursuing the language literature concentration are encouraged to study a language through Level 6. At UCSC, languages taught through level 6 are Arabic, Chinese, French, German, Italian, Japanese, and Spanish.

Take the following course

LIT 1	Literary Interpretation	5

LIT 1 is a writing-intensive course.

Plus one of the following options:

- One course from the LIT 60 or LIT 61-series, or
- One course from the LIT 80 or LIT 81-series

LIT 60/LIT 61-series courses focus on categories, methodologies, and problems of literary study.

LIT 80/LIT 81-series courses focus on topical, thematic, and comparative studies of literary and filmic texts.

LIT 60/LIT 61 and LIT 80/LIT 81 courses are also recommended for non-majors.

Upper-Division Requirements

The Language Literature concentration consists of 10 upper-division courses; two required courses, seven electives, and the comprehensive requirement. Students pursuing the intensive option will take two additional upper-division electives, for a total of 12 courses. See the Intensive Option section below.

Take the following courses:

LIT 101	Theory and Interpretation	5
LIT 102	Translation Theory	5

Students must successfully complete the language proficiency requirement before enrolling in LIT 102.

Students may substitute one upper-division non-English literature course (numbered LIT 182-189) studied in the original language for LIT 102. Such a course may not fulfill any other major requirements.

Plus the Comprehensive Requirement

The comprehensive requirement is satisfied by one senior seminar (LIT 190 series) or a senior thesis (LIT 195A or 195B). See the Comprehensive Requirement section below for more details.

Upper-Division Literature Electives

Students take seven 5-credit upper-division literature electives numbered 109-189. Independent studies and internships may also count toward this requirement with department approval. Among these seven courses, students fulfill the Distribution Requirements and Language Literature Requirements specified below. One course may fulfill more than one requirement.

Upper-division courses provide detailed treatment of literary and theoretical problems, themes, and periods. Students are strongly encouraged to take courses across chronological periods and national boundaries, and to balance small seminars with lecture courses.

A list of annual course offerings indicating distribution codes for each course is available in the department office and on the Literature Department website.

Distribution Requirements

Students should consult the Distribution Requirements Course List to find courses which satisfy one or more of the following requirements:

- Two courses on literature written before 1750
- One course on Non-Western literature or literature from a global perspective
- One course on poetry and poetics

Language Requirements

Language Literature Concentration students take five literature courses in their chosen language of concentration. These courses can overlap with one or more of the Distribution Requirements above. The course options below correspond to the languages of concentration:

Ancient Literature (courses in the LIT 181, LIT 184, and 186 series)

The study of the literature, languages, and cultural practices of ancient civilizations. Students take a minimum of three literature courses in the language they are using to satisfy the language requirement with the remaining two courses in another ancient language or languages. LIT 181 courses should be taken by students studying Arabic. LIT 184 courses should be taken by students studying Greek. LIT 186 courses should be taken by students studying Latin.

French Literature (courses in the LIT 182 series)

The study of French and Francophone literatures, languages, and cultural practices of France, Africa, and the Caribbean.

German Literature (courses in the LIT 183 series)

The study of the literature, language, and cultural practices of the German-speaking areas of central Europe including Germany, Austria, and Switzerland.

Greek Literature (courses in the LIT 184 series)

The study of the literature, languages, and cultural practices of ancient Greece.

Italian Literature (courses in the LIT 185 series)

The study of Italian literature, language, and cultural practices from the Middle Ages to the present.

Latin Literature (courses in the LIT 186 series)

The study of the literature, languages, and cultural practices of ancient Rome.

Spanish/Latin American/Latino Literatures (courses in the LIT 188-LIT 189 series, LIT 190X)

The study of literatures, language, and cultural practices of Spain, Latin America, and Latino populations in the United States.

Language Literature Intensive Option

Students wishing to complete the intensive option for the Language Literature concentration must take two additional upper-division electives, for a total of nine electives. Though these courses may be in the language of concentration, students are highly encouraged to pursue additional electives outside the language of concentration, including English.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. Literature majors must satisfy the disciplinary communication requirement by passing:

LIT 101	Theory and Interpretation	5

Comprehensive Requirement

Students must successfully complete LIT 101 before taking any comprehensive requirement.

Seniors must select one of the following options to satisfy the campus exit requirement:

Senior Seminar

Students take one senior seminar. These are courses in the LIT 190 series. Several senior seminars are offered each quarter; extensive writing is required in all seminars.

Senior Thesis

Students who wish to propose a senior thesis (30–40 pages) must apply to a Literature Department faculty sponsor at least two quarters before the projected date of graduation. The application must include a proposed subject, a brief outline, a bibliography, and a sample of previous written work. Only those students who have received written permission from the faculty supervisor may complete a thesis to satisfy the senior exit requirement. Students enroll in one of the following courses:

LIT 195A	Senior Essay	5
LIT 195B	Senior Essay	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Major Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	LIT 60/LIT 61 or LIT 80/LIT 81	LIT 60/LIT 61 or LIT 80/LIT 81 (optional)	WRIT 2	
	Language Level 1	Language Level 2	Language Level 3	
	College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	Upper-division LIT course (pre-1750 and poetry distribution requirements)	LIT 101 (if LIT 1 completed)	Upper-division LIT course (global distribution requirement)	
	Language Level 4	Language Level 5	Language Level 6	
	LIT 1			
3rd (junior)	Upper-division LIT Language course	LIT 102	Upper-division LIT Language course (pre-1750 distribution requirement)	

		Upper-division LIT Language course	
4th (senior)	Upper-division LIT Language course	Upper-division LIT Language course	LIT 190 (senior seminar)

Courses required for the major fulfill the TA general education requirement. Other requirements may be fulfilled depending on the choice of electives. The MF, SI and SR requirements are never fulfilled.

*WRIT 2 should be taken in or before spring quarter of the second year.

Transfer Student Planner #1 (for transfer students who have completed literature's lower-division, most general education requirements, and one year of language coursework at the time of transfer)

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	Upper-division LIT course (pre-1750 and poetry distribution requirements)	LIT 102	LIT 101	
		Upper-division LIT course (global distribution requirement)	Upper-division LIT Language course	Upper-division LIT Language course
4th (senior)	Upper-division LIT Language course	Upper-division LIT Language course	Upper-division LIT Language course	
	Upper-division LIT Language course (pre-1750 distribution requirement)		LIT 190 (senior seminar)	

Transfer Student Planner #2 (for transfer students who have completed literature's lower-division requirements and two years of language coursework at the time of transfer)

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	Upper-division LIT Language course	LIT 102	LIT 101	
		Upper-division LIT Language course	Upper division LIT Language course	
4th (senio	Upper-division	Upper-division	Upper-division	

r)	LIT Language course (pre-1750 distribution requirement)	LIT Language course (poetry distribution requirement)	LIT course (pre-1750 and global distribution requirements)
	Upper-division LIT course	LIT 190 (senior seminar)	

Creative Writing Concentration

The Literature Department offers a sequence of creative writing workshops from introductory through advanced levels. Admission to the creative writing concentration is selective. Interested students are required to take one lower-division creative writing workshop at UC Santa Cruz (LIT 90, LIT 90X, LIT 91A or LIT 91B) before applying to the concentration; however, students are strongly encouraged to complete two lower-division workshops (at least one at UCSC) before applying. To apply for admission to the creative writing concentration, students should submit a completed application form (available at the Literature Department office and on the Literature Department website). Once accepted into the concentration, students are required to declare (or redeclare) the major in literature, with a concentration in creative writing.

In addition to the distribution requirements required for all literature majors, students in the creative writing concentration must complete four of their eight upper-division literature courses in creative writing, including a senior project seminar.

Course Requirements

Lower-Division Requirements

Lower-division courses are introductions to critical reading and writing. Students should complete their lower-division coursework before beginning upper-division work.

Language Proficiency

Students must demonstrate Level 3 reading proficiency in a non-English language. Information on how to satisfy this requirement, as well as exam options, are in the Language Proficiency and Exam Options section of the Information and Policies.

Plus the following course:

LIT 1	Literary Interpretation	5

LIT 1 is a writing-intensive course

Plus one of the following options:

- One course from the LIT 60 or LIT 61-series, or
- One course from the LIT 80 or LIT 81-series

LIT 60/LIT 61-series courses focus on categories, methodologies, and problems of literary study.

LIT 80/LIT 81-series courses focus on topical, thematic, and comparative studies of literary and filmic texts.

LIT 60/LIT 61 and LIT 80/LIT 81 courses are also recommended for non-majors.

Plus at least one of the following

LIT 90	Introduction to Creative Writing	5
LIT 90X	Introduccion a la Escritura Creativa/Introduction to Creative Writing	5
LIT 91A	Intermediate Fiction/Prose Writing	5
LIT 91B	Intermediate Poetry Writing	5

An additional course from among LIT 90, LIT 90X, LIT 91A and LIT 91B is strongly encouraged.

Upper-Division Requirements

The Creative Writing concentration consists of10 upper-division courses; two required courses, seven electives, and the comprehensive requirement. Students pursuing the intensive option will take two additional upper-division electives, for a total of 12 courses. See the Intensive Option section below.

Take the following courses:

LIT 101	Theory and Interpretation	5
LIT 102	Translation Theory	5

Students must successfully complete the language proficiency requirement before enrolling in LIT 102.

Students may substitute one upper-division non-English literature course (numbered LIT 182-189) studied in the original language for LIT 102. Such a course may not fulfill any other major requirements.

Plus the Comprehensive requirement

The comprehensive requirement is satisfied by one creative project senior seminar (LIT 190V or LIT 190W) or a senior essay (LIT 195C). LIT 190V is strongly encouraged for students in the fiction/prose track, and LIT 190W is strongly encouraged for students in the poetry track. See the Comprehensive Requirement section below for more details.

Upper-Division Literature Electives

Students take seven 5-credit upper-division literature electives numbered 109-189. Independent studies and internships may also count toward this requirement with department approval. Among these seven courses, students fulfill the Distribution Requirements and Advanced Creative Writing Workshops

Requirement specified below. One course may fulfill more than one requirement.

Upper-division courses provide detailed treatment of literary and theoretical problems, themes, and periods. Students are strongly encouraged to take courses across chronological periods and national boundaries, and to balance small seminars with lecture courses.

A list of annual course offerings indicating distribution codes for each course is available in the department office and on the Literature Department website.

Distribution Requirements

Students should consult the Distribution Requirements Course List to find courses which satisfy one or more of the following requirements:

- Two courses on literature written before 1750
- One course on Non-Western literature or literature from a global perspective
- One course on poetry and poetics

Advanced Creative Writing Workshop Requirements

Creative Writing students take any three courses from the LIT 179 series. Though students may take any combination of these courses, fiction/prose students are encouraged to take at least one LIT 179A course, and poetry students are encouraged to take at least one LIT 179B course. Courses may be repeated.

Creative Writing Intensive Option

Students wishing to complete the intensive option of the [General or Creative Writing] concentration must take two additional upper-division electives, for a total of nine electives. These two courses must be in non-English literature, and may be chosen from any of the following:

- Ancient Literature (courses in the LIT 181 series)
- French Literature (courses in the LIT 182 series)
- German Literature (courses in the LIT 183 series)
- Greek Literature (courses in the LIT 184 series)
- Italian Literature (courses in the LIT 185 series)
- Latin Literature (courses in the LIT 186 series)
- Spanish/Latin American/Latino Literatures (courses in the LIT 188-LIT 189 series, LIT 190X)

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. Literature majors must satisfy the disciplinary communication requirement by passing:

LIT 101	Theory and Interpretation	5

Comprehensive Requirement

Students must successfully complete LIT 101 before taking any comprehensive requirement.

Seniors must select one of the following options to satisfy the campus exit requirement:

Senior Seminar

Students take one senior seminar from the following options. Extensive writing is required in all seminars. Creative writing senior seminars are offered only during spring quarter.

LIT 190V	Fiction Senior Seminar	5
LIT 190W	Poetry Senior Seminar	5

Senior Essay

Students who wish to propose a creative writing senior essay (30–40 pages) must apply to a Literature Department faculty sponsor at least two quarters before the projected date of graduation. The application must include a proposed subject, a brief outline, a bibliography, and a sample of previous written work. Only those students who have received written permission from a faculty supervisor may complete a senior essay to satisfy the senior exit requirement.

LIT 195C	Senior Essay	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Major Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	LIT 60/LIT 61 or LIT 80/LIT 81 College 1	LIT 60/LIT 61 or LIT 80/LIT 81 (optional) WRIT 1/WRIT 1E (if needed)	WRIT 2	

2nd (soph)	LIT 1	LIT 101 (if LIT 1 completed)	Upper-division LIT course (pre-1750 distribution requirement)
	Language Level 1	Language Level 2	Language Level 3
		LIT 90 or LIT 90X	LIT 91A or LIT 91B*
3rd (junior)	Upper-division LIT course (global distribution requirement)	LIT 102	LIT 179A, LIT 179B, or LIT 179C
		Upper-division LIT course (pre-1750 distribution requirement)	Upper-division LIT course (poetry/poetics distribution requirement)
4th (senior)	LIT 179A, LIT 179B, or LIT 179C	LIT 179A, LIT 179B, or LIT 179C	LIT 190V or LIT 190W (senior seminar)

*Not required for the major, but strongly recommended before applying for admission to the Creative Writing concentration.

Courses required for the major fulfill the TA general education requirement. Other requirements may be fulfilled depending on the choice of electives. The MF, SI and SR requirements are never fulfilled.

Transfer Student Planner #1 (for transfer students who have completed literature's lower-division and one-year language requirements, and one creative writing course, at the time of transfer)

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	Upper-division LIT course (pre-1750 and poetry distribution requirements)	LIT 102	LIT 101	
	Upper-division LIT course	Upper-division LIT course (global distribution requirement)	LIT 179A, LIT 179B, or LIT 179C	
	LIT 90 or LIT 90X or LIT 91A or LIT 91B			
4th (senior)	LIT 179A, LIT 179B, or LIT 179C	LIT 179A, LIT 179B, or LIT 179C	LIT 190V or LIT 190W (senior seminar)	
	Upper-division LIT course (pre-1750 distribution requirement)			

Transfer Student Planner #2 (for transfer students who have completed no literature requirements, language coursework, or creative writing course at the time of transfer, but have completed general education requirements)

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	LIT 1	LIT 60/61 or LIT 80/81	LIT 101	
	LIT 90	LIT 91A or LIT 91B*	LIT 179A, LIT 179B, or LIT 179C	
	Language Level 1	Language Level 2	Language Level 3	
4th (senior)	Upper-division LIT course (pre-1750 distribution requirement)	LIT 102	Upper-division LIT course (global distribution requirement)	
	Upper-division LIT course	Upper-division LIT course (pre-1750 and poetry distribution requirements)	LIT 190V or LIT 190W (senior seminar)	
	LIT 179A, LIT 179B, or LIT 179C	LIT 179A, LIT 179B, or LIT 179C		

*Not required for the major, but strongly recommended before applying for admission to the Creative Writing concentration.

LITERATURE MINOR

Students who minor in literature take courses that examine a variety of literary and visual texts and cultural artifacts from around the world, produced from pre-antiquity through the present. The literature minor requires a total of seven literature courses; literature minors do not have to satisfy certain major requirements such as second-language proficiency, distribution requirements, or a senior seminar.

Students must complete LIT 1 or its equivalent prior to declaring the minor. In order to declare the minor, students meet with a department advisor to complete and submit a Proposed Study Plan and Declaration of Major/Minor petition. All students considering a minor should consult with a department advisor as early as possible to make an academic plan.

Course Requirements

The minor in literature requires seven courses. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Take the following course:

LIT 1	Literary Interpretation	5

This is a writing-intensive course.

Plus one of the following options:

- One course from the LIT 60 or LIT 61-series, or
- One course from the LIT 80 or LIT 81-series

LIT 60/LIT 61-series courses focus on categories, methodologies, and problems of literary study.

LIT 80/LIT 81-series courses focus on topical, thematic, and comparative studies of literary and filmic texts.

LIT 60/LIT 61 and LIT 80/LIT 81 courses are also recommended for non-majors.

Upper-Division Courses

Five upper-division courses are required.

Take the following course:

LIT 101	Theory and Interpretation	5

Upper-Division Literature Electives

Students take four 5-credit upper-division electives chosen from LIT 108-189, excluding LIT 179A or LIT 179B, which are only available to students who have been accepted to the creative writing concentration. Independent studies and

internships may count toward the electives with department approval. The literature minor does not require second-language proficiency or a senior seminar.

Course Substitution Policy

Students may substitute up to three upper-division courses. A maximum of two combined courses may come from another University of California campus and/or a UC Education Abroad Program. A maximum of one course may come from another UC Santa Cruz department. Courses taken at other four-year institutions will be handled on a case-by-case basis.

In order to petition for a course from another department to substitute for a literature elective, students should submit a current course syllabus to the literature undergraduate program coordinator by email (litdept@ucsc.edu).

ITALIAN STUDIES MINOR

Students interested in an interdisciplinary approach to Italian culture through the combined study of language, literature, history, and art history may pursue a minor in Italian studies. A detailed checklist for the minor is available on the Italian studies program web site.

Staff advisers for the Italian studies minor are available in the Literature Department office, located in Humanities 1, room 303. The Italian studies program is administered by the Literature Department. Declaring a minor in Italian studies is a three-step process:

1. Complete the Petition for Major/Minor Declaration and submit it to litdept@ucsc.edu. Be sure to indicate your expected graduation term (EGT) on the petition. Your EGT is visible in your Student Advising Summary or on your MyUCSC Student Portal.

2. Make an appointment with the Italian studies program director to discuss your plans and fill out an Italian Studies Minor Checklist.

3. Make an appointment with an Italian studies advisor in the Literature Department in order to review and complete your declaration form. To schedule an advising appointment, visit ucsc.campus.eab.com, send an email to litdept@ucsc.edu, or leave a message at 831-459-4778.

Course Requirements

Lower-Division Courses

Each student must complete the lower-division language sequence (ITAL 1–ITAL 6), or equivalent.

ITAL 1	First-Year Italian	5
ITAL 2	First-Year Italian	5
ITAL 3	First-Year Italian	5
ITAL 4	Second-Year Italian	5
ITAL 5	Second-Year Italian	5
ITAL 6	Second-Year Italian	5

Italian has an accelerated language track of ITAL 1A and ITAL 1B. These two courses taken together equate to ITAL 1-ITAL 3.

Upper-Division Courses

Students must complete five upper-division courses in Italian studies as follows.

One of the following courses:

ITAL 101	Italian Culture through Food	5
ITAL 106	Italian Culture Through Film	5

Plus

Students complete four courses as follows. Consult the course lists below for options.

- Two Italian literature courses (Each student should complete the lower-division language sequence (ITAL 1–ITAL 6), or equivalent prior to taking the Italian literature courses).
- One course in Italian history
- One course in Italian art history.

A course featuring the work of Dante is recommended. Three of the five upper-division courses must be completed at UC Santa Cruz; three must be taught substantially in Italian. A maximum of two courses may be transferred from EAP.

Students can consult Italian studies course offerings for each of the above categories.

Italian Literature Courses

Any course in the LIT 185 series or from the following list:

LIT 102	Translation Theory	5
LIT 114A	Orlando Furioso	5
LIT 114C	Dante's Divine Comedy	5
LIT 114E	One Way Ticket to Hell … and Back: Exploring Dante's Inferno	5
LIT 114F	Finding Dante: A Reader's Guide to Getting Out of Hell	5
LIT 121G	The Idea of Poetry	5
LIT 130D	The Global Middle Ages	5
LIT 141A	Early Mediterranean Cultures	5
LIT 155D	Italian Cinema and Literature	5
LIT 164G	Literature and the Holocaust	5
LIT 166C	Early Modern Italian Women Writers	5
LIT 190A	Topics in Pre- and Early Modern Studies	5

Italian History Courses

SOCY 117E	Migrant Europe	5

Italian History of Art and Visual Culture Courses

HAVC 154	Byzantine Visual Culture: Politics and Religion in the Empire of Constantinople, 330-1453 A. C	5

HAVC 155	Constructing Cleopatra: Power, Sexuality, and Femininity Across the Ages	5
HAVC 157B	Italian Renaissance: Art and Architecture	5
HAVC 157C	High Renaissance	5
HAVC 157D	Art of the Venetian Renaissance	5
HAVC 191N	Topics in Renaissance Art and Visual Culture	5

Courses Taught Substantially in Italian

LIT 185B	Letteratura e cultura italiana	5
LIT 185J	Poesia moderna	5
LIT 185L	La novella italiana	5
LIT 185P	Boccaccio: Decameron	5
LIT 185Q	Dante: Divina Commedia	5
LIT 185S	Petrarca	5
ITAL 100	Advanced Italian Composition and Conversation	5
ITAL 106	Italian Culture Through Film	5

Courses Featuring the Work of Dante

LIT 185Q	Dante: Divina Commedia	5
LIT 114C	Dante's Divine Comedy	5

Courses Featuring Italy in a European or Global Context

HAVC 152	Roman Eyes: Visual Culture and Power in the Ancient Roman World	5

LITERATURE M.A.

Introduction

The Master's Degree in Literature. A separate master of arts degree program is intended for students whose aim is to deepen and expand their literary/critical training and to prepare for entry into a Ph.D. program, usually at another institution.

The M.A. program requirements may not be completed in less than one year; the maximum time to obtain a degree is two years.

Requirements

Course Requirements

- LIT 200, Proseminar, to be taken in fall quarter of the first year;
- Seven additional courses leading to the definition of an area of concentration. Up to two of these may be taken in other departments. One may be an independent study course;
- LIT 291F, a two-credit advising course, each quarter;
- LIT 299A or LIT 299B, Thesis Research.

LIT 200	Proseminar	5
LIT 291F	Advising	2
LIT 299A	Thesis Research	5
LIT 299B	Thesis Research	10

M.A. Thesis Description

The thesis for a Master's Degree in Literature will be a substantial critical work (typically ranging from 35 to 50 pages, plus a bibliography), written in conjunction with LIT 299. The project must be developed in close consultation with the thesis advisor, who serves as chair of the thesis reading committee, and ultimately be approved by at least two other reading committee members, who are chosen by the student and the advisor.

The majority of the reading committee must be members of the UC Santa Cruz Academic Senate (ladder-rank and Security of Employment faculty). The chair must be a tenured member of the literature faculty. At least two of the three members of the committee should be literature faculty.

Once the student and advisor have chosen the reading committee members and secured their agreement to serve, the student must submit a Master's Thesis Reading Committee nomination form to the department office; this form should be submitted as early as possible and in any case no later than the second week of the quarter in which the degree is to be conferred.

M.A. Degree Application and Department Verification

An Application for the Master's Degree form must be submitted to the department at least one week prior to the Graduate Division deadline as stated on the academic calendar (normally by the end of the first week in which the degree is to be awarded).

The thesis is approved by all committee members up to six weeks, but no less than three weeks, prior to the last day of instruction (or commencement, if the student intends to participate in the ceremony). A copy of the title page, signed by all thesis committee members, must be submitted to the department for verification of completion. The department does not require a copy of the thesis.

The student must file the thesis with the Graduate Division by the last day of instruction of the quarter in which the degree is to be conferred.

NOTE: In spring quarter, the deadline for students wishing to participate in the commencement ceremony is approximately one week earlier. Guidelines for the style and filing requirements of the M.A. Thesis are detailed in the PDF "Dissertation Thesis Guidelines", available on the Graduate Division website.

Admissions and Financial Aid

The Literature Department does not provide financial support to students pursuing the M.A. degree. Admission to the M.A. program does not constitute admission to the Ph.D. program. Students may not automatically transfer from the M.A.

program into the Ph.D. program, but must reapply. Further information and application materials are available from the Division of Graduate Studies and on the department website.

[Optional Catchall]

Applying for Graduation

LITERATURE PH.D.

Introduction

The UC Santa Cruz doctoral program in literature offers an innovative multilingual and multidisciplinary approach to literary studies, involving the use of more than one language literature. The program is relatively small, and students work closely with faculty throughout their graduate careers. They are encouraged to take advantage of the rich array of intellectual and cultural events, research clusters, and lectures offered on campus.

The doctoral program combines critical and independent thought with global perspectives. Working across linguistic, national, and period boundaries, students blend critical approaches, literary traditions, and/or cultural archives in comparative and interdisciplinary projects.

A creative/critical writing concentration within the Ph.D. program is available, for which students apply during the admissions process. Creative/critical applicants submit additional creative writing samples of poetry, prose fiction, creative nonfiction or hybrid/cross genre. Students in the creative/critical concentration complete all the requirements for the literature Ph.D. with the addition of a creative/critical degree component in the form of coursework, original creative work with a critical introduction and, if desired, work in poetics, translation, form and/or critical writing focused on creative practices.

Students may apply for a designated emphasis on the literature doctoral diploma in programs and departments such as Critical Race and Ethnic Studies, Education, Feminist Studies, History of Consciousness, Latin American and Latino Studies, Philosophy, Politics, Sociology, and the History of Art and Visual Culture. Applications and requirements are available at the respective department offices.

Advancement to Candidacy

Course Requirements

- LIT 200, Proseminar, to be taken in fall quarter of the first year;
- LIT 201, Pedagogy of Teaching/Teaching Assistant Training, to be taken prior to or in conjunction with the first teaching assistant appointment;
- Twelve additional courses leading to the definition of an area of concentration. At least two of these must be in a second-language literature; at least one must focus on pre-modern literature and culture. A minimum of six courses must be regularly scheduled Literature seminars;
- LIT 291F, a two-credit advising course, each quarter.

LIT 200	Proseminar	5
LIT 201	The Pedagogy of Literature	2
LIT 291F	Advising	2

Second Language Requirements

The program requires significant literary work in two languages. All students are required to complete the Literature Department's intensive three-week Graduate Summer Language Program or its equivalent and a minimum of two graduate courses in a second-language literature in which 50 percent or more of the reading is done in the original language.

Teaching Requirements

Students must complete at least three quarters of supervised teaching experience.

Pre-Qualifying Requirements

Qualifying Examination

The qualifying examination must be taken by the first quarter of the fourth year. It consists of three components: 1. a portfolio with a field statement and comprehensive bibliography, a topic statement, a paper of publishable quality, and a dissertation sketch; 2. translation examination; and 3. oral examination.

Post-Qualifying Requirements

Students must submit a prospectus outlining and defining the dissertation project within a quarter following the qualifying examination, but no later than the end of the fourth year. The prospectus identifies the research problem, methodologies, and case studies, with chapter outlines, footnotes, and bibliography.

Non-Terminal Master's Degree

A master of arts (M.A.) degree is conferred upon request to doctor of philosophy (Ph.D.) candidates who have successfully completed the literature Ph.D. qualifying examination or who have completed the coursework required for the doctorate (teaching assistant training and supervised teaching experience exempted) and elect to write a master's thesis under the supervision of a faculty advisor.

[Optional Catchall]

Dissertation

Dissertation

The dissertation is a substantial piece of original research in the field of literature, akin to a monograph.

A dissertation submitted for the Creative/Critical Concentration may take alternative forms:

1. A book-length original creative project--novel, novella, collection of poems, collection of stories, creative nonfiction, or a hybrid/experimental form (including

but not limited to digital/new media, performance/performativity/screenplay, the lyric essay) with a critical chapter or chapters totaling at least 75 pages exploring the historical, methodological, and/or theoretical foundations of the creative work; or

2. A dissertation on theory, form, poetics or literary history; a translation of a creative work with a 30-50-page, substantive, critical introduction; a critical edition.

The dissertation committee is composed of three members, with the dissertation advisor acting as chair. The majority of the membership of a dissertation committee shall be members of the Santa Cruz Division of the Academic Senate.

Detailed instructions for the preparation of the dissertation are available on the Graduate Division website.

Dissertation Defense

Academic Progress

To maintain satisfactory academic progress and eligibility for fellowships and other benefits, students must:

- complete required coursework in the first two to three years;
- satisfy the department's second-language requirement;
- pass the qualifying examination (QE) during the third year or fall quarter of the fourth year;
- complete a dissertation prospectus and advance to candidacy by the end of the fourth year; and
- complete the dissertation by the end of the seventh year.

Applying for Graduation

For information on how to apply for graduation, visit the Graduate Division website.

Further Information

Additional detailed information for prospective graduate students, including procedures for application and admission to graduate studies, examinations, and requirements for the doctor of philosophy degree, is available from the Division of Graduate Studies and on the department website.

Optional Catchall

LITERATURE DESIGNATED EMPHASIS

Introduction

Graduate students may work toward a Doctor of Philosophy (Ph.D.) degree that notes a designated emphasis in literature on the graduation documents. Students wishing to pursue this option should consult with the chair of their respective Ph.D. program and are encouraged to apply in the first or second year of graduate study.

Requirements

Graduate students in other programs may obtain a designated emphasis in literature on the Ph.D. degree by completing the following requirements:

Committee Composition and Departmental Approvals

The student must have a faculty graduate advisor from Literature, who serves both on the qualifying examination committee and the dissertation reading committee.

Course Requirements

The student must take four graduate courses in literature. With the approval of the literature advisor, one of the four required graduate courses may be an independent study.

Writing, Research and/or Teaching Requirements

The student must prepare a significant piece of writing in the area of literature, such as a substantial seminar paper or a chapter of the doctoral dissertation. The advisor from Literature, in consultation with the student, determines whether a particular piece of writing meets this requirement.

Designated Emphasis Application

When the above requirements have been fulfilled, the formal steps to obtain the Designated Emphasis in Literature are:

- The student should complete a Designated Emphasis Application form, obtain the literature advisor's signature and submit the application with supporting documentation (copies of the Qualifying Examination and Dissertation Committee Nomination forms) to the Literature Department graduate program coordinator.
- The Literature Department will notify the student and the home department of approval for the designated emphasis.

Academic Progress

[Optional Catchall]

DISTRIBUTION REQUIREMENT COURSE LISTS

Distribution Requirements Course Lists

Global Distribution Requirement

The following courses satisfy the global distribution requirement.

LIT 116I	Philosophy in India	5
LIT 117A	Old Iranian Literature	5
LIT 121K	Radical Moderns/Poetry International	5

LIT 124B	The Contemporary Latin American Short Story	5
LIT 125H	Modern Arabic Novel	5
LIT 125I	What is the Novel?	5
LIT 126A	International Cyberpunk	5
LIT 127D	Travel Writing	5
LIT 130A	Ancient Literature in Cross-Cultural Perspective	5
LIT 130B	Travel Writing and Intercultural Relations in the Middle Ages	5
LIT 130D	The Global Middle Ages	5
LIT 131A	Problems	5
LIT 131B	Space/Time	5
LIT 131C	Worldings	5
LIT 131D	Literature in a Global Context	5
LIT 133C	Modern Japanese Novel	5
LIT 133D	Topics in the Literatures and Cultures of Southern Asia	5
LIT 133E	Contemporary Chinese Society, Culture, and Politics	5
LIT 133F	Pacific Rim Discourse	5
LIT 133G	The Nuclear Pacific	5
LIT 133I	Global Japan: Literatures of the Japanese Diaspora	5
LIT 134A	Caribbean Literature	5
LIT 135A	Topics in African Literature	5
LIT 135E	The Historical Imaginary	5
LIT 135H	African Futurisms	5
LIT 137A	Global Cities	5
LIT 138A	Culture and Nation	5
LIT 138C	Modern Turkish Literature	5
LIT 141A	Early Mediterranean Cultures	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
LIT 141D	Classical Arabic Literature and Islamic Civilization	5
LIT 141E	Post-Classical Arabic Literature and Culture	5
LIT 149C	The 1960s	5
LIT 149F	Contemporary Mexican Narrative	5
LIT 149H	The Future	5
LIT 151L	Theater in India	5
LIT 155A	Cinema and Subjectivity	5
LIT 155E	Cinema and Social Change in Latin America	5
LIT 155N	Cinema in India	5
LIT 156E	Mapping Fictions: Geocritical Approaches to Cultural Studies	5
LIT 160C	Cruelty: Enjoying the Pain of Others	5
LIT 160E	Theorizing Race and Comics	5
LIT 160I	Race, Militarism, and Empire in Asia and the Pacific	5
LIT 160J	Exile, Diaspora, Migration	5
LIT 160K	Race, Labor, and Migration	5
LIT 160M	The War on Terror	5
LIT 160T	Reading Torture	5
LIT 162B	Literature of the Asian Diaspora	5
LIT 164C	Global Jewish Writing	5
LIT 165A	Chicanx/Mexican American Literature	5
LIT 165B	Latino Fictions of the Americas	5
LIT 165C	Mesoamerican Indigenous/Indigenista Literature	5
LIT 167G	Reading the Weather: Literature and Global Climate Change	5
LIT 167H	Disability in Transnational Asian American Studies	5
LIT 167K	Race and the Environment in the Atlantic World	5
LIT 168A	The Culture of Islamic Law	5
LIT 168B	Islamic Law and Society	5
LIT 181A	Biblical Hebrew, Part 1	5
LIT 181B	Biblical Hebrew, Part 2	5
LIT 181D	Reading Egyptian Hieroglyphs, Part 1	5
LIT 181E	Reading Egyptian Hieroglyphs, Part 2	5
LIT 181F	Reading Egyptian Hieroglyphs, Part 3	5
LIT 181H	Sanskrit, Part 2	5
LIT 182I	Littérature d'expression française hors de France	5
LIT 184E	Special Topics in Greek Literature	5
LIT 188R	Humanidades Ambientales	5
LIT 189A	De la conquista a Sor Juana	5
LIT 189C	Introducción a Spanish Studies	5
LIT 189E	Cuba	5
LIT 189F	Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish	5
LIT 189G	Cine y Literatura	5
LIT 189H	La Globalizacion en/del Cine Latin/o Americano	5
LIT 189I	Literatura e indigeneidad	5
LIT 189K	El ensayo latinoamericano	5
LIT 189L	Poesía latinoamericana	5
LIT 189M	Prosa contemporánea hispanoamericana	5
LIT 189N	Latinoamericano testimonio	5
LIT 189O	El Cuento Hispanoamericano: Variedades esteticas de la literatura breve en America Latina	5
LIT 189P	Las mujeres en la literatura latinoamericana	5
LIT 189R	La Novela de la Dictadura	5
LIT 189Q	Ficción y marginalidad	5
LIT 189S	La cultura popular en la narrativa latinoamericana	5
LIT 189T	Historia de la lectura y los lectores: Recepcion y consumo cultural en el mundo Latino Americano	5

LIT 189U	Modernidad y literatura: El Boom de la novela latinoamericana	5
LIT 189V	Andean Indigenismo	5
LIT 189Z	Literatura de Chile	5
LIT 190L	Topics in World Literature and Cultural Studies	5
LIT 190O	Studies in Slavery, Race, and Nation in the Americas	5

Poetry/Poetics Distribution Requirement

The following courses satisfy the poetry/poetics distribution requirement.

LIT 110A	The Traditional British Canon, Part I	5
LIT 110B	The Traditional British Canon, Part II	5
LIT 111C	John Milton	5
LIT 111B	Geoffrey Chaucer	5
LIT 111D	William Shakespeare	5
LIT 111E	Edmund Spenser	5
LIT 112E	Bob Dylan as Poet: From Folk Hero to Electric Messiah	5
LIT 112P	Gwendolyn Brooks	5
LIT 114A	Orlando Furioso	5
LIT 114C	Dante's Divine Comedy	5
LIT 114D	Goethe's Faust	5
LIT 114E	One Way Ticket to Hell … and Back: Exploring Dante’s Inferno	5
LIT 114F	Finding Dante: A Reader’s Guide to Getting Out of Hell	5
LIT 116B	Encountering Antiquity	5
LIT 116C	Ancient Myth/Modern Poetics	5
LIT 117A	Old Iranian Literature	5
LIT 120A	Topics in Poetry	5
LIT 120B	Poetry of the 17th Century	5
LIT 120C	Victorian Poetry	5
LIT 120D	Nineteenth-Century American Poetry	5
LIT 120E	Early- to Mid-20th-Century American Poetry	5
LIT 120F	Topics in Modern Poetry	5
LIT 120H	American Poetry Since World War II	5
LIT 120J	Contemporary American Poetry	5
LIT 121A	The Heroic Epic	5
LIT 121D	Medieval Epic	5
LIT 121G	The Idea of Poetry	5
LIT 121H	Classical Poetics in Elizabethan Verse	5
LIT 121K	Radical Moderns/Poetry International	5
LIT 121L	Green Ache: Ecopoetics, Race, and Material	5
LIT 121M	Blue and Brown: Race, Gender, and Blackness	5
LIT 121N	RAGE: Race and Performance	5
LIT 121O	Body Theories and Embodied Poetics in Contemporary American Poetry	5
LIT 121Q	Queer Lyrics: A History of LGBTQ Poetry in the United States	5
LIT 126P	Poe, Past and Present	5
LIT 136B	Beat Literature and the World	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
LIT 141D	Classical Arabic Literature and Islamic Civilization	5
LIT 146A	Studies in Romanticism	5
LIT 149E	Modern Fiction and Poetry	5
LIT 154C	Hip Hop Hi Art	5
LIT 164B	Hebrew Poetry	5
LIT 166A	Representations of Gender in Medieval Literature	5
LIT 167C	Metamorphoses: Pre/Post Modern Transformations	5
LIT 167M	Creation and its Discontents: From the Human to the Posthuman	5
LIT 181B	Biblical Hebrew, Part 2	5
LIT 181E	Reading Egyptian Hieroglyphs, Part 2	5
LIT 181F	Reading Egyptian Hieroglyphs, Part 3	5
LIT 181G	Sanskrit, Part 1	5
LIT 181H	Sanskrit, Part 2	5
LIT 182A	Le Moyen Age	5
LIT 182E	Etudes de Poésie	5
LIT 183N	Modern Deutsche Lyrik	5
LIT 184C	Greek Poetry	5
LIT 185J	Poesia moderna	5
LIT 185O	"I need a hero:" Ariosto's (Un)Epic Renaissance	5
LIT 185P	Boccaccio: Decameron	5
LIT 185Q	Dante: Divina Commedia	5
LIT 185S	Petrarca	5
LIT 186B	Roman Poetry	5
LIT 188B	Literatura peninsular: de los orígenes al siglo XVIII	5
LIT 189L	Poesía latinoamericana	5
LIT 190F	Studies in Poetry	5

Pre-1750 Distribution Requirement

The following courses satisfy the pre-1750 distribution requirement.

LIT 110A	The Traditional British Canon, Part I	5
LIT 111B	Geoffrey Chaucer	5
LIT 111C	John Milton	5
LIT 111D	William Shakespeare	5
LIT 111E	Edmund Spenser	5
LIT 114A	Orlando Furioso	5

LIT 114B	Don Quixote de la Mancha	5
LIT 114C	Dante's Divine Comedy	5
LIT 114E	One Way Ticket to Hell … and Back: Exploring Dante's Inferno	5
LIT 114F	Finding Dante: A Reader's Guide to Getting Out of Hell	5
LIT 116B	Encountering Antiquity	5
LIT 116C	Ancient Myth/Modern Poetics	5
LIT 116F	Knights, Ladies, and Werewolves: Medieval French Literature in Translation	5
LIT 116I	Philosophy in India	5
LIT 117A	Old Iranian Literature	5
LIT 118A	Hebrew Bible	5
LIT 120B	Poetry of the 17th Century	5
LIT 121A	The Heroic Epic	5
LIT 121D	Medieval Epic	5
LIT 121G	The Idea of Poetry	5
LIT 121H	Classical Poetics in Elizabethan Verse	5
LIT 121J	Medieval Romance	5
LIT 125A	Ancient Novel	5
LIT 130A	Ancient Literature in Cross-Cultural Perspective	5
LIT 130B	Travel Writing and Intercultural Relations in the Middle Ages	5
LIT 141A	Early Mediterranean Cultures	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
LIT 141D	Classical Arabic Literature and Islamic Civilization	5
LIT 141G	Granada: The Moor's Last Sigh and the Muslim's Frontier: The City in the Mediterranean Imagination	6
LIT 144A	Continental Renaissance	5
LIT 145A	Colonial American Literatures	5
LIT 150D	The Power of Writing: Books and Libraries 600-1500	5
LIT 151B	The Phenomenon of Tragedy	5
LIT 151G	English Drama: 1576-1642	5
LIT 151L	Theater in India	5
LIT 157A	Modern Ancient Drama	5
LIT 157C	Representations of Hamlet	5
LIT 157E	Greek Drama/Modern Film	5
LIT 159M	The Curse of the Mummy	5
LIT 160C	Cruelty: Enjoying the Pain of Others	5
LIT 160R	Gangsters, Bandits and Rogues: The Image of the Outlaw from the Middle Ages to the Present	5
LIT 164A	Jewish Travel Narratives	5
LIT 166A	Representations of Gender in Medieval Literature	5
LIT 166B	Early Modern Representations of Gender	5
LIT 166C	Early Modern Italian Women Writers	5
LIT 167B	Monsters and Humans	5
LIT 167K	Race and the Environment in the Atlantic World	5
LIT 167M	Creation and its Discontents: From the Human to the Posthuman	5
LIT 181A	Biblical Hebrew, Part 1	5
LIT 181B	Biblical Hebrew, Part 2	5
LIT 181C	Coptic	5
LIT 181D	Reading Egyptian Hieroglyphs, Part 1	5
LIT 181F	Reading Egyptian Hieroglyphs, Part 3	5
LIT 181G	Sanskrit, Part 1	5
LIT 181H	Sanskrit, Part 2	5
LIT 182A	Le Moyen Age	5
LIT 184A	Introduction to Greek Literature	5
LIT 184B	Greek Drama	5
LIT 184C	Greek Poetry	5
LIT 184D	Prose Authors	5
LIT 184E	Special Topics in Greek Literature	5
LIT 185O	"I need a hero:" Ariosto's (Un)Epic Renaissance	5
LIT 185P	Boccaccio: Decameron	5
LIT 185Q	Dante: Divina Commedia	5
LIT 185S	Petrarca	5
LIT 186A	Introduction to Latin Literature	5
LIT 186B	Roman Poetry	5
LIT 186C	Prose Authors	5
LIT 186D	Special Topics in Latin Literature	5
LIT 188A	Literatura medieval	5
LIT 188B	Literatura peninsular: de los orígenes al siglo XVIII	5
LIT 188E	Teatro del Siglo de Oro español	5
LIT 188F	Cuentos del Siglo de Oro español	5
LIT 188G	Literaturay vida en Don Quijote y otros textos cervantinos	5
LIT 188H	Erotismo y Mistica	5
LIT 188I	La novela picaresca	5
LIT 189A	De la conquista a Sor Juana	5
LIT 189D	Sor Juana Ines de la Cruz	5
LIT 190A	Topics in Pre- and Early Modern Studies	5

Research Distribution Requirement

The following courses satisfy the research distribution requirement.

LIT 119A	American Archives	5

Senior Seminar Distribution Requirement

The following courses satisfy the senior seminar distribution requirement.

LIT 190A	Topics in Pre- and Early Modern Studies	5
LIT 190F	Studies in Poetry	5
LIT 190I	Individual Authors	5
LIT 190J	Studies in English Language Literature	5
LIT 190K	Studies in U.S. Literature	5
LIT 190L	Topics in World Literature and Cultural Studies	5
LIT 190N	Studies in 19th-Century British Literature	5
LIT 190O	Studies in Slavery, Race, and Nation in the Americas	5
LIT 190T	Topics in Modern Literary Studies	5
LIT 190U	Topics in Theory	5
LIT 190V	Fiction Senior Seminar	5
LIT 190W	Poetry Senior Seminar	5
LIT 190X	Temas de la literatura y cultura espanolas y latinoamericanas	5
LIT 190Y	Topics in Jewish Literature and Culture	5
LIT 190Z	Topics in German Literature and Culture	5
LIT 195A	Senior Essay	5
LIT 195B	Senior Essay	5
LIT 195C	Senior Essay	5

ITALIAN STUDIES COURSE LIST

Course List

Italian Literature Courses

LIT 185B	Letteratura e cultura italiana	5
LIT 185H	L'Opera italiana	5
LIT 185I	Teatro italiano	5
LIT 185J	Poesia moderna	5
LIT 185L	La novella italiana	5
LIT 185M	Fascismo e resistenza	5
LIT 185N	Le donne nell'Italia moderna	5
LIT 185P	Boccaccio: Decameron	5
LIT 185Q	Dante: Divina Commedia	5
LIT 185S	Petrarca	5
LIT 61L	True Stories: Memoir	5
LIT 114A	Orlando Furioso	5
LIT 114C	Dante's Divine Comedy	5
LIT 121G	The Idea of Poetry	5
LIT 155D	Italian Cinema and Literature	5
LIT 166C	Early Modern Italian Women Writers	5

Italian History Courses

HIS 70A	Modern European History, 1500-1815	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 74B	Introduction to Middle Eastern and North African Jewish History, 1500-2000	5

Italian History of Art and Visual Culture Courses

HAVC 30	Introduction to European Visual Culture	5
HAVC 55	Unclothed: The Naked Body from Antiquity to the Present	5

Courses Taught Substantially in Italian

LIT 185B	Letteratura e cultura italiana	5
LIT 185H	L'Opera italiana	5
LIT 185I	Teatro italiano	5
LIT 185J	Poesia moderna	5
LIT 185L	La novella italiana	5
LIT 185M	Fascismo e resistenza	5
LIT 185N	Le donne nell'Italia moderna	5
LIT 185P	Boccaccio: Decameron	5
LIT 185Q	Dante: Divina Commedia	5
LIT 185S	Petrarca	5
ITAL 100	Advanced Italian Composition and Conversation	5
ITAL 106	Italian Culture Through Film	5

Courses Featuring the Work of Dante

LIT 114C	Dante's Divine Comedy	5
LIT 185Q	Dante: Divina Commedia	5

Courses Featuring Italy in a European or Global Context

Italian Language Courses

ITAL 1	First-Year Italian	5
ITAL 2	First-Year Italian	5
ITAL 3	First-Year Italian	5
ITAL 4	Second-Year Italian	5
ITAL 5	Second-Year Italian	5
ITAL 6	Second-Year Italian	5
ITAL 1A	Accelerated Italian	5
ITAL 1B	Accelerated Italian	5
ITAL 101	Italian Culture through Food	5

MIDDLE EASTERN AND NORTH AFRICAN STUDIES MENAS MINOR

The Middle Eastern and North African Studies (MENAS) minor, administered by the Humanities Division in partnership with the Center for the Middle East and North Africa (CMENA), supports the development of a robust knowledge of the Middle East and North Africa through a program that consists of a diverse set of courses across departments and divisions as well as the study of at least one regional language. Courses span the Humanities, Social Sciences, and Arts Divisions and draw on the varied and deep expertise of faculty in multiple academic departments that include the Departments of History, Politics, Anthropology,

Critical Race and Ethnic Studies, Feminist Studies, Literature, Languages and Applied Linguistics, the History of Art and Visual Culture, and Film and Digital Media. The objective of the MENAS minor is to promote substantive regional knowledge, understanding, and curiosity among students who are interested in positioning themselves as global citizens.

To complete the minor, students must take three quarters of language instruction in Arabic, Hebrew, or Persian, or complete the highest-level course of their chosen language (ARBC 6, HEBR 4, PERS 4). They also will take one specified lower-division introductory course, and five upper-division courses whose primary focus is the history, politics, artistic production, and/or cultures of the Middle East and/or North Africa.

Course Requirements

The minor consists of completing the language requirement and six additional courses from at least two different departments. Students can take up to two MENAS minor requirements pass/no pass. The remainder of the classes must be taken for a letter grade.

At least three quarters of language instruction

At least three quarters of language instruction from a single language or complete the highest level of your chosen language (ARBC 6, HEBR 4, PERS 4).

Three from the following:

Take three from the following **OR** complete the highest-level course, ARBC 6.

ARBC 1	First-Year Arabic	5
ARBC 2	First-Year Arabic	5
ARBC 3	First-Year Arabic	5
ARBC 4	Second-Year Arabic	5

Or three from the following:

Take three from the following **OR** complete the highest-level course, HEBR 4.

HEBR 1	First-Year Hebrew	5
HEBR 2	First-Year Hebrew	5
HEBR 3	First-Year Hebrew	5
HEBR 4	Second-Year Hebrew	5

Or three of the following:

Take three from the following **OR** complete the highest-level course, PERS 4.

Lower-Division Courses

Plus at least one lower-division survey course from the following list:

HIS 41	The Making of the Modern Middle East	5
HIS 50	When Pharaohs Reigned: The History of Ancient Egypt	5
HIS 51	Pyramids of Earth: Religion and Symbol in the Ancient World	5
HIS 58	From Pirates to Refugees: The History of the Modern Mediterranean	5
HIS 74A	Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern	5
HIS 74B	Introduction to Middle Eastern and North African Jewish History, 1500-2000	5
LIT 81D	The Prophet and the Qur'an	5

Upper-Division Courses

Plus at least five upper-division courses from the following list. Between the upper- and lower-division elective options, courses must be taken from at least two different departments.

The primary focus is the history, politics, artistic production, and/or cultures of the Middle East and/or North Africa.

ANTH 130T	Religion and Politics in the Muslim World	5
CRES 134	The Black "Middle East"	5
CRES 170	Intro to Arab American Communities	5
CRES 171	Arab Feminist Visions	5
CRES 172	Arab Uprising: Movements, Revolutions, and Praxis	5
CRES 173	Palestine: A History from Below	5
CRES 174	Palestine Through Ethnic Studies Lens	5
FILM 168	National Cinema and Culture	5
HAVC 153	Neither Venus Nor Virgin: Women's Lives Beyond Men's Constructs in Late Antiquity and Byzantium	5
HAVC 154	Byzantine Visual Culture: Politics and Religion in the Empire of Constantinople, 330-1453 A. C	5
HAVC 155	Constructing Cleopatra: Power, Sexuality, and Femininity Across the Ages	5
HAVC 190C	The Mediterranean from the Rise of Christianity to the Rise of Islam	5
HAVC 190N	Topics in Mediterranean Visual Culture	5
HIS 154	Post-Colonial North Africa	5
HIS 156A	Art, Culture, and Mass Media in the Arab Middle East	5
HIS 156B	Modern Arab Thought	5
HIS 156C	Living Egyptian History in the City of Cairo	5
HIS 157	The Ottoman Empire	5
HIS 159A	Cleopatra to Constantine: Greek and Roman Egypt	5
HIS 159B	Women and Gender in Ancient Egypt	5

HIS 159C	Temple and City: The Egyptian New Kingdom and the City of Thebes	5
HIS 159D	When Cities Were New: the Rise of Urbanism in the Ancient Near East and Mediterranean	5
HIS 170C	Mediterranean France: The History and Politics of Immigration	5
HIS 185C	Communism, Nationalism, and Zionism: Comparative Radical Jewish Politics	5
HIS 185M	Zionism: An Intellectual History	5
HIS 185O	The Holocaust and the Arab World	5
HIS 194L	Exile, Diaspora, and Displacement: Jewish Lives from North Africa to the Middle East	5
HIS 194S	Special Topics in Ancient Egyptian History	5
HIS 194V	Fascism and Anti-Fascism: The Global Spanish Civil War	5
HIS 194W	Social Movements in the Modern Middle East	5
LIT 117A	Old Iranian Literature	5
LIT 125H	Modern Arabic Novel	5
LIT 130B	Travel Writing and Intercultural Relations in the Middle Ages	5
LIT 130D	The Global Middle Ages	5
LIT 141A	Early Mediterranean Cultures	5
LIT 141D	Classical Arabic Literature and Islamic Civilization	5
LIT 141E	Post-Classical Arabic Literature and Culture	5
LIT 141G	Granada: The Moor's Last Sigh and the Muslim's Frontier: The City in the Mediterranean Imagination	6
LIT 159M	The Curse of the Mummy	5
LIT 168A	The Culture of Islamic Law	5
LIT 168B	Islamic Law and Society	5
POLI 140E	Middle East Politics	5
POLI 184	Shariah and Political Thinking: Law and Politics in Modern Islamic Thought	5
POLI 187	Decolonial Global Health: A View from the Middle East and Africa	5

Course Substitution Policy

Transfer Credits and Course Substitutions

Courses from the following categories may also be applied to the MENAS minor:

- Transfer Courses/Courses taken at another institution (three courses)
- Education Abroad Program (no limit). See Global Learning for available course offerings.
- Course Substitutions/Related courses not currently on the pre-approved MENAS course list (no limit)
- Independent and Field Studies (two courses)

Transfer Coursework

Students may petition up to three courses taken at another college or university for use toward their MENAS minor requirements. Courses must appear on your UC Santa Cruz Transfer Credit Summary Report before they will be approved for use toward your MENAS minor requirements.

Philosophy

220 Cowell College
(831) 459-2070
https://philosophy.ucsc.edu/

PROGRAMS OFFERED

Philosophy B.A. (p. 267)

Philosophy Minor (p. 270)

Philosophy Contiguous Bachelor's/Master's Pathway (p. 270)

Philosophy M.A. (p. 271)

Philosophy Ph.D. (p. 272)

Philosophy Designated Emphasis (p. 273)

Philosophy investigates fundamental questions about the most basic facets of human thought and life, e.g., concerning knowledge and belief (epistemology), the nature of reality (metaphysics), and morality and aesthetics (value theory). Such questions can be studied by looking at answers that contemporary philosophers propose, by investigating the principles that other disciplines use to legitimate claims, or by learning how, historically, philosophers approached these issues. In this respect, “philosophy” names not only a historically defined subject matter, but also inquiry into any of the fundamental determinants of rational thought. Thus, students of philosophy can pursue a broad range of topics of the greatest historical, intellectual, social, political, and personal interest.

The programs offered by the Philosophy Department are designed to familiarize students with the central concepts and key debates in the core areas of contemporary philosophical thought and with the works of the major figures in the history of philosophy. The department offers an undergraduate major and a minor. The philosophy major leads to a bachelor of arts (B.A.) degree in philosophy. The graduate program leads to the master of arts (M.A.) and doctor of philosophy (Ph.D.) degrees in philosophy.

The department also offers a combined B.A./M.A. pathway which makes it possible for certain well-qualified, highly motivated students to complete the requirements for both degrees in five years rather than the usual six.

Please see our planned course offerings for the current academic year on this page.

PHILOSOPHY B.A.

Information and Policies

Introduction

Philosophy investigates fundamental questions about the most basic facets of human thought and life, e.g., concerning knowledge and belief (epistemology), the nature of reality (metaphysics), and morality and aesthetics (value theory). Such questions can be studied by looking at answers that contemporary philosophers propose, by investigating the principles that other disciplines use to legitimate claims, or by learning how, historically, philosophers approached these issues. In this respect, "philosophy" names not only a historically defined subject matter, but also inquiry into any of the fundamental determinants of rational thought. Thus, students of philosophy can pursue a broad range of topics of the greatest historical, intellectual, social, political, and personal interest.

The department offers courses that relate these traditional philosophical questions to contemporary work in literature and the social and natural sciences. In addition, the department offers several courses that make a careful study of the classic texts in philosophy, ancient and modern. Moreover, the curriculum covers many of the dominant contemporary schools of philosophy in the Anglo-American and European traditions.

The study of philosophy enables students to expand their abilities in critical thinking and reasoning as well as to improve their skills in verbal and written communication. Students may major or minor in philosophy.

Philosophy prepares students for many careers as well as for most professional schools, including law, education, business, and non-profit management. Students who wish to go to graduate school in philosophy are encouraged to study logic at both the introductory and intermediate levels and any languages that are necessary for advanced scholarship in the different historical eras of philosophy.

Program Learning Outcomes

Students who complete the philosophy major should emerge with the following knowledge and skills:

- an ability to argue cogently for a philosophical point and to analyze and criticize the arguments of others;
- a familiarity with the central concepts and key debates in the core areas of contemporary philosophical thought, including ethics, metaphysics, and epistemology;
- a familiarity with the works of the major figures in the history of philosophy; and
- a familiarity with formal logic, including the ability to carry out proofs within symbolic formal systems.

Academic Advising for the Program

For undergraduate advising, please contact philadvi@ucsc.edu. For transfer students, please also consult the Transfer Information and Policy section and contact the undergraduate advisor with any questions. Please see our planned course offerings for year at this page.

Getting Started in the Major: Frosh

Transfer Information and Policy

Transfer Admission and Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz. Although this is not required for admission, students are recommended to complete courses in the following areas:

- Introduction to Symbolic Logic
- Ancient Philosophy
- Modern Philosophy
- Ethical Theory
- Philosophy of Mind or Epistemology

Students may petition to substitute courses taken at other institutions, or take courses articulated on assist.org. Please note that logic classes offered at community colleges will not fulfill the department's logic requirement (i.e., PHIL 9). However, most students should be able to satisfy their second required lower-division introductory course before transferring in.

Transfer students wishing to major in philosophy are encouraged to consult with the Philosophy Department undergraduate advisor as soon as possible.

Getting Started in the Major: Transfer Students

Students can declare the major once they are enrolled in or have taken one philosophy course.

Major Qualification Policy and Declaration Process

Major Qualification

Students may declare the major once they have enrolled in at least one 5-credit lower-division philosophy course. Students of any year can declare the major. While specific courses are not required in order to declare, students will have ideally completed some or all of the lower-division requirements. There is no GPA requirement to declare the philosophy major. A student approaching the campus declaration deadline who has not enrolled in any philosophy courses will be allowed to declare the philosophy major if they enroll in a lower-division philosophy course in the next quarter.

Appeal Process

How to Declare a Major

Students may declare the major by submitting a Petition for Major/Minor Declaration to the department advisor. Students must complete all requirements for the major with a grade of P, C (2.0), or better.

Per campus policy, students must submit their major declaration no later than the third quarter of their sophomore year or, in the case of transfer students, no later than the second quarter of their junior year. Philosophy welcomes students who are pursuing more than one major or who are transferring from another major to declare after this time frame.

Letter Grade Policy

This program does not have a letter grade policy.

Optional Catchall

Course Substitution Policy

For majors, students are allowed to substitute two upper-division courses for their required philosophy courses. Lower-division courses completed elsewhere may also be considered. Substitution requests are to be made via petition to and are subject to approval by the undergraduate program director. Students must have received a B or higher to transfer a course for credit.

Double Majors and Major/Minor Combinations Policy

Study Abroad)

Honors

Graduation with Honors in Philosophy requires at least a 3.7 average in all philosophy courses taken at UC Santa Cruz. Graduation with Highest Honors in Philosophy requires at least a 3.9 average in all philosophy courses taken at UC Santa Cruz. Students with an average between 3.8 and 3.9 may be awarded Highest Honors by vote of the Philosophy Department.

Program Planning Notes

When a faculty member thinks that a student has done exceptional work that could be carried to a more advanced level, the student may be given the option of writing a senior essay (PHIL 195A). Normally, the senior essay is completed in one quarter; in unusual circumstances, it can be continued for a second quarter (PHIL 195B), but only if the writing requirements for PHIL 195A are completed successfully and on time. The senior essay, like individual studies more generally, does not count toward the 11 courses required for the major.

After undergraduates have taken the requisite lower-division courses, they have a wide range of upper-division courses from which to choose. Those who are considering advanced study are encouraged to consult regularly with any member of the philosophy faculty about the courses that would best prepare them for graduate work. Preparation for graduate work ought to begin before senior year. The Philosophy Department sponsors workshops for students contemplating graduate school in philosophy.

Optional Catchall

Requirements and Planners

Course Requirements

Eleven courses are required: two at the lower-division level, two in the history of philosophy sequence (PHIL 100A, PHIL 100B, PHIL 100C), six additional upper-division courses (including one advanced seminar), and an elective course which may be from any level. These 11 courses must meet the following distribution requirements:

Lower-Division Courses

The following course:

PHIL 9	Introductory Symbolic Logic	5

Plus

At least one other 5-credit course numbered PHIL 1-98, with the exception of PHIL 8.

Transfer students should check Assist.org for articulation agreements.

Upper-Division Courses

History of philosophy

Two of the following courses:

PHIL 100A	Ancient Greek Philosophy	5
PHIL 100B	The Rationalists	5
PHIL 100C	The Empiricists	5

All three are strongly recommended for students who anticipate graduate work in philosophy.

Plus

Six 5-credit courses numbered PHIL 100A or above, with at least one in value theory and two in metaphysics and/or epistemology.

Note that the two courses counted toward fulfilling the history of philosophy requirement cannot be counted among these six additional courses. PHIL 195A, PHIL 195B, and PHIL 199 also cannot be counted among these six courses.

Courses satisfying the value theory requirement:

PHIL 118	Stoic Ethics	5
PHIL 140	History of Ethics	5
PHIL 142	Advanced Ethics	5
PHIL 143	Applied Ethics: Ethics Bowl	5

PHIL 144	Topics in Social and Political Philosophy	5
PHIL 147	Topics in Feminist Philosophy	5
PHIL 148	The Holocaust and Philosophy	5
PHIL 152	Aesthetics	5
PHIL 153	Philosophy of Race	5

Courses satisfying the metaphysics and epistemology requirement:

PHIL 106	Kant	5
PHIL 113	The History of Analytic Philosophy	5
PHIL 114	Probability and Confirmation	5
PHIL 121	Epistemology	5
PHIL 122	Metaphysics	5
PHIL 124	Other Minds	5
PHIL 125	Philosophy of Science	5
PHIL 126	Philosophy of Social Sciences	5
PHIL 127	Philosophy of Biology	5
PHIL 133	Philosophy of Mind	5
PHIL 135	Philosophy of Psychology	5

Senior Seminar

One advanced seminar numbered:

PHIL 190	Senior Seminar	5

Elective

An 11th 5-credit course from any level (lower, upper, or graduate).

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in philosophy is met by completing any two from the sequence:

PHIL 100A	Ancient Greek Philosophy	5
PHIL 100B	The Rationalists	5
PHIL 100C	The Empiricists	5

Comprehensive Requirement

In the fourth year, students satisfy the comprehensive (exit) requirement by taking one course numbered 190. This advanced seminar meets the standards of the senior-year level of achievement in philosophy. Students who do superior work in an advanced seminar can be awarded a notation of Honors in the evaluation for that course.

PHIL 190	Senior Seminar	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Courses must be satisfied in the following sequence. Before being eligible to enroll in any course in the history sequence (PHIL 100A-PHIL 100B-PHIL 100C), a student must have completed two lower-division courses (one of these may be PHIL 8 or PHIL 9, but not both). Before being eligible to enroll in any philosophy course above PHIL 100C, students must have taken PHIL 9 and at least one of the required history of philosophy courses (i.e., either PHIL 100A, PHIL 100B, or PHIL 100C). In addition to the specific courses shown in these planners, a student must complete courses satisfying the general education requirements.

Four-Year Major Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	PHIL 11 College 1	PHIL 9 WRIT 1/WRIT 1E (if needed)	PHIL 100C WRIT 2*	
2nd (soph)	PHIL 100A	PHIL 100B (elective)	PHIL 1XX (ME)	
3rd (junior)	PHIL 1XX (Value)	PHIL 1XX (elective)	PHIL 1XX (ME)	
4th (senior)	PHIL 1XX (elective)		PHIL 190	

PHIL 9 satisfies the MF general education requirement and PHIL 11 satisfies the TA general education requirement (Other lower-division courses may satisfy different GE

requirements). Students must complete all other GE requirements.

*WRIT 2 is a prerequisite to PHIL 100A, the DC course, and the PHIL 100A-C series. It should ideally be taken spring quarter of the first year. Under campus policy, WRIT 2 (the C requirement) must be completed by spring quarter of the second year.

Two-Year Transfer Major Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	PHIL 11 or PHIL 22 (if needed)	PHIL 100B	PHIL 100C	
	PHIL 9		PHIL 1XX (ME)	
2nd (senior)	PHIL 100A (elective)	PHIL 1XX (elective)	PHIL 1XX	
	PHIL 1XX (Value)	PHIL 1XX (ME)	PHIL 190	

Before transferring, students should complete as many of their general education as possible and their lower-division introductory philosophy course.

PHILOSOPHY MINOR

Course Requirements

Students must have taken or currently be enrolled in at least one lower-division philosophy course in order to declare the minor. Students declare by contacting the undergraduate advisor, who will develop an individual academic plan and complete a Petition for Major/Minor Declaration form. Students should contact philadvi@ucsc.edu in order to declare.

A minor in philosophy consists of seven of the 11 courses required for the major, and will meet the following distribution requirements:

Lower-Division Courses

The following course:

PHIL 9	Introductory Symbolic Logic	5

Plus

At least one other 5-credit course numbered PHIL 1-98, with the exception of PHIL 8.

Transfer students should check Assist.org for articulation agreements.

Upper-Division Courses

History of Philosophy

One of following courses:

PHIL 100A	Ancient Greek Philosophy	5
PHIL 100B	The Rationalists	5
PHIL 100C	The Empiricists	5

Plus

Four additional 5-credit upper-division courses numbered 100A or above. This includes one in value theory and two in metaphysics and/or epistemology (see Philosophy B.A. course requirements for a list of courses that satisfy this requirement).

Note that the course counted toward fulfilling the history of philosophy requirement cannot be counted among these additional courses. PHIL 195A, PHIL 195B, and PHIL 199 also cannot be counted among these courses.

Course Substitution Policy

One upper-division course substitution may be considered, but lower-division courses may not be substituted for an upper-division requirement. Lower-division courses completed elsewhere may also be considered. Substitution requests are to be made via petition to and are subject to approval by the undergraduate program director. There is no senior exit requirement for the minor.

For the sequence in which courses must be taken, see Major Requirements.

Letter Grade Policy

This program does not have a letter grade policy.

PHILOSOPHY CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

The B.A./M.A. pathway is an option that allows students to complete the requirements for both degrees in five years, rather than the usual six.

Interested students with a GPA of at least 3.5 will be asked to indicate their intention to participate in the program no later than the seventh week of the spring quarter of their junior year (spring quarter advising week). Intentions to participate

should be directed to the undergraduate staff advisor. Subject to instructor consent, students may then enroll in two to three graduate philosophy seminars in their senior year.

Actual admission to this program requires that students apply to the M.A. program through the standard graduate admissions process as specified on UC Santa Cruz's Graduate Division's website. If a student is then admitted, up to three graduate philosophy seminars taken in their senior year will count as credit toward their graduate degree. Students matriculating through the B.A./M.A. pathway will be required to take the remaining courses required for the M.A., as well as to write and defend their M.A. capstone paper, in the fifth year. Those needing additional time may continue in the pathway in accordance with normative time expectations for the stand-alone master's program.

PHILOSOPHY M.A.

Introduction

The M.A. program is host to talented students from diverse academic backgrounds. The program is open not only to applicants who majored in philosophy as undergraduates, but also to applicants from other disciplines, who have a significant background in philosophy and who now want to study philosophy more intensively. The program is designed to be completed in one to two years or, in the case of students on the Contiguous Bachelor's/Master's pathway, one year.

Preparation for the Master's Degree

Students can apply to be admitted into the graduate program to pursue the M.A. in philosophy. Interested students should discuss the possibility with one or more faculty members and formally apply online to the graduate program during fall quarter. For up-to-date information about the application process, consult the department's website and contact the graduate advisor.

Relationship of the M.A. and Ph.D. Programs

Students in the M.A. and Ph.D. programs will be in the same classes and satisfy similar course distribution requirements. Enrollment in the M.A. program confers no advantage for admission to the Ph.D. program.

Applications and Admissions

Application materials are available online. Further information regarding the program may be found on the department website.

Requirements

Course Requirements

Requirements in the First Year

During their first year, all graduate students are expected to fulfill a set of breadth requirements. These requirements are designed to provide both a common experience on which students can build their individual projects and a shared framework within which they can exchange ideas. Every graduate student in philosophy is required to complete six courses in their first year.

This minimal core set of courses will consist of (i) three graduate seminars, designated by the department each year as mandatory for every first year student, and (ii) three electives (any three graduate seminars in philosophy). Of the three required seminars, one will be in metaphysics/epistemology, one in the history of philosophy, and one in moral philosophy.

No courses labeled PHIL 294 or higher will satisfy any of these minimum core requirements. This restriction is redundant for PHIL 299 (since that course is open only to students who have advanced to candidacy). The point of this restriction is to limit the use of independent studies, reading groups or student seminars for graduate seminar credit.

During their first year of study all students must pass a logic competency examination with a grade of B or better. This examination will cover material typically taught in a first course in formal logic.

To facilitate professionalization in the exchange and development of academic knowledge and skills, M.A. students are strongly encouraged—though not required—to enroll in PHIL 280 and PHIL 281 each year. However, M.A. students wishing to work as a teaching assistant (TA) at any point during their time in the program must enroll in PHIL 281 in both years.

PHIL 280	Graduate Colloquia Course	2
PHIL 281	The Pedagogy of Philosophy	2

PHIL 280, Graduate Colloquia Course, provides preparation for and requires attendance at all department-sponsored colloquia and works-in-progress presentations each quarter.

PHIL 281, The Pedagogy of Philosophy, provides training in university-level teaching in general and in the pedagogy of philosophy specifically. It meets during the fall quarter only.

For further details, see the department's web page or consult with the department's graduate advisor.

Requirements in the Second Year

M.A. students are expected to complete the common first-year requirements as described above and then three more graduate seminars in the second year, for a total of nine courses. After the first-year coursework requirements have been met, M.A. students may substitute up to two of the three remaining graduate seminars with graduate seminars offered in other programs and/or with independent studies in philosophy (PHIL 297).

Other Requirements

By the end of the second year of study and the completion of 45 credits, M.A. students will submit a master's capstone paper, which will normally be defended before a committee of two faculty.

[Optional Catchall]

Applying for Graduation

Students apply to graduate by contacting the department graduate advisor and completing the relevant forms from the Graduate Division.

PHILOSOPHY PH.D.

Introduction

The Ph.D. program provides students with closely monitored training in philosophy. The program is designed to be completed in six years or less. Graduate work in philosophy can lead to careers both inside and outside academia. Because most doctoral students will be preparing for a career that involves teaching philosophy, they are encouraged to be teaching assistants for at least three quarters.

The department has four areas of focus; Ethics and Technology, Social Epistemic Injustice, Disagreement Rationality, and Public Engagement (see the "About" page). The department's faculty also have an interest in the history of philosophy as an indispensable background to the main areas of contemporary concern in the discipline. Among the faculty's main contemporary interests are those topics commonly pursued in any high-ranking research and teaching program, and particularly. those comparable to departments of philosophy at other UC's: philosophy of science, metaphysics, philosophy of mind, epistemology, aesthetics, philosophy of language, philosophy of religion, ethics and moral psychology (see the "Research" page). The faculty's research and teaching in these areas is informed by leading historical figures, including especially Kate, Aristotle, Hume, Wittgenstein and--again, uniquely for such a small department--leading figures from the Middle Ages and late antiquity, including medieval Islamic figures.

Relationship of the M.A. and Ph.D. Programs

Students in the M.A. and Ph.D. programs will be in the same classes and satisfy similar course distribution requirements. Enrollment in the M.A. program confers no advantage for admission to the Ph.D. program.

Applications and Admissions

Application materials are available online. Further information regarding the program may be found on the department website.

Advancement to Candidacy

Course Requirements

Requirements in the First Year

During their first year, all graduate students are expected to fulfill a set of breadth requirements. These requirements are designed to provide both a common experience on which students can build their individual projects and a shared framework within which they can exchange ideas. Every graduate student in philosophy is required to complete six courses in their first year.

This minimal core set of courses will consist of (i) three graduate seminars, designated by the department each year as mandatory for every first year student, and (ii) three electives (any three graduate seminars in philosophy). Of the three required seminars, one will be in metaphysics/epistemology, one in the history of philosophy, and one in moral philosophy.

No courses labeled PHIL 294 or higher will satisfy any of these minimum core requirements. This restriction is redundant for PHIL 299 (since that course is open only to students who have advanced to candidacy). The point of this restriction is to limit the use of independent studies, reading groups or student seminars for graduate seminar credit.

During their first year of study all students must pass a logic competency examination with a grade of B or better. This examination will cover material typically taught in a first course in formal logic.

To facilitate the professionalization of students in the exchange and development of academic knowledge and skills, all first- and second-year doctoral students will be required to enroll in:

PHIL 280	Graduate Colloquia Course	2
PHIL 281	The Pedagogy of Philosophy	2

PHIL 280, Graduate Colloquia Course, provides preparation for and requires attendance at all department-sponsored colloquia and works-in-progress presentations each quarter.

PHIL 281, The Pedagogy of Philosophy, provides training in university-level teaching in general and in the pedagogy of philosophy specifically. It meets during the fall quarter only.

Requirements in the Second Year

Doctoral students are expected to complete the common first-year requirements as described above and then six more graduate seminars in the second year, for a total of 12 courses.

After the common first-year requirements have been met, doctoral students may substitute up to two of the six remaining graduate seminars with graduate seminars offered in other programs, and up to two other seminars with independent studies in philosophy (PHIL 297). PHIL 270 does not count toward these 12 required breadth courses in years 1 and 2, but is required for successful completion of the Ph.D.

Foreign Language Requirements

The foreign language requirement will be individually determined based on the relevance of such linguistic skills to the research interests of the student. Proficiency can be demonstrated either by passing a written examination administered by the department or by successfully completing a language course approved by the graduate director.

Teaching Requirement

Pre-Qualifying Requirements

Qualifying Examination

Qualifying Examination and Research Seminar

The qualifying examination, normally taken during the third year of enrollment, is centered on a qualifying essay that demonstrates the candidate's ability to do extended, dissertation-level research and analysis relevant to the proposed thesis topic and dissertation plan. The examination focuses on the student's research project and on the fields of scholarship it presupposes.

Near the end of the required coursework, doctoral students will develop a research project resulting in a substantial paper. The paper is required to enroll in the research seminar, PHIL 270, which must be completed during or before winter quarter of the third year. The seminar will allow students to make substantial progress on a qualifying essay and cultivate their ability to assess and provide critical feedback on another author’s philosophical work. PHIL 270 is only offered in winter quarter, and will normally be taken in the third year, though it may be taken earlier than the third year or taken a second time in the fourth year with the permission of the instructor. It is optional for M.A. students.

Post-Qualifying Requirements

[Optional Catchall]

Dissertation

Dissertation

Prospectus

Within one year of passing the qualifying examination (usually during the fourth year) doctoral students will submit and defend a dissertation prospectus, consisting of some written foundation and a plan for completion of the dissertation. The committee for the prospectus defense is normally the dissertation committee.

The prospectus will be submitted at least one month prior to the defense. It will normally consist of:

1. A detailed outline or table of contents of the entire dissertation
2. A bibliography indicating knowledge of the scope of the relevant literature
3. A paper that would be suitable as a chapter of the dissertation and that (a) clearly shows the potential for developing the rest of the dissertation, or (b) lays out the central problem which the dissertation will address.

Dissertation

The final requirement for the Ph.D. degree is a dissertation representing a contribution to philosophical research. Students submit their dissertation committee to the department for approval once they complete their qualifying exam. They may change their committee at a later time pending department approval. This committee is submitted to the Graduate Division for final approval.

Dissertation Defense

Academic Progress

Applying for Graduation

Students apply to graduate by contacting the department graduate advisor and completing the relevant paperwork from the Graduate Division.

[Optional Catchall]

PHILOSOPHY DESIGNATED EMPHASIS

To receive a designated emphasis in philosophy, graduate students from other departments must complete the following requirements in addition to degree requirements for the doctorate in their home department.

Contact the Philosophy Department graduate advisor for more information about the emphasis and to obtain an application form.

Committee Composition and Departmental Approvals

A Philosophy Department faculty member is to be consulted about the intention to pursue a philosophy designated emphasis. This advisor is required to serve on both the qualifying examination committee and the dissertation reading committee.

Course Requirements

Students must complete four graduate courses in philosophy selected in consultation with the philosophy faculty advisor. One of the four may be an independent study approved by the philosophy faculty advisor.

Writing, Research and/or Teaching Requirements

Students must submit a significant piece of writing that demonstrates competency in the field. The writing could take

the form of a seminar paper or dissertation chapter. The essay must meet the approval of the philosophy advisor.

Academic Progress

[Optional Catchall]

Writing Program

209 Humanities 1
(831) 459-2431
https://writing.ucsc.edu
https://writingplacement.sites.ucsc.edu/

The Writing Program offers lower-division general education composition courses, upper-division peer tutoring courses, and graduate-level pedagogy courses. The Writing Program also houses the Don Rothman Endowed Award in First-Year Writing, which honors outstanding first-year writers and recognizes the pedagogical inspirations of their teachers.

Students place into writing courses via Directed Self-Placement (DSP). Please visit the DSP website for details.

LOWER-DIVISION COURSE

The Writing Program's lower-division courses are designed to help students become confident writers, learners, and researchers who communicate effectively in a variety of writing situations and disciplinary fields. These courses teach students how to develop analytical, reflective, and flexible writing practices to meet the expectations of academic, professional, and civic audiences, and are attentive to recent developments in writing (disinformation, AI, etc.).

Specifically, the program offers courses that satisfy:

- Systemwide Entry-Level Writing Requirement (ELWR)
  - WRIT 1, Introduction to Composition (F, W, S)
  - WRIT 1E, Introduction to Composition for Multilingual Students (F, W, S)

Students from catalog years 2019-2020 may place into WRIT 1 and WRIT 1E based on AWPE scores.

- General Education Composition (C) Requirement
  - WRIT 2, Rhetoric and Inquiry (F, W, S)
  - WRIT 2H, Rhetoric and Inquiry Honors (W, S)

MULTILINGUAL CURRICULUM

The Writing Program also offers the Multilingual Curriculumfor students who are in the process of acquiring English. These courses are designed to strengthen students' use of English for purposeful, authentic, and culturally appropriate communication. These courses honor students' multiliteracies and prepare students for subsequent writing requirements.

Based on students' course selection via Directed Self-Placement, students who are acquiring English may place into the following courses, which are taken prior to the ELWR (WRIT 1 or WRIT 1E) and C Requirement (WRIT 2 or WRIT 2H):

- WRIT 25, Writing about Place (F)
- WRIT 26, Writing about Language (F, W)*

Students from catalog years 2019-2020 and before may place into WRIT 25 and WRIT 26 based on AWPE-MLS scores.

*Upon completion of WRIT 26, multilingual students are highly encouraged to take WRIT 1E, which carries the same outcomes as WRIT 1 but is taught by trained faculty with expertise in language acquisition.

UPPER-DIVISION WRITING COURSE

The Writing Program offers a course for undergraduates interested in serving as peer tutors for lower-division writing students. By exploring theory and research on writing pedagogies, tutors gain insight into composing processes, meeting the academic needs of diverse learners, and providing responsive assistance in one-to-one tutoring settings.

- WRIT 169: Theory and Practice of Tutoring Writing (5 credits, W, S)

GRADUATE-LEVEL WRITING COURSES

The Writing Program supports graduate education by offering pedagogical training for graduate students from all disciplines in the theory and practice of teaching writing, with an emphasis on course and assignment design that foregrounds disability studies and inclusive teaching. This course is designed for students who would like to enhance their own pedagogical development as teaching assistants in other departments.

- WRIT 203, Teaching Writing

Humanities Certificate Programs

Humanizing Technology Certificate (p. 274)

Visualizing Abolition Studies (VAST) Certificate (p. 275)

HUMANIZING TECHNOLOGY CERTIFICATE

The Humanizing Technology Certificate Program (HTCP) encourages students to explore the impacts of new and existing technologies in our everyday lives. At the same time, it helps students develop their critical thinking about social and cultural systems that inform these technologies, and provides them with tools for becoming socially responsible professionals. The HTCP offers students interested in

technology a pathway to fulfill General Education (GE) requirements with courses that have a direct relevance to their majors and career interests, and it gives students an opportunity to develop community in smaller learning environments.

To earn the certificate, students are required to complete three of eight designated courses below. These classes have no prerequisites, and can be taken in any order. Intended for first-year and second-year students but open to all, the HTCP enables students to fulfill GE requirements with a set of courses that focus on the intersection of technology and issues of race, power, ethics, language, and representation. The certificate introduces students to humanistic methods and approaches to studying technology and its ramifications, enabling them to contextualize the social, cultural, and historical contexts of new technologies. Courses are small and designed to foster discussion, collaboration, and community. Students are encouraged to develop their own viewpoints on the sources and impacts of technological systems, and to convey those viewpoints clearly and confidently. Above all, the courses help students learn how to grapple with difficult societal questions that lack clear “right” answers and become socially responsible agents of positive change in their professional and personal lives.

The Humanizing Technology Certificate is awarded on completion of three of the eight designated courses. The HTCP program will contact students upon completion of this requirement. Students are encouraged to contact HTCP advising at humadvising@ucsc.edu to discuss their plans. Students are encouraged to list the HTCP Certificate in their resumes, in addition to articulating the skills they’ve developed through program courses. The HTCP Certificate will not appear on students’ transcripts.

Students who successfully complete a minimum of three of the following courses will be awarded the Humanizing Technology Certificate. Students can choose any combination of the classes in order to qualify.

- HUMN 15, Ethics and Technology (Textual Analysis Gen Ed). This course explores ethical, social, and political issues raised by existing and emerging technologies.
- HUMN 25, Humans and Machines (Textual Analysis Gen Ed). This course explores the tension between humans and machines, between people and objects increasingly resembling them.
- HUMN 35, Language Technology (Cross-Cultural Analysis Gen Ed). This course provides a comparative, historical framing of the development of communication technologies and practices, considering a variety of cultures and societies across human history.
- HUMN 45, Race and Technology (Ethnicity and Race Gen Ed). This course examines how the construction of race connects with constructs in science and technology.
- HUMN 55, Technologies of Representation (Interpreting Arts and Media Gen Ed). Focusing on technologies of representation like photographs, selfies, and surveillance data, this course explores how viewers and makers derive meaning from images and how power operates in their creation and circulation.
- LIT 81E, Social Media and Society, (Perspectives: Technology and Society Gen Ed). Introduction to social media's evolving impact on society. How are social media changing communication, politics, identity, privacy, and what we believe? Materials include critical texts and real-world case studies, as well as films and short fiction.
- LIT 126H, Artificial Intelligence and Human Imagination (Cross-Cultural Analysis Gen Ed). This course uses a humanistic framework to study the promises and perils of artificial intelligence technosystems (AI). It studies cultural depictions of AI, co-creates cultural artifacts using AI, and analyzes the "anatomy" of specific AIs.
- LIT 160P, Misinformation, Disinformation, and Fake News (Perspectives: Human Behavior Gen Ed). Our world is saturated with information and much of it is inaccurate. This class teaches how to identify bad information and how to keep it from spreading. It explores the role and responsibility of journalism in the world and why it matters. It investigates where information originates and the motivations of those producing, spreading, and sharing it, and pushes students to consider their media diet and how it affects their life and understanding of the world.

Per the university's Committee on Educational Policy's Policy on Undergraduate Academic Certificate Programs, "course credits should not count toward any other major or minor." Students who are pursuing a Humanizing Technology Certificate should contact the Humanizing Technology Certificate advisor to discuss their plans; the courses for the certificate may need to be adjusted.

VISUALIZING ABOLITION STUDIES (VAST) CERTIFICATE PROGRAM

Visualizing Abolition Studies

The Visualizing Abolition Studies Certificate Program (VAST) provides students with access to a curriculum in critical studies of incarceration that builds through developing skills in analyzing art and visual culture. Based on a recognition that visual materials co-constitute our world and are often a primary means through which we come to access it, VAST will prepare students to examine not only the existing criminal legal system but also the means through which it has been studied in the past. As such, it offers students an arena in which to develop their critical thinking about the social and cultural systems that structure our lives.

Open to all students, the VAST Certificate Program encourages exploration of the many ways in which forms of visibility, representation, aesthetic production, and popular culture intersect with the carceral. The course of study is multidisciplinary and includes the potential for both creative and analytical coursework. Opportunities for practical learning, especially in collaboration with the Institute of the Arts and Sciences (IAS) and other area museums, are stressed. Above all, VAST courses encourage students to hone a sense of their own political commitments and capacities by supporting their views with a strong research foundation.

Students are encouraged to list the VAST Certificate on their resumés. The VAST Certificate will not appear on students' transcripts but may be verified with the IAS.

For more information, visit: https://ias.ucsc.edu/visualizing-abolition-studies/ or contact vast@ucsc.edu.

Certificate Level Learning Outcomes

As a result of completing the VAST certificate program, students will be able to:

- **Think** beyond the entrenched social dynamics that center on punishment.
- **Analyze** the role played by visual media in constructing past and present social systems.
- **Create** and/or **interpret** visual art in order to challenge carceral practices and fashion new modes of relationality.
- **Develop** critical skills and workplace experience required to enter multiple post-graduate professions such as (but scarcely limited to): the arts, teaching, legal work, the non-profit sector, and social work.

Academic Advising for the Program

Undergraduate advising for the VAST Certificate Program is supported by the Humanities Division. The humanities divisional advisor offers specific information about navigating through the program and curriculum and assists students with academic planning, requirements, and extra-curricular opportunities related to the program. Please contact the advisor at vast@ucsc.edu.

Students are not required to declare their intent to complete the certificate program in advance. Once their third VAST course is completed and grades have posted, they will receive a PDF certificate via email from the VAST advisor. If they haven't heard from the VAST advisor, please reach out to them to confirm the certificate's completion.

Transfer Information and Policy

Students transferring to UC Santa Cruz are strongly encouraged to pursue the VAST Certificate. Transfer students may consult with the VAST advisor about transferring credits to count towards the completion of the certificate program; requests will be evaluated on a course-by-course basis.

Faculty

The faculty of the VAST program can be found here.

Course Requirements

The Visualizing Abolition Studies Certificate is awarded on completion of 15 credits in VAST courses.

Take the following course:

FMST 71	Introduction to Visualizing Abolition Studies	5

Plus 10 credits of electives:

10 credits from the following courses (students may earn 10 credits toward the VAST Certificate by taking the full two-quarter sequence of FILM 171S: Making an Exoneree):

ART 108	Art, Design, and Social Practice	5
ART 175	Taking Art to the Streets	5
CRES 115	Frantz Fanon: Resistance, Revolution, and Decolonization	5
CRES 132	Black Speculations	5
CRES 190D	Black Geographies and the Imperative of Abolition	5
FILM 171S	Special Topics in Film and Digital Media Production	5
FMST 176	Law, Prisons, and Popular Culture	5
KRSG 60C	Narratives of Incarceration and Abolition	3
PRTR 132	Writing the Future: Science Fiction	5
PSYC 147A	Psychology and Law	5
PSYC 147B	Psychology and Law	5
VAST 188J	Curation and Justice	5
VAST 199	Independent Study	5

Some courses may have prerequisites.

Per the university's Committee on Educational Policy on Undergraduate Academic Certificate Programs, "course credits should not count toward any other major or minor." Students who are pursuing a VAST certificate should contact the VAST advisor to discuss their plans; the courses for the certificate may need to be adjusted.

PHYSICAL AND BIOLOGICAL

SCIENCES DIVISION

Physical Sciences Building, 5th Floor
(831) 459-2931
https://science.ucsc.edu

The Division of Physical & Biological Sciences at the University of California, Santa Cruz invites you to join a vibrant community of curious minds and change-makers. Our academic programs span a wide range of disciplines designed to inspire and empower students. The intellectual rigor of these programs ensures that our graduates are well prepared for further studies in graduate and professional schools, as well as careers in research and development, healthcare and medicine, environmental and conservation careers, technology and engineering, education and outreach, public policy and consulting, industry and entrepreneurship, and specialized fields or emerging careers in AI, bioinformatics, or sustainability.

Our programs are deeply interdisciplinary, offering students unique opportunities to learn in and beyond the classroom through independent research, collaborative experiments, and hands-on fieldwork. Whether you're studying the intricacies of cells, exploring distant galaxies, investigating the forces of plate tectonics, developing innovative chemical compounds, or uncovering patterns in complex data, you'll gain the skills and experiences that prepare you to explore and discover the world and also to define and improve it.

We are committed to fostering a welcoming and inclusive environment where every student's perspective is valued. The diversity of personal experiences, cultures, and perspectives drives the innovation and creativity needed to meet the most pressing challenges at the cutting edge of scientific research and education. We aim to provide our students with degree-defining experiences and empower them to become impactful members of their community.

Our division encompasses the Departments of Astronomy & Astrophysics; Chemistry & Biochemistry; Earth & Planetary Sciences; Ecology & Evolutionary Biology; Mathematics; Microbiology & Environmental Toxicology; Molecular, Cell, & Developmental Biology; Ocean Sciences; Physics; as well as interdisciplinary programs in Coastal Science & Policy, Environmental Science, Global & Community Health, Materials Science & Engineering, Science Communication, and Science Education. We also host world-renowned research centers, including UCSC’s Natural Reserve System, the Santa Cruz Institute for Particle Physics, and the Institute of Marine Sciences, and have close relationships with UCSC's Genomics Institute, the University of California Observatories, and Lick Observatory.

To explore our program and learn more about how we can support you on your academic journey, please visit our website.

Astronomy and Astrophysics

Astronomy Department Office
269 Interdisciplinary Sciences Building
(831) 459-3081
http://www.astro.ucsc.edu

PROGRAMS OFFERED

Astronomy and Astrophysics Ph.D. (p. 279)

Astrophysics Minor (p. 278)

OTHER PROGRAMS OF INTEREST

Physics (Astrophysics) B.S. (p. 477)

Astronomy and astrophysics has the universe as its domain. Galaxies, stars, planets, and an ever-increasing variety of phenomena observed from ground- and space-based observatories are among the objects of study. Areas of special interest at UCSC include cosmology, exoplanets, stars, and galaxies, high-energy astrophysics, active galaxies, supernovae and nucleosynthesis, black holes, interstellar medium, intergalactic medium, and orbital dynamics. Research areas include observations across a broad range of wavelengths, with a focus on the visible and infrared, the creation of new instruments and telescope technology including adaptive optics, and theory and simulation, using state-of-the-art computing resources. Astronomers use concepts from and contribute to the development of many other scientific disciplines, including optics, mechanics, relativity, atomic and nuclear physics, applied mathematics, chemistry, geology, and meteorology. The interdisciplinary nature of astronomy, including its historical and philosophical elements, makes its study valuable to those planning careers in a variety of fields.

The Department of Astronomy and Astrophysics offers an undergraduate curriculum focused on a diverse set of general education classes, intended for the broad undergraduate community. The department also offers an astrophysics minor as well as additional upper-division classes focusing on computational methods and in astrophysics.

The graduate program is intended for those with a deep interest in the subject. Students are trained in the latest techniques in computation, data analysis, and instrumentation, which have wide utility in academia and industry. The interests of the faculty embrace a wide range of theoretical, observational, and instrumentation aspects of astronomy. Current research and course offerings include exoplanet detection and atmospheric spectroscopy, stellar spectroscopy, time-domain astrophysics, the interstellar medium, galactic structure and evolution, cosmology, the origin of the elements, optical and infrared astronomy, high-energy astrophysics, and advanced astronomical instrumentation including adaptive optics.

Graduate students have access to state-of-the-art instrument development and data reduction technology and an on-campus supercomputer dedicated to astrophysical computation. Graduate students may conduct supervised research using selected telescopic facilities of the Lick Observatory on Mount Hamilton, 55 miles from Santa Cruz. The 10-meter

Keck Telescope in Hawaii, the world's largest, is administered from the UCSC campus and is used for frontier research by UC astronomers.

UNDERGRADUATE PROGRAM

Courses for non-majors

Instruction in astronomy for undergraduates at UC Santa Cruz is designed to meet the needs of several groups of students.

ASTR 1, ASTR 2, ASTR 3, ASTR 4, ASTR 5, ASTR 6, ASTR 7, and ASTR 8 provide a general survey of the universe as now understood from historical and modern observations, and are offered for those not specializing in a scientific discipline. ASTR 1 is a non-mathematical introduction to the universe. ASTR 1 and ASTR 6 on exploring our solar system in the space age, satisfy the scientific inquiry (SI) general education (GE) requirement. ASTR 2 through ASTR 5 and ASTR 7 provide an introduction, with the use of basic mathematics, to a diverse array of modern astronomy, covering planets, stars, the formation of the universe, and black holes, and satisfy the mathematical and formal reasons (MF) general education requirement. ASTR 8 explores the universe with astronomical data and satisfies the statistical reasoning (SR) GE.

Courses for majors in physics (astrophysics) and those with suitable background in calculus and physics.

ASTR 21 is an introductory class, with a higher math level than ASTR 1-8, with a focus on material for first-year astrophysics majors. ASTR 111, 112, 113, 117, 118 cover order-of-magnitude astrophysics (111), stars (112), cosmology (113), high-energy astrophysics (117), and planetary systems (118) at a upper-division level. The advanced undergraduate lab (ASTR 136) complements these other classes. These 100-level courses are predominantly taken by students in physics, Earth sciences, chemistry, computer science, and engineering.

ASTROPHYSICS MINOR

For undergraduate students having a particular interest in the subject, a minor in astronomy and astrophysics is offered. Most students who minor in astronomy and astrophysics are majors in another science, though majors in other fields are also possible.

Course Requirements

The following is required for the astrophysics minor. Some courses may be satisfied via exam credit. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Calculus:

Choose one of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Advanced Calculus:

MATH 23A	Vector Calculus	5

Physics:

Choose one of the following options:

	Either these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 5D	Introduction to Physics IV	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1
PHYS 5D	Introduction to Physics IV	5

PHYS 15A can substitute for PHYS 5A, and PHYS 15C for PHYS 5C.

Upper-Division Courses

Modern Physics:

PHYS 102	Modern Physics	5

Four of the upper-division astronomy electives chosen from the following:

ASTR 111	Order-of-Magnitude Astrophysics	5
ASTR 112	Physics of Stars	5
ASTR 113	Introduction to Cosmology	5
ASTR 117	High Energy Astrophysics	5
ASTR 118	Physics of Planetary Systems	5
ASTR 119	Introduction to Scientific Computing	5
PHYS 129	Particle Physics and Astrophysics	5
PHYS 133	Intermediate Laboratory	5
ASTR 136	Advanced Astronomy Laboratory	5
PHYS 171	General Relativity, Black Holes, and Cosmology	5
EART 160	Planetary Science	5

EART 162	Planetary Interiors	5
EART 163	Planetary Surfaces	5
EART 164	Planetary Atmospheres	5
AM 107	Introduction to Fluid Dynamics	5

ASTRONOMY AND ASTROPHYSICS, PH.D.

Introduction

The Astronomy and astrophysics graduate program is intended for those with a deep interest in the subject. Students are trained in the latest techniques in computation, data analysis, and instrumentation, which have wide utility in academia and in industry. The interests of the faculty encompass a wide range of theoretical, observational, and instrumentation aspects of astronomy. Current research and course offerings include cosmology, galaxies, stars, transient astronomy, exoplanets, astrobiology, and instrumentation/adaptive optics.

Graduate students have access to state-of-the-art instrument labs and an on-campus supercomputer dedicated to astrophysical computation. Graduate students may conduct supervised research at Lick Observatory on Mount Hamilton, 55 miles from Santa Cruz, and the Keck Telescope in Hawaii.

Advancement to Candidacy

Course Requirements

Preparation for Graduate Work in Astrophysics

The UC Santa Cruz graduate program in astronomy and astrophysics is predominantly designed for Ph.D. students seeking a professional career in research and teaching, but with flexibility for students to prepare for careers outside of academia. In view of the thorough preparation in mathematics and physics required for graduate study, most entering astronomy graduate students major in physics or astrophysics as undergraduates.

The suggested minimum requirements for admission to graduate standing at UC Santa Cruz include the following undergraduate courses:

Basic physics.

Mechanics, wave motion, sound, light, electricity and magnetism, thermodynamics, atomic physics, and quantum mechanics.

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
PHYS 5D	Introduction to Physics IV	5

Basic mathematics.

Calculus

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

or equivalent.

And Statistics

STAT 5	Statistics	5

Intermediate-level physics.

PHYS 105	Mechanics	5
PHYS 110A	Electricity, Magnetism, and Optics	5
PHYS 110B	Electricity, Magnetism, and Optics	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116D	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 129	Particle Physics and Astrophysics	5
PHYS 139A	Quantum Mechanics I	5
PHYS 139B	Quantum Mechanics II	5

Intermediate-level mathematics.

MATH 21	Linear Algebra	5
MATH 103A	Complex Analysis	5
MATH 106	Systems of Ordinary Differential Equations	5
MATH 107	Partial Differential Equations	5

Graduate Program Requirements

The graduate curriculum includes six required core courses, which are listed below. Students must pass all six required courses by maintaining a grade of B or higher in five of the required courses and receiving a grade of S (satisfactory) in ASTR 205. ASTR 205 should be taken Satisfactory/Unsatisfactory. All other core classes should be taken ABC/No Pass. Students will take five of these classes in their first year and one class (either ASTR 220A or ASTR 233) in their second year.

1.1 Core Curriculum (6 courses)

ASTR 202	Astrophysics I	5
ASTR 204	Astrophysics II	5
ASTR 205	Introduction to Astronomical Research and Teaching	5
ASTR 220A	Stars and Planets I	5
ASTR 233	Galaxies and Cosmology I	5
ASTR 257	Observational Astronomy	5

1.2 Elective Courses (choose 2 over first 2 years)

Students must pass two elective classes from the following list of six courses. These classes are graded Satisfactory/Unsatisfactory. Subject to instructor availability, the Astronomy and Astrophysics Department expects to offer

each of these classes every two years. Students should complete this requirement by the end of their second year.

ASTR 222	Stars and Planets II	5
ASTR 230	Diffuse Matter in Space	5
ASTR 234	Statistical Techniques in Astronomy	5
ASTR 240A	Galaxies and Cosmology II	5
ASTR 260	Instrumentation for Astronomy	5
ASTR 289	Adaptive Optics and Its Application	5

1.3 Additional Electives (3 courses)

Students must pass three additional elective classes. There are three ways to fulfill this requirement, which are described below. Students have the option of taking these classes ABC/No Pass or Satisfactory/Unsatisfactory, subject to the requirements of the individual courses. Students should complete this requirement by the end of their second year.

1) Students may take additional classes from the list in Section 1.2.

2) Students may take ASTR 215, Research Practicum for Astrophysics, which is a project-based class that introduces students to topics substantially outside of their primary research area.

3) Students may take courses in other departments that are relevant to an astronomy and astrophysics Ph.D., most often in physics, Earth and planetary sciences, applied mathematics, and statistics. This coursework must cover topics that are not covered in the astronomy and astrophysics graduate curriculum or its assumed pre-requisites. The courses must count toward the Ph.D. requirements of the offering departments. The graduate program director approves these courses on a case-by-case basis.

Additional Research Requirements

1) Students must meet at least quarterly (and ideally weekly) with an assigned adviser.

2) By the end of their second academic year, students must (a) complete a research project advised by a UC Santa Cruz faculty member, either in astronomy and astrophysics, or approved by the department, (b) give a department talk on this work, and (c) submit a lead-author paper on this work to a refereed journal or equivalent.

3) Pursue independent research, under the mentorship of their adviser, leading to a doctoral dissertation.

Foreign Language Requirements

Teaching Requirements

1) Serve as a teaching assistant two times, and at least once during the first seven quarters.

2) Write a teaching statement, similar to the type that would be expected of someone applying for a university faculty job. The teaching statement will be evaluated by a member of the astronomy and astrophysics faculty. This requirement may be completed at any time during the Ph.D.

Pre-Qualifying Requirements

Qualifying Examination

By the end of the third year, students must complete a qualifying examination that presents and defends a proposed thesis topic.

Post-Qualifying Requirements

Degree Timeline

The department has established six years as the normative time to degree. Normative time is the elapsed calendar time, in years, that, under normal circumstances and excluding department-approved leaves, will be needed to complete all requirements for the Ph.D.

Exceptions for extension beyond six years will be granted only for exceptional extenuating circumstances and will be decided upon by the department chair in consultation with the faculty.

Dissertation

Dissertation

After passing the board review based on the requirements and the qualifying examination, students pursue independent research leading to the doctoral dissertation.

Dissertation Defense

Upon completion of the Ph.D. dissertation, students must pass an oral dissertation defense. A completed draft of the thesis must be submitted to the dissertation committee at least two weeks before the date of the defense, and the defense itself must occur at least two weeks before the campus deadline for thesis submissions in that quarter. Exceptions to this policy will be granted only under exceptional circumstances and must be approved by the department chair, graduate program director, and the student's thesis committee.

Academic Progress

Applying for Graduation

[Optional Catchall]

Chemistry and Biochemistry

230 Physical Sciences Building
(831) 459-4125
https://science.ucsc.edu/department/chemistry/

PROGRAMS OFFERED

Chemistry B.A. (p. 282)

Chemistry B.S. (p. 289)

Chemistry B.S. with Biochemistry Concentration (p. 297)

Biochemistry and Molecular Biology B.S. (p. 300)

Chemistry Minor (p. 307)

Chemistry M.S. (p. 309)

Chemistry Ph.D. (p. 310)

Chemistry is central to modern science. Ultimately, most phenomena in biology, medicine, materials, engineering, geology, and the environmental sciences can be described in terms of the chemical and physical behavior of atoms and molecules. Because of the wide appeal and utility of chemistry, UC Santa Cruz offers comprehensive lower-division courses in introductory and organic chemistry, differing in emphasis and style, to meet diverse needs. Students should also note the numerous upper-division course offerings and select those most suitable to their academic interests. The curriculum in chemistry exposes the student to the principal areas of modern chemistry, including organic, inorganic, physical, materials, analytical, and biochemistry. The curriculum is designed to meet the needs of students who plan to graduate with a bachelor of arts (B.A.) or a bachelor of science (B.S.) degree, as well as those who wish to pursue an advanced degree. UCSC Chemistry B.A. or B.S. graduates are well prepared to pursue a career in chemistry or a related field. The B.S. degree can be completed with a concentration in biochemistry.

Research in chemistry at UCSC is closely interwoven with graduate and undergraduate education. The chemistry and biochemistry research program is highly active at the graduate level, and faculty also encourage undergraduates to become involved in research. Research can lead to academic credit in Senior Thesis (CHEM 195A, CHEM 195B, CHEM 195C) or Senior Research (CHEM 199 or CHEM 199F). The department offers a course-based undergraduate research experience in biochemistry (CHEM 160J, CHEM 160K, CHEM 160L) and chemical biology (CHEM 161J, CHEM 161K, CHEM 161L). There are also opportunities for interdisciplinary research combining chemistry with a wide range of sciences, for example, biology, physics, geology, ocean sciences, microbiology, and environmental toxicology. At UCSC, it is not uncommon for students to become co-authors of original work published in research journals.

Chemistry and biochemistry faculty, research and administrative staff, and approximately 100 graduate students and 15-20 postdoctoral fellows are housed in the Physical Sciences Building near the Science and Engineering Library. The department maintains and constantly expands cutting-edge facilities (such as the Chemical Screening Center, Macromolecular Structure Function Core Facility, Cryo-Electron Microscopy, Mass Spectrometry, NMR Facility, and X-Ray Facility) that enable scientists to carry out their research

The Science and Engineering Library has an excellent collection of current journals and reference works, as well as access to earlier volumes of all the major journals. Many of these are subscribed to online. Additional source material can be readily and rapidly obtained on interlibrary loan.

UNDERGRADUATE PROGRAM

A degree in chemistry or biochemistry and molecular biology opens the door to a wide variety of academic careers. Some UC Santa Cruz graduates are working as industry researchers in electronic materials, biotechnology, medicinal chemistry, pharmacy, or laser technology. Others have entered government service as research chemists in the Food and Drug Administration, the Environmental Protection Agency, DOD, DOE, or law enforcement crime laboratories. Fields such as patent law, commercial development, and scientific writing are open to graduates. Many chemistry majors go on to university graduate programs across the nation to prepare for careers in academia, government, or industry. The degrees in the Department of Chemistry and Biochemistry at UC Santa Cruz also provide a strong disciplinary background in preparation for a career in the important and much-needed area of science teaching in high school. A major in chemistry is also an excellent beginning for one of the many opportunities in the health sciences and can serve as a preparative degree for medical, dental, and pharmacy school.

The UCSC Department of Chemistry and Biochemistry offers both Chemistry B.S. (with or without biochemistry concentration) and B.A. degree programs. For either degree program, the courses stress the fundamentals of chemistry and allow students to pursue independent research. The B.S. degree provides complete coursework in all subdisciplines of chemistry and can meet the requirements for accreditation by the American Chemical Society. The B.A. degree has fewer specific course requirements and is suited for students who desire more flexibility to explore other academic disciplines. Either degree is suitable for graduate study, getting an industry job following graduation, or preparation for a career or further study in health sciences.

A minor in chemistry is also offered for those who wish to have a strong complementary program in chemistry while majoring in another area of study.

A B.S. in Biochemistry and Molecular Biology (BMB) is excellent preparation for medical, dental, and graduate school, as well as careers in biotechnology; pharmaceutical design, development, and sales; food and drug design; and environmental research and protection. The BMB B.S. is interdisciplinary and involves coursework in the Department of Molecular, Cell, and Developmental Biology.

GRADUATE PROGRAM

The Department of Chemistry and Biochemistry offers three graduate degrees: the Doctor of Philosophy (Ph.D.), a thesis Master of Science (M.S.), and a coursework M.S. The Ph.D. and thesis M.S. programs are designed to help students develop into independent scholars while pursuing the excitement of scientific research in a personal, supportive environment. Both the Ph.D. and the research M.S. programs prepare students for careers in academia, industry, government laboratories, and other settings requiring an

advanced education in chemistry and related disciplines. The coursework M.S. does not require research and is suited to future teachers and others wishing to update or broaden their chemical expertise. Approximately 100 graduate students are currently enrolled in the graduate program.

The Department of Chemistry and Biochemistry invites well-known researchers from outside UC Santa Cruz to share and discuss their current research. Visiting speakers from other universities and government or industrial research labs expose students to advances at the frontiers of chemical research, offering the opportunity for personal contact with leading scientists. All Ph.D. and thesis M.S students are required to enroll in the CHEM 291, Research Seminar until they have advanced to candidacy.

Teaching assistantships provide both financial support and the opportunity to put into practice the required pedagogical training offered in CHEM 296 (presentation techniques, discussion strategies, laboratory teaching skills, laboratory safety procedures, and time management). Doctoral students may also be supported as graduate-student researchers.

CHEMISTRY B.A.

Information and Policies

The requirements for the bachelor of arts (B.A.) in chemistry have been kept to a minimum so that students may tailor their program to their own purposes For example, taking fewer prescribed courses for the major enables students to pursue a double major, to pursue more independent research, to complete major requirements late in their college career, to take more physical and biological science courses outside of chemistry to enter an interdisciplinary area such as health sciences or education, or to take more courses in other arts and sciences disciplines). While more flexible, the degree is still suitable for students who intend to pursue graduate studies or careers in chemistry.

Academic Advising for the Program

The chemistry and biochemistry advisors provide counsel to undergraduate majors. Students are encouraged to seek out advising and assistance in planning their academic careers to ensure completion of their major in a timely manner. For advising assistance, please contact chemistry and biochemistry advising at chemistryadvising@ucsc.edu or visit the department's advising webpage. All students interested in the chemistry B.A. should read this catalog to learn more details about the major.

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities, and attitudes that students are expected to develop over the course of their studies.

Students graduating with a B.A. in chemistry should be able to:

- demonstrate mastery of a broad set of chemical knowledge concerning the fundamentals in the basic areas of the discipline (organic, inorganic, and physical chemistry).
- solve area-specific problems by identifying the essential parts of a problem, formulating a strategy for solving the problem, applying appropriate techniques to arrive at a solution, testing the correctness of the solution, and interpreting their results.
- use modern library search tools (such as SciFinder, PubMed, or Web of Science) to locate and retrieve scientific information about a topic, chemical, chemical technique, or an issue relating to chemistry.
- know and follow the proper procedures and regulations for safe handling and use of chemicals.
- understand the objective of their chemical experiments, properly carry out the experiments, and appropriately record and analyze the results.
- use computers in data acquisition and processing, and use available software as a tool in data analysis.
- use standard laboratory equipment, modern instrumentation, and classical techniques to carry out experiments.
- communicate the concepts and results of their laboratory experiments through effective writing and/or oral communication using the discipline standards for reporting and citation.
- collaborate effectively as part of a team to solve problems, debate different points of view, and interact productively with a diverse group of team members.

Getting Started in the Major: Frosh

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Prospective chemistry majors should have a solid foundation in high school mathematics; familiarity with algebra, logarithms, trigonometry, and analytic geometry is particularly required. Incoming students in the chemistry major should complete the Math Placement process as early as possible, so that the placement is posted before enrollment begins. For more information, please review the Math Placement website.

Students taking chemistry at the University of California, Santa Cruz, have a number of options for satisfying their general chemistry requirements:

1. Begin with CHEM 3A, CHEM 3B, CHEM 3C with associated labs, CHEM 3BL and CHEM 3CL.
2. Students with an exceptionally strong background in high school chemistry may begin with the advanced general chemistry sequence (if offered): CHEM 4A and CHEM 4B with associated labs CHEM 4AL and CHEM 4BL. Enrollment in the CHEM 4 series requires

qualification; see the "Qualifying for the Advanced General Chemistry series" section below.

3. Students with transfer exam credit will take the next course in the general chemistry sequence.

Any of the above pathways fully satisfies the general chemistry prerequisites of any major declaration or required/elective classes for programs in the Physical and Biological Sciences (PBSci) Division.

Qualifying for the Advanced General Chemistry series

Note: CHEM 4 is not offered in the 2025-26 academic year.

CHEM 4 is an accelerated two-quarter series intended for students who enter UC Santa Cruz with excellent preparation in high school chemistry. Students in this series will learn fundamental concepts in chemistry at a faster pace than our traditional general chemistry series (CHEM 3), with emphasis on quantum theory, molecular structure, and chemical driving forces. Students with an exceptionally strong background in high school chemistry are especially encouraged to begin with CHEM 4A (Advanced General Chemistry: Molecular Structure and Reactivity) instead of CHEM 3A.

All students who want to enroll in the accelerated series must complete an online learning module and assessment administered by the Chemistry and Biochemistry Department, regardless of high school AP scores. Once the online learning module and assessment is started (by completing the initial knowledge check), students will have six weeks to complete the online learning module and assessment and, once the module and assessment are completed, students may request enrollment in CHEM 4A. Students who complete the online learning module and assessment and submit their proof of completion by the established deadline are eligible to remain enrolled in CHEM 4A. Students can access the full CHEM 4A qualification instructions and the online learning module by joining a canvas class.

If you have questions about this process, please contact chemistry advising at chemistryadvising@ucsc.edu.

Transfer Information and Policy

General information about transferring to UC Santa Cruz can be found on the transfer preparation advising website. Students planning to transfer to UC Santa Cruz from a California community college should reference assist.org to determine which courses are equivalent to required and recommended pre-transfer courses.

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer/entry to UCSC. Courses must be completed with a grade of C or better with a cumulative GPA of 2.50 in these courses. Completion of these courses also satisfies all major qualification requirements. For students with exam credit for any of the courses, a grade of A will be used in the GPA calculation.

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
	AND	
MATH 22	Introduction to Calculus of Several Variables	5

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Recommended pre-transfer courses

Completion of the following courses is highly recommended before the transfer to ensure timely graduation. Students who only complete the minimum required transfer coursework for the major prior to transfer will likely need more than two years to complete the chemistry B.A.:

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1

Getting Started in the Major: Transfer Students

Transfer students are strongly encouraged to meet with the chemistry academic advisor in their first quarter. For assistance with advising, please email chemistryadvising@ucsc.edu.

Transfer students must already be qualified at time of entry to UCSC to be accepted into the chemistry major. Any student who fails to meet these requirements may file an appeal for admission to the major, but admission is not guaranteed.

Students who transfer as juniors can declare their major any time after coming to UC Santa Cruz but are required to be declared in a major by the declaration deadline in their second term at UC Santa Cruz.

Transfer students who are proposed in a different major (other than chemistry) require permission from the department to change into the major. Admission to the major is not guaranteed.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete each of the following qualification courses, or their equivalents, by their campus-established declaration deadline with a grade of C or better and with a cumulative grade point average (GPA) of 2.50 or greater:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

And one of the following options:

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	OR	
MATH 23A	Vector Calculus	5
	OR	
AM 30	Multivariate Calculus for Engineers	5

Determining qualification for the major

When pursuing major qualification, students should keep the following details in mind:

- All courses must be taken for a letter grade. See the Letter Grade Policy below.
- A grad of A will be used in the GPA calculations for students with exam credit for any of the above courses.
- UC Santa Cruz native students with two or more grades of NP, C-, D+, D, D-, or F in courses required to qualify for the major are not eligible to declare.

Transfer students should also consult the Transfer Information and Policy section above.

How to Declare a Major

Students may declare a major as early as they would like if they have decided which major to pursue and have satisfied prerequisites or qualification requirements for the major.

Per the UC Santa Cruz major declaration policy, students who enter UCSC as frosh are required to be formally declared in a major by the campus deadline in their 6th quarter and before enrolling in their third year (or equivalent). Upper-division junior transfer students are required to be declared in a major by the deadline in their second term at UCSC.

Students should petition to declare a chemistry major once they have met all qualification criteria and have an official, signed, department-approved academic plan on file.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh, second quarter for junior transfer students), will either be approved, denied, or provided with conditions (e.g., completion of final qualification courses with certain grades), but will not be declared until all requirements have been met and satisfactory grades have been posted.

Each major/minor advising office has a process for declaring. For assistance with declaring the chemistry major, please contact chemistry and biochemistry advising at chemistryadvising@ucsc.edu.

Appeal Process

Students may appeal to the major either prior to or after submitting a petition to declare and being denied (in the latter case, appeals must be submitted within 15 days from the date the denial notification was sent). Within 15 days of receipt of the appeal being submitted, the department will notify the student and their affiliated college of the decision.

To appeal to declare a chemistry major, complete the Chemistry Major Appeal form via DocuSign.

To complete the major appeal form, you will need:

- An official Academic Plan (signed by the chemistry major advisor)
- Unofficial transcripts
- An appeal letter

Additional instructions can be found in the form.

Note: The information you share in your appeal or with your advisors will be kept confidential and shared only with campus officials as required to serve you in an advising capacity or process your appeal. However, in limited circumstances, including those related to potential harm to yourself or others, sexual assault, and abuse, we may be required by law to report incidents you disclose to other need-

to-know offices on campus such as the Title IX Office and/or University of California Police Department. If you are in need of support for any issues, please see the list of confidential and/or support resources.

Letter Grade Policy

All courses used to satisfy degree requirements of the major must be taken for a letter grade and earn a grade of C or higher.

Course Substitution Policy

At least half of the upper-division courses (CHEM 100–CHEM 199) required for any chemistry major must be taken through the chemistry program at UCSC, not as transfer credits from another department or institution. Students are advised to contact the Chemistry and Biochemistry Department undergraduate advising office before enrolling in any chemistry or biochemistry upper-division courses at other institutions to verify articulation.

Independent Study Policy

Students may take up to 5 credits of individual studies coursework per quarter.

There are three different independent studies options in Chemistry and Biochemistry Department: CHEM 199 and CHEM 195. CHEM 199 Independent Research is for any student working on an independent research project under the guidance of UC Santa Cruz faculty. Independent research can be taken for 5 credits (CHEM 199) or 2 credits (CHEM 199F). CHEM 195 Thesis Research is for students performing independent research under the guidance of UC Santa Cruz faculty AND who will complete a final thesis. CHEM 186L is an additional option for any student working on an independent research project under the guidance of a UC Santa Cruz faculty. CHEM 186L can be used to satisfy the Senior Exit Lab and DC requirements, can not be taken concurrently with CHEM 199 or CHEM 195, and can only be taken once.

Throughout their undergraduate career at UC Santa Cruz, students may take up to 15 credits total of CHEM 199 (either CHEM 199 or CHEM 199F) and CHEM 186L. For example, a student could take three quarters of CHEM 199, up to seven quarters of CHEM 199F, or some combination of CHEM 199, CHEM 199F,and CHEM 186L (so long as the total is not more than 15 credits).

Throughout their undergraduate career at UC Santa Cruz, students may take up to 15 credits total of CHEM 195. CHEM 195 credits can be taken in addition to up to 15 credits of CHEM 199/CHEM 199F/CHEM 186L. Note that there are three different CHEM 195 courses (CHEM 195A, CHEM 195B, and CHEM 195C) that should be taken in order. The expectation for CHEM 195 is that satisfactory completion of the course is contingent on the submission of a final thesis that meets the faculty sponsor's approval. If there is doubt that a thesis could be completed, CHEM 199 Independent Research is a more appropriate course.

Double Majors and Major/Minor Combinations Policy

A student cannot double major/minor in chemistry and any other major/minor offered by the departments of chemistry and biochemistry.

To declare a double major, a student must obtain an academic plan showing that they are able to complete both degrees within the maximum number of quarters of enrollment available at UC Santa Cruz. Therefore, the steps for a student to pursue chemistry as a second major are as follows:

1. The student must have an up-to-date and accurate major academic plan for their initial major.
2. The student must make an appointment with the chemistry major advisor and send the link to their initial major academic plan to chemistryadvising@ucsc.edu.
3. The chemistry major advisor will review the major academic plan and will add the chemistry major courses to the academic plan, as necessary. In doing so, the advisor will determine if it is a viable double major considering double unit counting, enrollment limitations, and time-to-degree guidelines.
4. The chemistry major advisor will discuss the double major plan with the student during their scheduled appointment. If the plan is viable, it will be approved and signed by both the student and the chemistry major advisor.
5. Once the student has an approved and viable double major plan and qualifies for the major, the student must petition to declare chemistry as a second major using the Petition for Major/Minor form in MyUCSC.

Honors

Department honors in the majors are awarded to graduating students whose academic performance demonstrates excellence at a GPA of 3.5 or above in required major coursework. Department highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above in required major coursework.

Materials Fee

Chemistry students should be aware of the materials fee required for some courses. The fee is billed to the student's account for specific laboratory materials purchased by the Chemistry and Biochemistry Department through the university. Students may incur additional expenses for individual supplies.

Program for Students of the Health Sciences

Students intending to enter medical, dental, or another health science professional school can satisfy entrance requirements with a major program in chemistry supplemented with further courses, especially in biology, as specified by the admissions requirements of the school where they intend to apply.

Students are strongly encouraged to review the Pre-Health section of the Career Success website to review preparation recommendations, prerequisite and other information about professional health education programs (medical school, dental school, etc.), and more important information to assist in preparation for a career in health sciences.

Students are urged to contact Career Success for assistance with the application process.

[Optional Catchall]

Requirements and Planners

Course Requirements

The following is required to complete the Chemistry B.A. Some courses may be satisfied via exam credit.

Lower-Division Courses

General Chemistry:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4BL	Advanced General Chemistry Lab	2

Calculus:

Choose one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

A student may combine the MATH 11 series with the MATH 19 series to complete this portion of the major requirement(s) (for example, a student can take and complete MATH 19A and then take and complete MATH 11B), but must follow the Mathematics Department's Calculus Series Transition Policy.

Multivariable Calculus:

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or this course	
AM 30	Multivariate Calculus for Engineers	5

Physics:

Choose one of the following options:

	Either these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6N	Introductory Physics III Laboratory	1

A student may combine the PHYS 5 series with the PHYS 6 series to complete this portion of the major requirement(s), but must follow the Physics Transition policies.

Organic Chemistry:

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2

By permission and invitation of the instructor, students may substitute CHEM 8M with CHEM 8N, Honors Organic Chemistry Lab. This course is designed to introduce the exceptional student to many of the techniques associated with organic chemistry while taking part in an active organic chemistry research experience.

Upper-Division Courses

Intermediate Organic Chemistry:

CHEM 110	Intermediate Organic Chemistry with Emphasis on Synthesis and Analytical Methods	5
CHEM 110L	Intermediate Organic Chemistry Laboratory	2

By permission and invitation of the instructor, students may substitute CHEM 110L with CHEM 110N, Honors Organic Chemistry Lab. This course is designed to introduce the exceptional student to many of the techniques associated with

organic chemistry while taking part in an active organic chemistry research experience.

Inorganic Chemistry:

CHEM 151A	Chemistry of Metals	5
CHEM 151L	Inorganic Chemistry Laboratory	2

Satisfies part of the Disciplinary Communication (DC) and Comprehensive requirements.

Physical Chemistry:

CHEM 163A	Quantum Mechanics and Basic Spectroscopy	5
CHEM 163B	Chemical Thermodynamics	5
CHEM 164	Physical Chemistry Laboratory	5

Students may substitute CHEM 163A and CHEM 163B with BIOC 163A and BIOC 163B, respectively. A student may combine the CHEM 163 series with the BIOC 163 series to complete this portion of the major requirement(s). For example, a student can take and complete CHEM 163A and then take and complete BIOC 163B.

One of the following laboratory courses:

CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Note: CHEM 160L requires completion of CHEM 160J and CHEM 160K as prerequisites, and CHEM 161L requires completion of CHEM 161J and CHEM 161K as prerequisites.

Students currently conducting senior thesis research are strongly encouraged to choose an advanced laboratory in the CHEM 146 series that is outside their research area.

Electives

At least two from the following:

BIOC 100A	Biochemistry and Molecular Biology	5
CHEM 103	Biochemistry	5
CHEM 124	Bioanalytical Chemistry	4
CHEM 143	Organic Chemical Structure and Reactions	5
CHEM 144	Catalysis In Organic Synthesis Using Metals and Metalloids Based Reagents	5
CHEM 151B	Chemistry of the Main Group Elements	5
CHEM 156C	Materials Chemistry	5
CHEM 163C	Statistical Thermodynamics and Kinetics	5
CHEM 169	Chemistry and Biology of Drug Design and Discovery	5
CHEM 171	Chemical Biology	5
METX 101	Sources and Fates of Pollutants	5
METX 102	Cell and Molecular Toxicology	5
OCEA 120	Aquatic Chemistry: Principles and Applications	5
OCEA 121	Aqueous Geochemistry	5
PHYS 156	Applications of Quantum Materials	5
PHYS 180	Biophysics	5

Students cannot receive elective credit toward the major for both BIOC 100A and CHEM 103.

Students may also satisfy the elective requirement by completing a chemistry graduate course with the permission of the instructor and department. Please consult with chemistry and biochemistry major advising prior to enrolling.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) Requirement. The DC Requirement for the bachelor of arts degree in chemistry is satisfied by completing the following. This also satisfies the comprehensive requirement:

CHEM 151L	Inorganic Chemistry Laboratory	2

Plus one of the following courses:

CHEM 124	Bioanalytical Chemistry	4
CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Note: CHEM 160L requires completion of CHEM 160J and CHEM 160K as prerequisites, and CHEM 161L requires completion of CHEM 161J and CHEM 161K as prerequisites.

Comprehensive Requirement

The comprehensive requirement is a part of all UCSC degrees. For the chemistry B.A., this requirement can be satisfied by receiving a passing grade in the upper-division labs listed below. These courses provide modern, individualized training in the discipline thus serving as relevant capstone experiences.This also satisfies the Disciplinary Communication (DC) requirement.

CHEM 151L	Inorganic Chemistry Laboratory	2

Plus one of the following courses:

CHEM 124	Bioanalytical Chemistry	4
CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Note: CHEM 160L requires completion of CHEM 160J and CHEM 160K as prerequisites, and CHEM 161L requires CHEM 161J and CHEM 161K as prerequisites.

Planners

The sample academic plans below are for the chemistry B.A. major. They serve informational purposes and do not reflect all university, general education, and credit requirements. See the Undergraduate Graduation Requirements section of the catalog for more information.

This is the ideal academic plan for those pursuing a chemistry B.A. major. If needed, the plan can be arranged differently. Please meet with an academic advisor in the Chemistry and Biochemistry Department to review your individualized official academic plan.

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 11A or MATH 19A CHEM 3A or CHEM 4A	MATH 11B or MATH 19B CHEM 3B and CHEM 4AL	CHEM 3C and CHEM 3CL (not required if CHEM 4 series completed) CHEM 3BL or CHEM 4B and CHEM 4BL	
2nd (soph)	CHEM 8A CHEM 8L PHYS 6A PHYS 6L WRIT 2**	CHEM 8B CHEM 8M MATH 22	CHEM 110 CHEM 110L PHYS 6B PHYS 6M	
3rd (junior)	CHEM 163A PHYS 6C PHYS 6N	CHEM 163B CHEM 151A CHEM 151L	CHEM elective	
4th (senior)	CHEM elective or CHEM 146A*	CHEM 164	CHEM elective or CHEM 146B/CHEM 146C*	

	College Core	WRIT 1/WRIT 1E (if needed)	

* CHEM 146A is offered in fall quarter; CHEM 146B and CHEM 146C are offered in spring quarter. Only ONE advanced lab (CHEM 146A, CHEM 146B, or CHEM 146C) is required for degree completion. Alternatively, students can take the CHEM 160 or CHEM 161 series: CHEM 160J/CHEM 161J, CHEM 160K/CHEM 161K, and CHEM 160L/CHEM 161L, which are offered in the fall, winter, and spring, respectively.

** WRIT 2 should be taken in or before spring quarter of the second year. Questions about WRIT coursework or any other non-Chemistry major requirements should be directed to college advising.

Two of the required general education requirements will be fulfilled by the major requirements listed in the above planner (MF SI). In addition to the specific courses shown in these planners, a student will also need to complete courses satisfying the following general education requirements: Cross-Cultural Analysis, Ethnicity Race, Interpreting Arts Media, Statistical Reasoning, Textual Analysis Interpretation, Perspectives, and Practice.

Sample Transfer Two-Year Planner

This is a sample academic plan for students who have transferred in with both the required and highly recommended pre-transfer courses.

Note: Students who did not complete both the required and highly recommended courses prior to transfer will need to follow a different academic plan and may require additional time to degree.

Please meet with an advisor from the Chemistry and Biochemistry Department to create and review your individualized official academic plan.

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	CHEM 163A PHYS 6C PHYS 6N	CHEM 163B CHEM 151A CHEM 151L	CHEM 110 CHEM 110L	
2nd (senior)	CHEM elective 1 CHEM 146A*	CHEM 164	CHEM elective 2 CHEM 146B or CHEM 146C*	

* CHEM 146A is offered in fall quarter; CHEM 146B and CHEM 146C are offered in spring quarter. Only ONE advanced lab (CHEM 146A, 146B, or 146C) is required for degree completion. Alternatively, students can take the CHEM 160 series: CHEM 160J/CHEM 161J, CHEM 160K/CHEM 161K, and CHEM 160L/CHEM 161L, which are offered in the fall, winter, and spring, respectively.

CHEMISTRY B.S.

Information and Policies

Introduction

The bachelor of science major program is designed for students who intend to pursue a professional career in chemistry. It is rigorous and broadly covers all chemistry subdisciplines.

Academic Advising for the Program

The Chemistry and Biochemistry Department advisors provide counsel to undergraduate students pursuing departmental majors. Students are encouraged to seek out advising and assistance in planning their academic careers to ensure completion of their major in a timely manner. For advising assistance, please contact Chemistry and Biochemistry Department advisors at chemistryadvising@ucsc.edu or visit the chemistry advising webpage. All students interested in the chemistry B.S. should read this catalog to learn more details about the major.

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities, and attitudes that students are expected to develop throughout their studies.

Students graduating with a B.S. in chemistry should be able to:

- demonstrate mastery of a broad set of chemical knowledge concerning the fundamentals in the basic areas of the discipline (organic, inorganic, analytical, physical, and biochemistry).
- solve area-specific problems by identifying the essential parts of a problem, formulating a strategy for solving the problem, applying appropriate techniques to arrive at a solution, testing the correctness of the solution, and interpreting their results.
- use modern library search tools (such as SciFinder, PubMed, or Web of Science) to locate and retrieve scientific information about a topic, chemical, chemical technique, or an issue relating to chemistry.
- know and follow the proper procedures and regulations for safe handling and use of chemicals.
- understand the objective of their chemical experiments, properly carry out the experiments, and appropriately record and analyze the results.

- use computers in data acquisition and processing, and use available software as a tool in data analysis.
- use standard laboratory equipment, modern instrumentation, and classical techniques to carry out experiments.
- communicate the concepts and results of their laboratory experiments through effective writing and/or oral communication using the discipline standards for reporting and citation.
- collaborate effectively as part of a team to solve problems, debate different points of view, and interact productively with a diverse group of team members.

Getting Started in the Major: Frosh

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Prospective chemistry majors should have a solid foundation in high school mathematics; familiarity with algebra, logarithms, trigonometry, and analytic geometry is particularly required. Incoming students in the chemistry major should complete the Math Placement process as early as possible, so that the placement is posted before enrollment begins. For more information, please review the Math Placement website.

Students taking chemistry at the University of California, Santa Cruz, have a number of options for satisfying their general chemistry requirements:

1. Begin with CHEM 3A, CHEM 3B, CHEM 3C with associated labs, CHEM 3BL and CHEM 3CL.
2. Students with an exceptionally strong background in high school chemistry may begin the advanced general chemistry sequence (if offered): with CHEM 4A and CHEM 4B with associated labs, CHEM 4AL and CHEM 4BL Enrollment in the CHEM 4 series requires qualification – see the "Qualifying for the Advanced General Chemistry series" admission policy section below).
3. Students with transfer or exam credit will take the next course in the general chemistry sequence.

Any of the above pathways fully satisfies the general chemistry prerequisites of any major declaration or required/elective classes for programs in the Physical and Biological Sciences (PBSci Division).

Qualifying for the Advanced General Chemistry series

Note: *CHEM 4 is not offered in the 2025-26 academic year.*

CHEM 4 is an accelerated two-quarter series intended for students who enter UC Santa Cruz with excellent preparation in high school chemistry. Students in this series will learn fundamental concepts in chemistry at a faster pace than our traditional general chemistry series (CHEM 3), with emphasis on quantum theory, molecular structure, and chemical driving forces. Students with an exceptionally strong background in high school chemistry are especially encouraged to begin with CHEM 4A (Advanced General Chemistry: Molecular Structure and Reactivity) instead of CHEM 3A.

All students who want to enroll in the accelerated series must complete an online learning module and assessment administered by the Chemistry and Biochemistry Department. Once the online learning module and assessment is started (by completing the initial knowledge check), students will have six weeks to complete the online learning module and assessment and, once the module and assessment are completed students may request enrollment in CHEM 4A.. Students who complete the online learning module and assessment and submit their proof of completion by the established deadline are eligible to remain enrolled in CHEM 4A. Students can access the full CHEM 4A qualification instructions and the online learning module by joining a canvas class.

If you have questions about this process, please contact a Chemistry and Biochemistry Department advisor at chemistryadvising@ucsc.edu.

Transfer Information and Policy

General information about transferring to UC Santa Cruz can be found on the Transfer Preparation Advising website. Students planning to transfer to UC Santa Cruz from a California community college should reference assist.org to determine which courses are equivalent to required and recommended pre-transfer courses.

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer /entry to UCSC. Courses must be completed with a grade of C or better with a cumulative GPA of 2.50 in these courses. Completion of these courses also satisfies all major qualification requirements. For students with exam credit for any of the courses, a grade of A will be used in the GPA calculation.

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
	AND	
MATH 22	Introduction to Calculus of Several Variables	5

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Students must complete the above courses or their equivalents, with a grade of C or better, and have a cumulative GPA in these courses of 2.5 or greater.

For courses required to qualify for the major that have been satisfied with advanced placement (AP) credit based on an AP examination score (See Admissions AP Chart), students may substitute a grade of A for each course when calculating their GPA.

Note for winter transfer students: CHEM 8A/CHEM 8L are additional pre-transfer requirements for students planning to enter UCSC in the winter. CHEM 8A/CHEM 8L are still recommended for fall transfer admits, as listed below.

Recommended pre-transfer courses

Completion of the following courses is highly recommended before the transfer to ensure timely graduation. Students who only complete the minimum required transfer coursework for the major prior to transfer will likely need more than two years to complete the chemistry B.S.

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1

If transferring into CHEM BS with BIOC concentration add these as pre-transfer courses:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5

Getting Started in the Major: Transfer Students

Transfer students are strongly encouraged to meet with a Chemistry and Biochemistry Department advisor in their first quarter. For assistance with advising, please email chemistryadvising@ucsc.edu.

Transfer students must already be qualified at time of entry to UCSC to be accepted into the chemistry major. Any student who fails to meet these requirements may file an appeal for admission to the major, but admission is not guaranteed.

Students who transfer at the junior-year level can declare their major any time after coming to UC Santa Cruz, but are required to be declared in a major by the declaration deadline in their second term at UCSC.

Transfer students who are proposed in a different major (other than chemistry) require permission from the department to change into the major. Admission to the major is not guaranteed.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete each of the following qualification courses, or their equivalents, by their campus-established declaration deadline with a grade of C or better and with a cumulative grade point average (GPA) of 2.50 or greater:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

And one of the following options:

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	or this course	
MATH 23A	Vector Calculus	5
	or this course	
AM 30	Multivariate Calculus for Engineers	5

Determining qualification for the major

When pursuing major qualification, students should keep the following details in mind:

- All courses must be taken for a letter grade. See the Letter Grade Policy below.
- A grade of A will be used in the GPA calculation for each student with exam credit for any of the above courses.
- UC Santa Cruz native students with two or more grades of NP, C-, D+, D, D-, or F in courses required to qualify for the major are not eligible to declare.

Transfer students should also consult the Transfer Information and Policy section above.

How to Declare a Major

Students may declare a major as early as they would like if they have decided which major to pursue and have satisfied prerequisites or qualification requirements for the major.

Per the UC Santa Cruz major declaration policy, students who enter UCSC as frosh are required to be formally declared in a major by the campus deadline in their 6th quarter and before enrolling in their third year (or equivalent). Upper-division junior transfer students are required to be declared in a major by the deadline in their second term at UC Santa Cruz.

Students should petition to declare a chemistry major once they have met all qualification criteria and have an official, signed, department-approved academic plan on file.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Students petitioning when the campus declaration deadline is imminent (i.e., in their 6th quarter, for students admitted as frosh, second quarter for junior transfer students), will either be approved, denied, or provided with conditions (e.g., completion of final qualification courses with certain grades), but will not be declared until all requirements have been met and satisfactory grades have been posted.

Each major/minor advising office has a process for declaring. For assistance with declaring the chemistry major, please contact chemistry and biochemistry advising at chemistryadvising@ucsc.edu.

Appeal Process

Students may appeal to the major either prior to or after submitting a petition to declare and being denied (in the latter case, appeals must be submitted within 15 days from the date the denial notification was sent). Within 15 days of receipt of the appeal being submitted, the department will notify the student and their affiliated college of the decision.

To appeal to declare a chemistry major, complete the Chemistry Major Appeal form via DocuSign.

To complete the major appeal form, you will need:

- An official Academic Plan (signed by the Chemistry major advisor)
- Unofficial Transcripts
- An Appeal Letter

Additional instructions can be found in the form.

Note: The information you share in your appeal or with your advisors will be kept confidential and shared only with campus officials as required to serve you in an advising capacity or process your appeal. However, in limited circumstances, including those related to potential harm to yourself or others, sexual assault, and abuse, we may be required by law to report incidents you disclose to other need-to-know offices on campus such as the Title IX Office and/or University of California Police Department. If you are in need of support for any issues, please see the list of confidential and/or support resources.

Letter Grade Policy

All courses used to satisfy degree requirements in any of the Chemistry and Biochemistry Department's majors must be taken for a letter grade. Additionally, letter grades of C or higher must be attained in all courses to meet major and minor requirements for graduation.

Course Substitution Policy

At least half of the upper-division courses (CHEM 100–CHEM 199) required for any chemistry major must be taken through the Chemistry and Biochemistry Department at UC Santa Cruz, not as transfer credits from another department or institution. Students should contact the Chemistry and Biochemistry Department advising office before enrolling in any upper-division chemistry course at other institutions to verify articulation.

Independent Study Policy

Students may take up to 5 credits of individual studies coursework per quarter.

There are three different independent studies options in the Chemistry and Biochemistry Department: CHEM 199 and CHEM 195. CHEM 199 Independent Research is for any student working on an independent research project under the guidance of UC Santa Cruz faculty. Independent research can be taken for 5 credits (CHEM 199) or 2 credits (CHEM 199F). CHEM 195 Thesis Research is for students performing independent research under the guidance of UC Santa Cruz faculty **AND** who will complete a final thesis. CHEM 186L is an additional option for any student working on an independent research project under the guidance of a UC Santa Cruz faculty. CHEM 186L can be used to satisfy the Senior Exit Lab and DC requirements, cannot be taken concurrently with CHEM 199 or CHEM 195, and can only be taken once.

Throughout their undergraduate career at UC Santa Cruz, students may take up to 15 credits total of CHEM 199 (either 199 or 199F) and CHEM 186L. For example, a student could take three quarters of CHEM 199, up to seven quarters of CHEM 199F, or some combination of CHEM 199, CHEM 199F and CHEM 186L (so long as the total is not more than 15 credits).

Throughout their undergraduate career at UC Santa Cruz, students may take up to 15 credits total of CHEM 195. CHEM 195 credits can be taken in addition to up to 15 credits of CHEM 199/CHEM 199F/CHEM 186L. Note that there are three different CHEM 195 courses (CHEM 195A, CHEM 195B, and CHEM 195C) that should be taken in order. The expectation for CHEM 195 is that satisfactory completion of the course is contingent on the submission of a final thesis that meets the faculty sponsor's approval. If there is doubt that

a thesis could be completed, CHEM 199 Independent Research is a more appropriate course.

Double Majors and Major/Minor Combinations Policy

A student cannot double major/minor in chemistry and any other major/minor offered by the Chemistry and Biochemistry Department.

To declare a double major program, a student must obtain an academic plan showing that they are able to complete both degrees within the maximum number of quarters of enrollment available at UC Santa Cruz. Therefore, the steps for a student to pursue chemistry as a second major are as follows:

1. The student must have an up-to-date and accurate major academic plan for their initial major.
2. The student must make an appointment with the chemistry major advisor and send the link to their initial major academic plan to chemistryadvising@ucsc.edu.
3. The chemistry major advisor will review the major academic plan and will add the chemistry major courses to the academic plan, as necessary, and if it is viable to do so per double unit counting, enrollment limitations, and time-to-degree guidelines.
4. The chemistry major advisor will discuss the double major plan with the student during their scheduled appointment. If the plan is viable, it will be approved and signed by both the student and the chemistry major advisor.
5. Once the student has an approved and viable double major plan and qualifies for the major, the student must petition to declare chemistry as a second major using the Petition for Major/Minor form in MyUCSC.

Honors

Department honors in the majors are awarded to graduating students whose academic performance demonstrates excellence at a GPA of 3.5 or above in required major coursework. Department highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above in required major coursework.

Materials Fee

Chemistry students should be aware of the materials fee required for some courses. The fee is billed to the student's account for specific laboratory materials purchased by the Chemistry and Biochemistry Department through the university. Students may incur additional expenses for individual supplies.

Program for Students of the Health Sciences

Students intending to enter medical, dental, or another health science professional school can satisfy entrance requirements with a major program in chemistry supplemented with further courses, especially in biology, as specified by the admissions requirements of the school where they intend to apply. Students are strongly encouraged to review the Pre-Health section of the Career Success website to review preparation recommendations, prerequisite and other information about professional health education programs (medical school, dental school, etc.), and more important information to assist in preparation for a career in health sciences.

Students are urged to contact Career Success for assistance with the application process.

American Chemical Society Certification

The American Chemical Society (ACS) recognizes certain undergraduate programs, including those of UC Santa Cruz, to be of such quality that they allow some graduates to become ACS members immediately upon graduation. Graduates must be individually certified to the ACS by the Chemistry and Biochemistry Department chair if they have satisfactorily completed an approved program of study. ACS certification standards are rigorous; a graduate who has met them carries a distinction that is well-recognized in the profession.

Broadly speaking, ACS certification requirements are satisfied by completing CHEM 122 as an elective and graduating with a chemistry B.S. (biochemistry concentration excluded). More information is available from the Chemistry and Biochemistry Department advisors.

[Optional Catchall]

General B.S. Degree

Course Requirements

The bachelor of science (B.S.) major program is designed for students who intend to pursue a professional career in chemistry. It is rigorous and broadly based. The course requirements for the B.S. major are as follows; please refer to each course description for a detailed listing of prerequisites. Some courses may be satisfied via exam credit.

Lower-Division Courses

General Chemistry:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4BL	Advanced General Chemistry Lab	2
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

CHEM 4AL	Advanced General Chemistry Lab	2

Calculus:

Choose one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

A student may combine the MATH 11 series with the MATH 19 series to complete this portion of the major requirement(s), (for example, a student can take and complete MATH 19A and then take and complete MATH 11B) but must follow the Mathematics Department's Calculus Series Transition Policy.

Multivariable Calculus:

Choose one of the following options:

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or this course	
AM 30	Multivariate Calculus for Engineers	5

Advanced Mathematics:

Choose one of the following courses:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5
MATH 24	Ordinary Differential Equations	5

Physics:

Choose one of the following options:

	Either these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6N	Introductory Physics III Laboratory	1

A student may combine the PHYS 5 series with the PHYS 6 series to complete this portion of the major requirement(s), while following the Physics Transition policies.

Organic Chemistry:

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2

By permission and invitation of the instructor, students may substitute CHEM 8M with CHEM 8N, Honors Organic Chemistry Lab. This course is designed to introduce the exceptional student to many of the techniques associated with organic chemistry while taking part in an active organic chemistry research experience.

Upper-Division Courses

Intermediate Organic Chemistry:

CHEM 110	Intermediate Organic Chemistry with Emphasis on Synthesis and Analytical Methods	5
CHEM 110L	Intermediate Organic Chemistry Laboratory	2

By permission and invitation of the instructor, students may substitute CHEM 110L with CHEM 110N, Honors Organic Chemistry Lab. This course is designed to introduce the exceptional student to many of the techniques associated with organic chemistry while taking part in an active organic chemistry research experience.

Inorganic Chemistry:

CHEM 151A	Chemistry of Metals	5
CHEM 151L	Inorganic Chemistry Laboratory	2

Satisfies part of the Disciplinary Communication (DC) and Comprehensive requirements.

Biochemistry:

CHEM 103	Biochemistry	5

Students who plan to do advanced work in biochemistry and molecular biology should take the biochemistry and molecular biology (BIOC) 100ABC series. Completing the series will fulfill the requirement of CHEM 103 (Biochemistry) plus fulfill one elective. Students who have finished CHEM 103 can, with instructor permission, enroll in BIOC 100C without taking BIOC 100A and BIOC 100B.

Physical Chemistry:

CHEM 163A	Quantum Mechanics and Basic Spectroscopy	5
CHEM 163B	Chemical Thermodynamics	5

CHEM 163C	Statistical Thermodynamics and Kinetics	5
CHEM 164	Physical Chemistry Laboratory	5

One of the following laboratory courses:

CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Note: CHEM 160L requires completion of CHEM 160J and CHEM 160K as prerequisites, and CHEM 161L requires CHEM 161J and CHEM 161K as prerequisites.

Students currently conducting senior thesis research are strongly encouraged to choose an advanced laboratory in the CHEM 146 series that is outside their research area.

Electives

At least two from the following list:

BIOC 100C	Biochemistry and Molecular Biology	5
CHEM 122	Principles of Instrumental Analysis	5
CHEM 124	Bioanalytical Chemistry	4
CHEM 143	Organic Chemical Structure and Reactions	5
CHEM 144	Catalysis In Organic Synthesis Using Metals and Metalloids Based Reagents	5
CHEM 151B	Chemistry of the Main Group Elements	5
CHEM 156C	Materials Chemistry	5
CHEM 169	Chemistry and Biology of Drug Design and Discovery	5
CHEM 171	Chemical Biology	5
METX 101	Sources and Fates of Pollutants	5
METX 102	Cell and Molecular Toxicology	5
OCEA 120	Aquatic Chemistry: Principles and Applications	5
OCEA 121	Aqueous Geochemistry	5
PHYS 156	Applications of Quantum Materials	5
PHYS 180	Biophysics	5

To receive certification from the American Chemical Society, students must complete CHEM 122.

Students may also satisfy the elective requirement by completing a chemistry graduate course with permission from the instructor and department. Please consult with chemistry biochemistry major advising before enrolling.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) Requirement. The DC Requirement for the bachelor of science (B.S.) degree in chemistry is satisfied by completing:

CHEM 151L	Inorganic Chemistry Laboratory	2

Plus one of the following courses:

CHEM 124	Bioanalytical Chemistry	4
CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Comprehensive Requirement

The comprehensive requirement is a part of all UCSC degrees. For the chemistry B.S., this requirement can be satisfied by receiving a passing grade in the upper-division labs listed below. These courses provide modern, individualized training in the discipline thus serving as relevant capstone experiences.

CHEM 151L	Inorganic Chemistry Laboratory	2

Plus one of the following courses:

CHEM 124	Bioanalytical Chemistry	4
CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Note: CHEM 160L requires completion of CHEM 160J and CHEM 160K as prerequisites, and CHEM 161L requires CHEM 161J and CHEM 161K as prerequisites.

Planners

The sample academic plans below are for chemistry major informational purposes and do not reflect all university, general education, and credit requirements. See the

Undergraduate Graduation Requirements section of the catalog for more information.

This is the ideal academic plan for those pursuing a chemistry B.S. major. If needed, this plan can be arranged differently. Please meet with an academic advisor in the Chemistry and Biochemistry Department to review your individualized official academic plan.

Sample Four-Year Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 11A or MATH 19A	MATH 11B or MATH 19B	CHEM 3C & CHEM 3CL (not required if CHEM 4 series completed)	
	CHEM 3A orCHEM 4A & CHEM 4AL	CHEM 3B & CHEM 3BL orCHEM 4B & CHEM 4BL	MATH 21	
	College Core	WRIT 1 or WRIT 1E (if needed)		
2nd (soph)	CHEM 8A & CHEM 8L	CHEM 8B & CHEM 8M	CHEM 110 & CHEM 110L	
	PHYS 6A & PHYS 6L	MATH 22	PHYS 6B & PHYS 6M	
	WRIT 2**			
3rd (junior)	CHEM 163A	CHEM 163B	CHEM 163C	
	PHYS 6C & PHYS 6N	CHEM 151A & CHEM 151L	CHEM 103	
4th(senior)	CHEM 146A*	CHEM 164	CHEM elective 2	
	CHEM elective 1		CHEM 146B* or CHEM 146C*	

* CHEM 146A is offered in fall quarter; CHEM 146B and CHEM 146C are offered in spring quarter. Only ONE advanced lab (CHEM 146A, 146B, or 146C) is required for degree completion. Alternatively, students can take the CHEM 160 or CHEM 161 series: CHEM 160J or CHEM 161J, CHEM 160K CHEM 161K, and CHEM 160L or CHEM 161L, which are offered in the fall, winter, and spring, respectively.

** WRIT 2 should be taken in or before spring quarter of the second year. Questions about WRIT coursework or any other non-chemistry major requirements should be directed to college advising.

Two of the required general education requirements will be fulfilled by the major requirements listed in the above planner (MF and SI). In addition to the specific courses shown in these planners, a student will also need to complete courses satisfying the following general education requirements: Cross-Cultural Analysis, Ethnicity & Race, Interpreting Arts & Media, Statistical Reasoning, Textual Analysis & Interpretation, Perspectives, and Practice. College advisors assist students with questions relating to general education requirements.

Sample Transfer Two-Year Planner

This is a sample academic plan for students who have transferred in with both the required and highly recommended pre-transfer courses.

Note: Students who did not complete both the required and highly recommended courses prior to transfer will need to follow a different academic plan and may require additional time to degree.

Please meet with an advisor in the Chemistry and Biochemistry Department to create and review your individualized official academic plan

	Fall	Winte	Spring	Summer

		r		
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	CHEM 163A	CHEM 163B	CHEM 163C	
	PHYS 6C & PHYS 6N	CHEM 151A & CHEM 151L	CHEM 110 & CHEM 110L	
2nd (senior)	CHEM 146A*	CHEM 164	CHEM elective 2	
	CHEM elective 1	MATH 21	CHEM 103	
			CHEM 146B* or CHEM 146C*	

* CHEM 146A is offered in fall quarter; CHEM 146B and CHEM 146C are offered in spring quarter. Only **ONE** advanced lab (CHEM 146A, CHEM 146B, or CHEM 146C) is required for degree completion. Alternatively, students can take the CHEM 160 or 161 series: CHEM 160J or CHEM 161J, CHEM 160K CHEM 161K, and CHEM 160L or CHEM 161L, which are offered in the fall, winter, and spring, respectively.

Biochemistry Concentration

The biochemistry concentration is designed for students who intend to pursue a career in biochemistry or in a related field such as biotechnology, and it provides an exceptionally rigorous chemistry emphasis.

Course Requirements

The course requirements for the B.S. major with the biochemistry concentration are as follows; please refer to each course description for a detailed listing of prerequisites. Some courses may be satisfied via exam credit.

Lower-Division Courses

General Chemistry:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4BL	Advanced General Chemistry Lab	2

Calculus:

Choose one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

A student may combine the MATH 11 series with the MATH 19 series to complete this portion of the major requirement(s). For example, a student can take and complete MATH 19A and then take and complete MATH 11B, but they must follow the Mathematics Department's Calculus Series Transition Policy.

Multivariable Calculus:

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or this course	
AM 30	Multivariate Calculus for Engineers	5

Advanced Mathematics:

Choose one of the following courses:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5
MATH 24	Ordinary Differential Equations	5

Introductory Biology:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5

Physics:

Choose one of the following options:

	Either these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6N	Introductory Physics III Laboratory	1

A student may combine the PHYS 5 series with the PHYS 6 series to complete this portion of the major requirement(s) but must follow the Physics Transition policies.

Organic Chemistry:

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2

By permission and invitation of the instructor, students may substitute CHEM 8M with CHEM 8N, Honors Organic Chemistry Lab. This course is designed to introduce the exceptional student to many of the techniques associated with organic chemistry while taking part in an active organic chemistry research experience.

Upper-Division Courses

Intermediate Organic Chemistry:

CHEM 110	Intermediate Organic Chemistry with Emphasis on Synthesis and Analytical Methods	5
CHEM 110L	Intermediate Organic Chemistry Laboratory	2

By permission and invitation of the instructor, students may substitute CHEM 110L with CHEM 110N, Honors Organic Chemistry Lab. This course is designed to introduce the exceptional student to many of the techniques associated with organic chemistry while taking part in an active organic chemistry research experience.

Inorganic Chemistry:

CHEM 151A	Chemistry of Metals	5
CHEM 151L	Inorganic Chemistry Laboratory	2

Satisfies part of the Disciplinary Communication (DC) and Comprehensive requirements.

Biochemistry:

BIOC 100A	Biochemistry and Molecular Biology	5
BIOC 100B	Biochemistry and Molecular Biology	5
BIOC 100C	Biochemistry and Molecular Biology	5
	AND	
	One of these courses	
BIOC 110L	Advanced Biochemistry Laboratory	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Satisfies part of the the Disciplinary Communication (DC) and Comprehensive requirements.

Note: CHEM 160L requires completion of CHEM 160J and CHEM 160K as prerequisites, and CHEM 161L requires completion of CHEM 161J and CHEM 161K as prerequisites.

Physical Chemistry:

CHEM 163A	Quantum Mechanics and Basic Spectroscopy	5
CHEM 163B	Chemical Thermodynamics	5
CHEM 163C	Statistical Thermodynamics and Kinetics	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) Requirement. The DC Requirement in chemistry with a biochemistry concentration is satisfied by completing the following. This also satisfies the Comprehensive Requirement.

CHEM 151L	Inorganic Chemistry Laboratory	2
	AND	
	One of these courses	
BIOC 110L	Advanced Biochemistry Laboratory	5
CHEM 124	Bioanalytical Chemistry	4
CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5

CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Comprehensive Requirement

The comprehensive requirement is a part of all UC Santa Cruz degrees. For the chemistry B.S with a biochemistry concentration, this requirement can be satisfied by receiving a passing grade in the upper-division labs listed below. These courses provide modern, individualized training in the discipline thus serving as relevant capstone experiences. This also satisfies the Disciplinary Communication (DC) requirement.

CHEM 151L	Inorganic Chemistry Laboratory AND One of these courses	2
BIOC 110L	Advanced Biochemistry Laboratory	5
CHEM 124	Bioanalytical Chemistry	4
CHEM 146A	Advanced Laboratory in Organic Chemistry	3
CHEM 146B	Advanced Laboratory in Inorganic Chemistry	3
CHEM 146C	Advanced Laboratory in Physical Chemistry	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Note: CHEM 160L requires completion of CHEM 160J and CHEM 160K as prerequisites, and CHEM 161L requires completion of CHEM 161J and CHEM 161K as prerequisites.

Planners

This is the most general academic plan for this major. If needed, the plan can be rearranged.

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See the Undergraduate Graduation Requirements section of the catalog for more information.

Please meet with an academic advisor in the Chemistry and Biochemistry Department to review your specific official academic plan.

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional))
1st (frosh)	MATH 11A or MATH 19A CHEM 3A orCHEM 4A & CHEM 4AL College 1	MATH 11B or MATH 19B CHEM 3B & CHEM 3BL orCHEM 4B & CHEM 4BL WRIT 1 or WRIT 1E (if needed) **	BIOL 20A CHEM 3C & CHEM 3CL (not required if CHEM 4 series completed)	
2nd (soph)	CHEM 8A & CHEM 8L BIOE 20B WRIT 2**	CHEM 8B & CHEM 8M MATH 22	CHEM 110 & CHEM 110L MATH 21	
3rd (junior)	BIOC 100A PHYS 6A & PHYS 6L	BIOC 100B PHYS 6B & PHYS 6M	BIOC 100C PHYS 6C & PHYS 6N	
4th (senior)*	CHEM 163A	CHEM 163B CHEM 151A & CHEM 151L	CHEM 163C BIOC 110L*	

Alternatively to BIOC 110L, students can take the CHEM 160 or CHEM 161 series: CHEM 160J or CHEM 161J, CHEM 160K or CHEM 161K, and CHEM 160L or CHEM 161L, which are offered in the fall, winter, and spring, respectively.

**WRIT 2 should be taken in or before spring quarter of the second year. Questions about WRIT coursework or any other non-chemistry major requirements should be directed to college advising.

Two of the required general education requirements will be fulfilled by the major requirements listed in the above planner (MF and SI). In addition to the specific courses shown in these planners, a student will also need to complete courses satisfying the following general education requirements: Cross-Cultural Analysis, Ethnicity and Race, Interpreting Arts and Media, Statistical Reasoning, Textual Analysis and Interpretation, Perspectives, and Practice. College advisors assist students with questions relating to general education requirements.

Sample Transfer Two-Year Planner

This is a sample academic plan for students who have transferred in with both the required and highly recommended pre-transfer courses.

Note: Students who did not complete the required and most of the recommended chemistry transfer courses prior to transfer will need to follow a different academic plan and may require additional time to degree.

Please meet with an advisor from the Chemistry and Biochemistry Department to create and review your individualized official academic plan.

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	BIOC 100A	BIOC 100B	BIOC 100C CHEM 110 & CHEM 110L	
2nd (senior)	CHEM 163A	CHEM 163B CHEM 151A & CHEM 151L	CHEM 163C BIOC 110L*	

*Alternatively to BIOC 110L, students can take the CHEM 160 or CHEM 161 series: CHEM 160J or CHEM 161J, CHEM 160K or CHEM 161K, and CHEM 160L or CHEM 161L, which are offered in the fall, winter, and spring, respectively.

BIOCHEMISTRY AND MOLECULAR BIOLOGY B.S.

Information and Policies

Introduction

Research at the macromolecular, molecular, and atomic levels is revolutionizing our understanding of the fundamental processes of life. Students interested in joining this search are best prepared by undertaking coursework in biology, chemistry, physics, mathematics, and computer science. The undergraduate major in biochemistry and molecular biology (BMB) is jointly administered by the Chemistry and Biochemistry and Molecular, Cell, and Developmental (MCD) Biology Departments. Program faculty are actively engaged in research on biological systems.

Students who declare the BMB major earn a bachelor of science (B.S.) degree. The BMB major constitutes an integrated curriculum of basic instruction in biology, chemistry, mathematics, and physics, followed by the opportunity to pursue advanced study in specialized areas of interest. In modern, well-equipped laboratories, distinguished faculty are engaged in frontline research at UCSC. The Chemistry and Biochemistry Department and the Molecular, Cell, and Developmental Biology Department each host a very active seminar series in which internationally-recognized scientists present their current research findings. Advanced BMB undergraduates are encouraged to attend.

The BMB program features close faculty-student interaction, stimulating learning environments, and opportunities for independent research and study. Students majoring in BMB are encouraged to become involved in research under the guidance of a faculty sponsor. Many students participating in this aspect of the program have made important contributions to the scientific literature.

The BMB major has a broad scope and is interdisciplinary in nature. All prospective majors should see the BMB academic advisor for additional information.

Academic Advising for the Program

The chemistry and biochemistry advisors provide counsel to undergraduate majors. Students are encouraged to seek out advising and assistance in planning their academic careers to ensure completion of their major in a timely manner. For advising assistance, please contact chemistry and biochemistry advising at chemistryadvising@ucsc.edu or visit the BMB Advising webpage. All students interested in the Biochemistry Molecular Biology (BMB) B.S. major should read this catalog to learn more details about the major.

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities, and attitudes that students are expected to develop over the course of their studies.

Students graduating with a B.S. in biochemistry and molecular biology should be able to:

- demonstrate mastery of a broad set of chemical and biological knowledge concerning the fundamentals in the basic areas of the discipline (organic, inorganic, analytical, physical, biochemistry, and molecular biology).
- solve area-specific problems by identifying the essential parts of a problem, formulating a strategy for solving the problem, applying appropriate techniques to arrive at a solution, testing the correctness of the solution, and interpreting their results.
- use modern cloud search tools (such as SciFinder, PubMed, Google Scholar, or Web of Science) to locate and retrieve scientific information about topics relating to chemistry and biology.
- know and follow the proper procedures and regulations for safe handling and use of chemicals, biohazardous materials, and common laboratory instruments.
- understand the objective of their chemical and biological experiments, properly carry out the experiments, and appropriately record and analyze the results.
- use computers in data acquisition and processing, and use available software as a tool in data analysis; use standard laboratory equipment, modern instrumentation, and classical techniques to carry out experiments.
- communicate the concepts and results of their laboratory experiments through effective writing and/or oral communication using the discipline standards for reporting and citation.
- collaborate effectively as part of a team to solve problems, debate different points of view, and interact productively with a diverse group of team members.

Getting Started in the Major: Frosh

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Prospective biochemistry and molecular biology majors should have a solid foundation in high school mathematics; familiarity with algebra, logarithms, trigonometry, and analytic geometry is particularly required. Incoming students in the biochemistry and molecular biology major should complete the ALEKS Math Placement process as early as possible. ALEKS results must be officially posted to students' records as a prerequisite to first quarter enrollment. For more information, please review the Math Placement website.

Students taking chemistry at the University of California, Santa Cruz, have a number of options for satisfying their general chemistry requirements:

1. Begin with CHEM 3A, CHEM 3B, CHEM 3C with associated labs, CHEM 3BL and CHEM 3CL.
2. Students with an exceptionally strong background in high school chemistry may begin with the advanced general chemistry sequence (if offered): CHEM 4A and CHEM 4B with associated labs, CHEM 4AL and CHEM 4BL. Enrollment in the CHEM 4 series requires qualification – see the "Qualifying for the Advanced General Chemistry series" admission policy section below).
3. Students with transfer or exam credit will take the next course in the general chemistry sequence.

Any of the above pathways fully satisfies the general chemistry prerequisites of any major declaration or required/elective classes for programs in the Physical and Biological Sciences (PBSci) Division.

Qualifying for the Accelerated General Chemistry series (CHEM 4)
Note: CHEM 4 not offered in Academic Year 2025-26

CHEM 4 is an accelerated two-quarter series intended for students who enter UC Santa Cruz with excellent preparation in high school chemistry. Students in this series will learn fundamental concepts in chemistry at a **faster pace** than our traditional general chemistry series, CHEM 3, with an emphasis on quantum theory, molecular structure, and chemical driving forces. Both courses cover the same material; however, the CHEM 4 series completes the content in two quarters rather than three. Students with an exceptionally strong background in high school chemistry are especially encouraged to begin with CHEM 4A (Advanced General Chemistry: Molecular Structure and Reactivity) instead of CHEM 3A.

All students who want to enroll in the accelerated series must complete an online learning module and assessment administered by the Chemistry and Biochemistry Department. Once the online learning module and assessment are started (by completing the initial knowledge check), students will have six weeks to complete the online learning module and assessment and, once the module & assessment are completed students may request enrollment in CHEM 4A.. Students who complete the online learning module and assessment and submit their proof of completion by the established deadline are eligible to remain enrolled in CHEM 4A. Students can access the full CHEM 4A qualification instructions and the online learning module by joining this Canvas Class.

If you have questions about this process, please contact chemistry advising at chemistryadvising@ucsc.edu.

Transfer Information and Policy

General information about transferring to UC Santa Cruz can be found on the Transfer Preparation Advising website. Students planning to transfer to UC Santa Cruz as a

biochemistry and molecular biology major from a California community college should reference assist.org to determine which courses are equivalent to required and recommended pre-transfer courses.

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall. Courses must be completed with a grade of C or better with a cumulative GPA of 2.50 in these courses. Completion of these courses also satisfies all major qualification requirements. For students with exam credit for any of the courses, a grade of A will be used in the GPA calculation.

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

And these courses:

BIOL 20A	Cell and Molecular Biology	5
CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5

Plus one of the following options:

MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Recommended Major Preparation for Junior Transfer Students

Completion of the following courses is highly recommended before the transfer to ensure timely graduation. Students who only complete minimum required transfer coursework for the major prior to transfer are more likely to take longer to complete the Biochemistry and Molecular Biology B.S.

BIOE 20B	Development and Physiology	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6N	Introductory Physics III Laboratory	1
STAT 5	Statistics	5

As well as one of the following:

MATH 11B	Calculus with Applications	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Getting Started in the Major: Transfer Students

Transfer students are strongly encouraged to meet with the biochemistry and molecular biology academic advisor in their first quarter. For assistance with advising, email chemistryadvising@ucsc.edu.

Any student who fails to meet these requirements may file an appeal for admission to the major, but admission is not guaranteed.

Students who transfer as juniors can declare their major any time after coming to UC Santa Cruz but are required to be declared in a major by the declaration deadline in their second term at UC Santa Cruz.

Transfer students who are proposed in a different major (other than biochemistry and molecular biology) require permission from the department to change into the major. Admission to the major is not guaranteed.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete each of the following qualification courses, or their equivalents, by their campus-established declaration deadline with a grade of C (2.0) or better and with a cumulative grade point average (GPA) of 2.50 or greater:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus these courses

BIOL 20A	Cell and Molecular Biology	5
CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5

Plus one of the following options:

MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

How to Declare a Major

Students may declare a major as early as they would like if they have decided which major to pursue and have satisfied prerequisites or qualification requirements for the major.

Per the UC Santa Cruz major declaration policy, students who enter UCSC as frosh are required to be formally declared in a major by the campus deadline in their sixth quarter and before enrolling in their third year (or equivalent). Upper-division junior transfer students are required to be declared in a major by the deadline in their second term at UCSC.

Students should petition to declare a biochemistry major once they have met all qualification criteria and have an official, signed, department-approved academic plan on file.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh, second quarter for junior transfer students), will either be approved, denied, or provided with conditions (e.g., completion of final qualification courses with certain grades), but will not be declared until all requirements have been met and satisfactory grades have been posted.

Each major/minor advising office has a process for declaring. For assistance with declaring the chemistry major, please contact chemistry and biochemistry advising at chemistryadvising@ucsc.edu.

Appeal Process

Students may appeal to the major either prior to or after submitting a petition to declare and being denied (in the latter case, appeals must be submitted within 15 days from the date the denial notification was sent). Within 15 days of receipt of the appeal being submitted, the department will notify the student and their affiliated college of the decision.

To submit an appeal, please complete the applicable appeal form, available on the Chemistry Biochemistry Advising website.

Note: The information you share in your appeal or with your advisors will be kept confidential and shared only with campus officials as required to serve you in an advising capacity or process your appeal. However, in limited circumstances, including those related to potential harm to yourself or others, sexual assault, and abuse, we may be required by law to report incidents you disclose to other need-to-know offices on campus such as the Title IX Office and/or University of California Police Department. If you are in need of support for any issues, please see the list of confidential and/or support resources.

Letter Grade Policy

All courses used to satisfy degree requirements in any of the chemistry and biochemistry majors must be taken for a letter grade. Additionally, letter grades of C or higher must be attained in all courses to meet major and minor requirements for graduation.

Course Substitution Policy

At least half of the upper-division courses (numbered 100–199) required for any biochemistry and molecular biology major must be taken through the chemistry or biology programs at UC Santa Cruz, not as transfer credits from another department or institution. Students are advised to contact the Chemistry and Biochemistry Department undergraduate advising office before enrolling in any chemistry or biochemistry upper-division courses at other institutions to verify articulation.

Independent Study Policy

BMB students who are considering independent research or wish to complete a thesis should contact chemistryadvising@ucsc.edu. Students who are participating in undergraduate research should consider taking BIOL 186L or CHEM 186L as their senior exit lab. BIOL 186L is hosted and controlled by the MCD Biology Department, while CHEM 186L is hosted and controlled by the Department of Chemistry Biochemistry.

Double Majors and Major/Minor Combinations Policy

A student cannot double major/minor in BMB and any other major/minor offered by the departments of Chemistry Biochemistry, Ecology and Evolutionary Biology, Microbiology and Environmental Toxicology, MCD Biology, or Global Community Health.

Pursuing a double major that includes a chemistry major is a highly individual decision and should be based on a student's educational and career goals. Because the biochemistry and molecular biology major itself is course-intensive and rigorous, it should be noted that completing a double major involving biochemistry and molecular biology is difficult and often not viable.

To declare a double major, a student must obtain an academic plan showing that they are able to complete both degrees within the maximum number of quarters of enrollment available at UC Santa Cruz. Therefore, the steps for a student to pursue chemistry as a second major are as follows:

1. Student must have an up-to-date and accurate major academic plan for their initial major.
2. Student must make an appointment with the biochemistry and molecular biology major advisor and send the link to their signed academic plan to chemistryadvising@ucsc.edu.
3. The biochemistry and molecular biology major advisor will review the major academic plan and will add the biochemistry and molecular biology major courses to the academic plan, as necessary. In doing so, the advisor will determine if it is a viable double major

considering double-credit counting, enrollment limitations, and time-to-degree guidelines.

4. The biochemistry and molecular biology major advisor will discuss the double major plan with the student during their scheduled appointment. If the plan is viable, it will be approved and signed by both the student and the biochemistry and molecular biology major advisor.

5. Once the student has an approved and viable double major plan and qualifies for the major, the student must petition to declare biochemistry and molecular biology as a second major using the Petition for Major/Minor form in MyUCSC.

Honors

Department honors in the majors are awarded to graduating students whose academic performance demonstrates excellence at a GPA of 3.5 - 3.79 in required major coursework. Department highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above in required major coursework.

Materials Fee

Biochemistry and molecular biology students should be aware of the materials fee required for some laboratory courses. The fee is billed to the student's account for specific laboratory materials purchased through the university. Students may incur additional expenses purchasing individual supplies.

Program Planning Notes

Students who do not begin the lower-division qualification course requirements during their first year, and who do not complete the organic chemistry requirements by the end of their second year, will have difficulty completing the program within four years. Chemistry and biochemistry advising works closely with students interested in pursuing the major to ensure that they begin the program immediately and follow the appropriate steps toward completion.

It is strongly recommended that students avail themselves of the opportunities to obtain firsthand research experience through either independent study, a course-based undergraduate research experience, or by working in a faculty research lab.

Program for Students of the Health Sciences

Students intending to enter medical, dental, or another health science professional school can satisfy entrance requirements with a major program in biochemistry and molecular biology supplemented with further courses, especially in biology, as specified by the admissions requirements of the school where they intend to apply. Students are strongly encouraged to review the Pre-Health section of the Career Success website to review preparation recommendations, prerequisites and other information about professional health education programs (medical school, dental school, etc.), and more important information to assist in preparation for a career in health sciences.

Students are urged to contact Career Success for assistance with the application process.

Requirements and Planners

Course Requirements

The following is required to complete the Biochemistry and Molecular Biology B.S. Some courses may be satisfied via exam credit.

Lower-Division Courses

General Chemistry

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4BL	Advanced General Chemistry Lab	2

Calculus

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Statistics

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Intro Biology

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
	AND	

	One of these courses	
BIOL 20L	Experimental Biology Laboratory	2
BIOL 102J	Toxic RNA Lab I	5
BIOL 107J	Synthetic Gene Regulation Lab I	5
CHEM 160J	Biochemistry Research Laboratory	5
CHEM 161J	Chemical Biology Research Laboratory	5

Organic Chemistry

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2

Physics

	Either these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
PHYS 5L	Introduction to Physics I Laboratory	1
PHYS 5M	Introduction to Physics II Laboratory	1
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6N	Introductory Physics III Laboratory	1

A student may combine the PHYS 5 series with the PHYS 6 series to complete this portion of the major requirement(s), while following the Physics Transition policies.

Upper-Division Courses

Biochemistry and Molecular Biology

BIOC 100A	Biochemistry and Molecular Biology	5
BIOC 100B	Biochemistry and Molecular Biology	5
BIOC 100C	Biochemistry and Molecular Biology	5

and one of these courses:

BIOL 101L	Molecular Biology Laboratory	2
BIOL 102L	Toxic RNA Lab II	5
BIOL 107L	Synthetic Gene Regulation Lab II	5
BIOL 122K	Phage Biology Lab I	5
CHEM 160K	Biochemistry Research Laboratory	5
CHEM 161K	Chemical Biology Research Laboratory	5

Genetics

BIOL 105	Genetics	5

Eukaryotic Molecular Biology

BIOL 115	Eukaryotic Molecular Biology	5

Physical Chemistry

BIOC 163A	Quantum Mechanics, Spectroscopy and Molecular Structure for Biochemistry and Molecular Biology	5
BIOC 163B	Biochemical Thermodynamics and Statistical Mechanics for Biochemistry and Molecular Biology	5

Students may substitute CHEM 163A and CHEM 163B for this requirement. While not required for the major, MATH 22 is a prerequisite for CHEM 163A and CHEM 163B. MATH 22 is only taught in winter (and possibly summer) at UC Santa Cruz.

Elective

Complete one course from the following list:

BIOL 110	Cell Biology	5
BIOL 118	Principles of Human Genetics	5
BME 110	Computational Biology Tools	5
BME 128	Protein Engineering	5
BME 130	Genomes	5
BME 132	Evolutionary Genomics	5
BME 160	Research Programming in the Life Sciences	6
CHEM 110	Intermediate Organic Chemistry with Emphasis on Synthesis and Analytical Methods	5
CHEM 169	Chemistry and Biology of Drug Design and Discovery	5
CHEM 171	Chemical Biology	5
STAT 131	Introduction to Probability Theory	5

Senior Exit Lab

One of the following laboratory courses (also satisfies the Disciplinary Communication (DC) and Senior Comprehensive Requirement for graduation):

BIOC 110L	Advanced Biochemistry Laboratory	5
BIOL 100L	Biochemistry Laboratory	5
BIOL 103L	Toxic RNA Lab III	5
BIOL 105L	Eukaryotic Genetics Laboratory	5
BIOL 106L	Eukaryotic Genetic Engineering	5
BIOL 108L	Synthetic Gene Regulation Lab III	5

BIOL 109L	Yeast Molecular Genetics Laboratory	5
BIOL 115L	Eukaryotic Molecular Biology Laboratory	5
BIOL 121L	Environmental Phage Biology Laboratory	5
BIOL 122L	Phage Biology Lab II	5
BIOL 186L	Undergraduate Research in MCD Biology	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
CHEM 186L	Research Communication and Practice	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in biochemistry and molecular biology is satisfied by completing one of the Senior Exit Lab options listed in the previous section.

The DC requirement must be satisfied at UC Santa Cruz and may not be transferred from another institution.

Comprehensive Requirement

Students must satisfy the senior comprehensive requirement by receiving a passing letter grade in any of the Senior Exit Lab options listed in the previous section. In addition, students are encouraged to gain research experience by working in a faculty research lab.

Planners

The sample academic plans below are for BMB major informational purposes and do not reflect all university, general education, and credit requirements. See the Undergraduate Graduation Requirements section of the catalog for more information.

This is the ideal academic plan for those pursuing the biochemistry and molecular biology B.S. major. Note that some course offering schedules change over time. Please see an academic advisor in the Chemistry and Biochemistry Department to create/verify your individualized official academic plan.

Sample Four-Year Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 11A or MATH 19A CHEM 3A orCHEM 4A and CHEM 4AL College 1	MATH 11B or MATH 19B CHEM 3B & CHEM 3BL orCHEM 4B & CHEM 4BL WRIT 1/WRIT 1E (if needed)	BIOL 20A CHEM 3C & CHEM 3CL (not required if CHEM 4 series completed)	
2nd (soph)	BIOE 20B CHEM 8A & CHEM 8L WRIT 2 (in or before 5th quarter)	PHYS 6A & PHYS 6L CHEM 8B & CHEM 8M	PHYS 6B and PHYS 6M BIOL 20L*	
3rd (junior)	BIOC 100A PHYS 6C & PHYS 6N	BIOC 100B BIOL 105 MATH 22 (optional)	BIOC 100C BIOL 101L**	
4th (senior)	BIOL 110 STAT 5 orSTAT 7 and STAT 7L Senior	BIOC 163A*** BIOL 115Senior Exit Lab****	BIOC 163B*** Senior Exit Lab****	

	Exit Lab** **		

*Either CHEM 160J, or CHEM 161J may be substituted for BIOL 20L. These courses are taught in fall and require an application for enrollment.

**Either CHEM 160K, or CHEM 161K may be substituted for BIOL 101L. These courses are only taught in winter and require the completion of CHEM 160J, and CHEM 161J, respectively, and application for enrollment.

***CHEM 163A and CHEM 163B may be substituted for BIOC 163A and BIOC 163B. **Note**: the CHEM 163 series is taught fall and winter, respectively, while the BIOC 163 series is taught winter and spring, respectively. MATH 22 (taught only in winter and summer) is a prerequisite for CHEM 163A and CHEM 163B but is not a prerequisite for BIOC 163A and CHEM 163B.

****Senior Exit Lab should be completed as early as possible. Students should discuss options with their BMB advisor when academic planning 3rd- and 4th-year enrollments.**

Four of the required general education requirements will be fulfilled by the major requirements listed in the above planner (MF, SI, SR, and DC). In addition to the specific courses shown in these planners, students will also need to complete courses satisfying the following general education requirements: Cross-Cultural Analysis, Ethnicity and Race, Interpreting Arts and Media, Textual Analysis, Perspectives, and Practice.

Sample Transfer Two-Year Planner

This is a sample academic plan for junior transfer students who completed all of the required and some of the highly recommended pre-transfer courses.

Note: Students who did not complete both the required and highly recommended courses prior to transfer will need to follow a different academic plan and may require additional time to degree. The following sample academic plan assumes completion of only the minimum transfer requirements. Please see an academic advisor in the Chemistry and Biochemistry Department to create and review your specific official academic plan.

Sample Transfer Two-Year Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	BIOC 100A PHYS 6A & PHYS 6L	BIOC 100B BIOL 105 PHYS 6B & PHYS 6M	BIOC 100C BIOL 101L PHYS 6C and PHYS 6N	
2nd (senior)	BIOL 110 STAT 5	BIOC 163A BIOL 115	BIOC 163B Senior Exit Lab	

UC Transfer Pathway courses:

- General biology with lab (full introductory sequence) BIOL 20A, BIOE 20B, BIOL 20L
- General chemistry with lab (one-year sequence) CHEM 4A & CHEM 4AL, CHEM 4B and CHEM 4BL (or CHEM 3A/CHEM 3B/CHEM 3C, and CHEM 3BL/CHEM 3CL)
- Calculus for STEM majors MATH 11A or MATH 19A and MATH 11B or MATH 19B; MATH 22 (optional)
- Organic chemistry with lab (one-year sequence) CHEM 8A and CHEM 8L, CHEM 8B and CHEM 8M

Courses are subject to being offered in different terms. Please check departmental websites for updates on course offerings.

CHEMISTRY MINOR

For assistance please contact chemistry advising at chemistryadvising@ucsc.edu or visit our department website.

HOW TO DECLARE THE CHEMISTRY MINOR

Students electing a chemistry minor may not use the online petition to declare. The steps to pursue a chemistry minor are as follows:

1. Create a major academic plan and have it signed by the UC Santa Cruz major advisor.
2. Make an appointment with the chemistry minor advisor and send the link for the signed major academic plan to chemistryadvising@ucsc.edu.
3. The chemistry minor advisor will review the major academic plan and will add the chemistry minor courses to the academic plan, if it is viable to do so per

double credit counting, enrollment limitations, and time-to-degree guidelines.

4. The chemistry minor advisor will discuss the chemistry minor plan with the student during their scheduled appointment.

5. Once approved as a viable major/minor plan by both the major/department advisor and the Chemistry minor advisor, the Chemistry minor advisor will sign the academic planning form and they will process the minor declaration.

Note: Students need to declare a major before they can declare a minor. Students should prioritize major coursework over minor coursework when necessary.

General information on double majors and minors may be found here.

Course Requirements

All courses used to satisfy degree requirements in the chemistry minor must be taken for a letter grade.

Lower-Division Courses

Chemistry

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4BL	Advanced General Chemistry Lab	2

and these courses:

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8M	Organic Chemistry Laboratory	2

Calculus

One of the following options

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

A student may combine the MATH 11 series with the MATH 19 series to complete this portion of the major requirement(s), (for example, a student can take and complete MATH 19A and then take and complete MATH 11B) but must follow the Mathematics Department's Calculus Series Transition Policy.

Plus one of the following options

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	OR	
AM 30	Multivariate Calculus for Engineers	5

Physics

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
PHYS 5M	Introduction to Physics II Laboratory	1
	OR	
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6N	Introductory Physics III Laboratory	1

A student may combine the PHYS 5 series with the PHYS 6 series to complete this portion of the major requirement(s), while following the Physics Transition policies.

Upper-Division Courses

This course

CHEM 163A	Quantum Mechanics and Basic Spectroscopy	5

Students may substitute BIOC 163A for CHEM 163A.

Plus two of the following courses

CHEM 103	Biochemistry	5

CHEM 110	Intermediate Organic Chemistry with Emphasis on Synthesis and Analytical Methods	5
CHEM 151A	Chemistry of Metals	5

Electives

Plus two chemistry upper-division electives from the following:

BIOC 100A	Biochemistry and Molecular Biology	5
BIOC 100B	Biochemistry and Molecular Biology	5
BIOC 163B	Biochemical Thermodynamics and Statistical Mechanics for Biochemistry and Molecular Biology	5
CHEM 143	Organic Chemical Structure and Reactions	5
CHEM 144	Catalysis In Organic Synthesis Using Metals and Metalloids Based Reagents	5
CHEM 151B	Chemistry of the Main Group Elements	5
CHEM 156C	Materials Chemistry	5
CHEM 163B	Chemical Thermodynamics	5
CHEM 163C	Statistical Thermodynamics and Kinetics	5
CHEM 169	Chemistry and Biology of Drug Design and Discovery	5
CHEM 171	Chemical Biology	5
METX 101	Sources and Fates of Pollutants	5
METX 102	Cell and Molecular Toxicology	5
OCEA 120	Aquatic Chemistry: Principles and Applications	5
OCEA 121	Aqueous Geochemistry	5
PHYS 180	Biophysics	5

Students cannot receive elective credit toward the minor for 1) both BIOC 100A and CHEM 103; 2) both BIOC 163B and CHEM 163B.

Students may also satisfy the elective requirements by completing a chemistry graduate course with the permission of the instructor and department. To do so, please consult with the department undergraduate adviser prior to enrolling.

CHEMISTRY M.S.

Introduction

Note: Applications for the Plan I (thesis) master's degree are not being accepted at this time.

The Department of Chemistry and Biochemistry offers a **Plan II (capstone)** master's degree in which a student may earn the M.S. degree after approximately one year of coursework and a capstone seminar. This program serves the needs of such diverse groups as teachers on sabbaticals, technicians from industry and re-entry students. The Plan II (capstone) M.S. does not require research and is suited to future teachers and others wishing to update or broaden their chemical expertise. The degree can be finished in one year if the student is well prepared to take a full course load. No financial aid is available for this program, although student loans may be available based from the FAFSA (Free Application for Federal Student Aid) program.

Prerequisites: A bachelor of arts (B.A.) or bachelor of science (B.S.) degree in chemistry or biochemistry. Applicants with a bachelor's degree in another discipline must have taken all or most of the courses required for a B.A. or B.S. in chemistry or biochemistry at UC Santa Cruz.

Requirements

Course Requirements

Nine courses are required. Of these, at least seven must be lecture courses offered by chemistry and biochemistry. The remaining two courses may be lecture courses, seminars, or independent study.

Of the seven chemistry and biochemistry lecture courses, at least four must be graduate level (200), but up to three may be advanced undergraduate level (100), excluding CHEM 109-CHEM 110.

The seven lecture courses must include representatives from at least three of the chemistry subdisciplines: biochemistry, inorganic, organic, analytical, and physical. In consultation with the graduate director, it may be determined that a student needs additional preparation to take graduate classes in one of the above subdisciplines. In these cases, the following courses if used for preparation for graduate coursework would not count toward the seven-course total: (CHEM 103, CHEM 143, CHEM 151A, CHEM 163A, CHEM 163B, and CHEM 163C).

For a further description of the courses available, please visit the Graduate Student Handbook.

Capstone Requirement

The candidate is required to present a passing literature seminar on a topic of their choosing, demonstrating the ability to read and critically analyze research data, to organize data into a coherent presentation, and to communicate the information in a clear and logical manner.

Applying for Graduation

M.S. students must complete the Application for the Master's Degree form by the appropriate quarter's deadline listed in the current academic calendar.

The form can be found on the Graduate Division website or can be provided by the Department of Chemistry and Biochemistry. The form should be turned in to the graduate adviser and program coordinator for review and submission to the Graduate Division.

CHEMISTRY PH.D.

Introduction

The Department of Chemistry and Biochemistry offers admitted graduate students access to world-class research while in the pursuit of their Ph.D.s. While the department offers Ph.D.s in two separate tracks, it is important to note that both tracks confer a Ph.D. in chemistry.

CHEM Track:

The Ph.D. in the Department of Chemistry and Biochemistry (CHEM), typically involves internal faculty/labs. Within this Ph.D. program, students have the flexibility to design a course of study focused on personal research interests, and at the same time are expected to maintain the high intellectual standards associated with the doctoral degree. Research options include biochemistry, physical chemistry, biophysical chemistry, inorganic chemistry, bioinorganic chemistry, materials chemistry, physical-organic chemistry, and bioorganic chemistry. Some research groups are interdisciplinary and are involved in two or more of these areas. After successful completion of all of the Ph.D. requirements, students in this track will be awarded a Ph.D. degree in chemistry from the Department of Chemistry and Biochemistry.

CB3 Track:

The Department of Chemistry and Biochemistry also participates in the graduate Program in Biomedical Science and Engineering (PBSE) through its administration of the Chemical Biology, Biochemistry and Biophysics (CB3) training track. Sixty-one faculty members, who come primarily from the Departments of Molecular, Cell, and Developmental Biology; Biomolecular Engineering; Chemistry and Biochemistry; and Microbiology and Environmental Toxicology offer an unusual breadth of expertise and exceptional opportunities in interdisciplinary graduate research training. When students apply to the PBSE they indicate interest in one of four training tracks:

- Biomolecular Engineering and Bioinformatics (BMEB)
- Chemical Biology, Biochemistry, and Biophysics (CB3)
- Microbiology and Environmental Toxicology (METX)
- Molecular, Cell, and Developmental Biology (MCD)

The Ph.D. track in chemical biology, biochemistry and biophysics (CB3) provides students with the opportunity to carry out cutting-edge research at the interface between biology and chemistry. The training program emphasizes analysis of molecular structure and mechanism as well as chemical biology and the use of organic chemistry to address biological questions. Interdisciplinary research is encouraged and supported by a diverse group of faculty.

Students in both tracks will be required to complete their coursework and other milestones to advance to candidacy, after which, they will write and defend their dissertations. After successful completion of all of the Ph.D. requirements, students in both tracks will be awarded a Ph.D. degree in chemistry from the Department of Chemistry and Biochemistry.

Progression and Milestones

Course Requirements

Both CHEM and CB3 tracks prepare students with an in-depth understanding of their area of specialization through a core curriculum that prepares them for advanced study and research. Students are also exposed to areas outside of their specialization with elective courses. Below are the course requirements specific to each track. All students are required to take CHEM 292 and CHEM 296 in their first year. Additionally, all Ph.D. students are required to enroll in CHEM 291 (weekly research seminars) until they advance to candidacy.

CHEM Track

Students in the CHEM track are expected to complete **15 credits of core courses (three courses) and 10 credits (two courses) of electives.** Electives may be either at the graduate level (200 series) or at the advanced undergraduate level (100 series). Twenty of the 25 credits (four 5-credit courses) must be chemistry and biochemistry courses. The remaining 5 credits may be in chemistry and biochemistry or in a related discipline such as molecular, cell, and developmental (MCD) biology; microbiology and environmental toxicology; physics; math; biomolecular engineering; electrical engineering; etc. Eligible electives do not include CHEM 163A/CHEM 163B/CHEM 163C, CHEM 109, CHEM 110, CHEM 110L, CHEM 143 or CHEM 151A, but can include CHEM 124, 151B, and CHEM 169. Completing these 25 lecture course credits is a requirement that must be met before advancing to candidacy. In consultation with their research advisor, students may take more than the required five courses at any time depending on their interests or research.

Please refer to the Graduate Student Handbook for the current core and elective curriculum by area of specialization.

CB3 Track

Students in the CB3 track complete the courses listed below, as well as at least three additional graduate-level lecture courses by the end of the third year. A list of approved elective courses is available on the PBSE-CB3 website

CHEM 200A	Advanced Biochemistry: Biophysical Methods	5
CHEM 200B	Advanced Biochemistry: Macromolecular Structure and	5

	Function	
CHEM 271	Chemical Biology	5
BIOL 289	Practice of Science	5

Teaching Requirement

The focus on high quality undergraduate education is one of the most outstanding features of the UC Santa Cruz campus. Teaching is a job that is taken very seriously and many graduate students and faculty come to UCSC because they want to be in an atmosphere where both teaching and research are important.

Students in the CB3 track are required to serve as a teaching assistant for a minimum of two quarters.

Students in the CHEM track are required to serve as a teaching assistant for a minimum of three quarters.

Committee Requirements

Broadly speaking, all graduate students will interact with three different committees in the pursuit of the degree as listed below.

Dissertation Advising Committee (DAC) - a committee which meets with the student annually to review the student's progress and to advise on thesis research by providing outside viewpoints. The student's research advisor is on the committee as well as a committee chair who must be a tenured faculty member from the Department of Chemistry and Biochemistry, as well as a third faculty member from the department. The committee members help decide when sufficient work has been completed for submission of a thesis. In certain cases, students in the CB3 track may nominate a fourth member to join the committee.

Qualifying Exam Committee - committee that assesses a student's qualifying exam in the second (CHEM track) or third year (CB3 track). Students in both tracks nominate a four-person Qualifying Exam committee.

Members 1 - 3 are track dependent:

- Students in the CB3 track nominate three CB3 faculty members (not to include the research advisor)
- Students in the CHEM track nominate the members of their DAC (chair of DAC and QE committee will **not** be the research advisor)

The fourth committee member of both tracks is an "outside" member, selected in consultation with the student and the research advisor. This member must be a tenured faculty member in an external department at Santa Cruz, a tenured faculty member at a different university, or a scientist at a different institution with a research record comparable to a faculty member with tenure. The nomination of the committee is due to the graduate student advisor no later than 35 days before the scheduled Qualifying Exam and is subject to the approval by the Graduate Division.

Dissertation Reading Committee (DRC) - committee that is responsible for reading, providing critical feedback on, and ultimately approving the written dissertation. The DRC is chaired by the research advisor, and is typically joined by two other faculty members from the Department of Chemistry and Biochemistry. The composition of the DAC and the DRC may be the same, with the important distinction of which faculty member is chair of which committee as stipulated above. In certain cases, students in the CB3 track may nominate a fourth member to join the committee.

First-Year Requirements

Laboratory Rotations

Students in the CHEM track do two, nine-week rotations during fall and winter quarters in the laboratory of two Chemistry and Biochemistry faculty members. Performance in each rotation is graded as satisfactory/unsatisfactory. At the end of each rotation period, students are required to present their project as a short talk to the department.

Students in the CB3 track students do three, seven-week rotations during fall and winter quarters in the laboratory of three PBSE-affiliated faculty members. Performance in each rotation is graded as satisfactory/unsatisfactory. At the end of each rotation period, students are required to present on their project either with a short talk or poster presentation.

Laboratory Placement

Graduate students in both tracks are required to choose their research advisor and join a lab in the spring quarter (by May 1) of their first year. A research advisor is necessary to make progress toward completing dissertation research.

Commitee Formation

Students in the CHEM track need to nominate names for their Dissertation Advising Committee (DAC). All committee names must be nominated by the end of the first spring quarter.

Students in the CB3 track nominate names in the second year.

Second-Year Requirements

Students in the CHEM track are required to pass a 25-minute literature seminar in their fourth or fifth quarter. Students present a second-year seminar on a topic of current interest in published research. The oral presentation is accompanied by a detailed three-page written document that describes the contents of the presentation, and is delivered to the student's DAC.

Students in the CB3 track are required to pass their Ph.D. oral qualifying examination before their Qualifying Exam Committee by the end of the student's sixth quarter. The members of the Qualifying Exam Committee are nominated by the student, subject to approval. Students must demonstrate an expertise in their area of research and include a six-page

NIH-style research strategy and specific aims page on their planned dissertation research. Upon passing that examination, the Dissertation Reading Committee (DRC) is formed. The committee comprises the research advisor plus two other members of the Chemistry and Biochemistry faculty. An outside member from the broader community of PBSE faculty can be requested as an additional member of the DRC. The Dissertation Advising Committee is formalized at the same time, and both committees' memberships will be the same, with differing chairs.

Third-Year Requirements

Students in the CHEM track are required to pass their Ph.D. oral qualifying examination (QE) by the end of their seventh quarter (typically the fall of the third year). The oral QE is given before the Qualifying Exam Committee. The Ph.D. candidate presents (a) a summary of current research results and future directions, and (b) an original research proposal on a chemistry or biochemistry topic. This proposal may either be partially related or unrelated to the candidate's current thesis research. This proposal must be approved by the student's DAC prior to the oral examination. In addition, a detailed six-page research strategy and specific aims page on their written research proposal will be submitted for evaluation to the QE committee. **Upon successful completion of the QE and satisfaction of course requirements, the students advance to candidacy.**

By the end of their ninth quarter (typically the spring of the third year), students in the CB3 track must: (a) present an hour-long public seminar that is based on their dissertation research; and (b) answer questions posed by their DAC. **Upon successful completion of the seminar and satisfaction of course requirements, the students advance to candidacy.**

Advancement to Candidacy

Students in both tracks will have advanced to candidacy when they have completed all progression requirements and other milestones other than defending a dissertation. Both tracks include similar milestones (each detailed in the above ections and distinguished by track):

- Course requirements
- Teaching requirements
- 1st-year requirements
- 2nd-year requirements
- 3rd-year requirements

Note: Students in both tracks are required to be enrolled in at least one quarter between advancing to candidacy and applying to graduate.

Academic Progress Meetings

Students in both tracks will have their academic progress reviewed annually by the graduate program administration each spring term. Progress summaries will be sent to each student and their principal investigator (PI) by the following fall. The summaries will include details of expected requirements for the following year.

Concurrently, students who have advanced to candidacy must meet with their DAC at least once a year, typically during the fall quarter, to report research progress and present an updated prospectus and get advice and guidance for the coming year.

The fourth-year review gives the student an opportunity to focus and plan their research and to begin shaping the final product—the research dissertation. With this goal in mind, the student presents their research progress to the DAC, obtains feedback, and receives guidance on future directions.

Progress discussions and reviews with the DAC are held in the fall quarter of the fifth year and the sixth year, if necessary, until the dissertation is submitted. These meetings' format is the same as described above for the fourth-year review.

Normative Time to Degree

In alignment with Graduate Division guidelines, the department has established six years of normative time to degree. Ph.D. students from both tracks are expected to complete research and write the dissertation within nine quarters after advancing to candidacy following a successful Ph.D. oral QE. Financial support is not available after 18 quarters in the graduate program.

Dissertation and Graduation

Dissertation

As the final requirement for the Ph.D., students from both tracks will write and defend the dissertation, which must be accepted under the rules of the Academic Senate. When the DRC agrees that the research is ready to be submitted, the student writes the dissertation according to the guidelines prescribed by the University Library and the Graduate Division.

Students must submit the doctoral thesis to the DRC for tentative approval at least one month before presenting a defense seminar.

The dissertation, completed in the format specified by the Graduate Council and approved by the DRC, **must be submitted to the Graduate Division no later than the last day of the term in which the degree is to be awarded.**

Dissertation Defense

In addition to the research and writing, the dissertation must be defended. The defense takes the form of a public seminar, where the student presents the principal results of their research to their DRC, as well as any members of the public in attendance. Following the presentation, the committee and other attendees will ask questions of the work. The dissertation defense should be scheduled at least one week prior to submitting the dissertation to the Graduate Division for final processing and graduation (**per the above section, this means the dissertation defense should be scheduled no later than one week before the end of the term in which the degree is to be awarded**).

The DRC makes the final departmental decision regarding the awarding of the Ph.D. degree. The decision is subject to the approval of the graduate dean.

Applying for Graduation

Students close to completing their degree must file an application for the Ph.D. degree by the end of the second week of the quarter in which they wish to graduate (see the Academic and Administrative Calendar for deadline). The application is the student's official notification to the graduate dean of their intent to graduate. This form is available on the Graduate Division's **website.**

Coastal Science and Policy

Coastal Science and Policy Program
115 McAllister Way, rm 251, Ocean Health Building
https://csp.ucsc.edu/

PROGRAMS OFFERED

Coastal Science and Policy M.S. (p. 313)

Coastal Science and Policy Designated Emphasis (p. 313)

OTHER PROGRAMS OF INTEREST

Biology: Ecology and Evolutionary Biology (p. 352)

Economics (p. 679)

Environmental Studies (p. 737)

Earth Sciences (p. 316)

Ocean Sciences (p. 464)

Sociology (p. 852)

Politics (p. 816)

COASTAL SCIENCE AND POLICY M.S.

Introduction

Students in the University of California, Santa Cruz's Coastal Science and Policy Program (CSP) are early career leaders in sustainability from across the globe. The program gives students hands-on training, strengthens their networks, and helps them redeploy where they are needed most. Students in this program develop a range of skills, interdisciplinary knowledge, and pragmatic approaches to become more effective leaders at developing practical solutions to coastal sustainability challenges, from watersheds to the open ocean. Small cohorts of students hailing from California, additional U.S. states and other nations experience in-depth interaction with faculty members, professionals and practitioners. The curriculum and composition of student cohorts aim to advance justice, equity, diversity and inclusion in coastal sustainability.

The two-year Master of Science program is tailored for rising leaders to expand their networks and develop interdisciplinary solutions to challenges facing coastal communities and ecosystems. Key program features:

Year 1: Students take interdisciplinary courses and seminars in natural and social sciences, economics, policy analysis, coastal governance, leadership, innovation, and methods for designing scalable solutions to complex problems.

Year 2: Students engage with partner organizations to design and pursue individual capstone projects that build capacity and develop solutions for real problems. Projects may be based globally.

The program focuses on practical training to provide integrated, scalable solutions to social and ecological challenges under five interconnected themes that leverage UCSC's existing leadership in coastal sustainability:

- Coastal Resilience and Climate Change
- Conserving Biodiversity and Sustaining Ecosystem Processes
- Fisheries and Aquaculture
- Coastal Policy
- Justice, Equity, Diversity and Inclusion
- Innovation for Coastal Solutions

Preparation for Graduate Work in Coastal Science and Policy

Students admitted to the Master of Science (M.S.) in Coastal Science and Policy Program will have completed a bachelor's degree at a four-year university in a field relevant to coastal sustainability. Relevant fields are diverse and include the natural sciences (e.g., biology, earth sciences, chemistry, oceanography), social sciences (e.g., economics or business, human ecology, political science, sociology), interdisciplinary programs (e.g., environmental studies and sciences) and engineering. Regardless of undergraduate major and/or minors, specific additional requirements prior to admission include at least one course in writing and one course in statistics; as well as coursework in at least two of the

following three areas: biological sciences, physical sciences, and the social sciences (including policy and economics). Students are not expected to have identified a faculty adviser prior to joining the program. Students from underrepresented and diverse racial, ethnic, cultural, socioeconomic, and disciplinary backgrounds are encouraged to apply. We anticipate that competitive applicants to the program will have additional experience from either post-baccalaureate professional jobs or a combination of coursework, internships, professional jobs and research, in relevant fields.

Requirements

Course Requirements

The Master's of Science in Coastal Science and Policy is a Plan II (capstone project) degree.

Core Courses

The M.S. program will include a core set of three foundational and seven developmental courses.

Foundational Courses

CSP 200	Natural Sciences for Coastal Sustainability	5
CSP 210	Social Sciences for Coastal Sustainability	5
CSP 220	Economics for Coastal Sustainability	5

Developmental Courses

These courses cut across multiple disciplines and will be taught by core faculty, partner practitioner-scientists, and specialist trainers.

CSP 230	Integrated Problem-Based Discussion	
CSP 231A	CSP Year 1 Capstone Planning & Design Fall	2
CSP 231B	CSP Year 1 Capstone Planning & Design Winter	2
ENVS 240	Public Policy and Conservation	5
ENVS 250	Coastal Governance	5
CSP 244	Adaptation and Planning	5
BIOE 262	Facilitating Change in Coastal Science Policy	5

Methods and Elective Courses

M.S. students are also required to take one 5-credit methods course and one 5-credit elective course in their first year. The methods and elective courses can be drawn from courses currently offered across the UCSC campus. The methods course should provide training in quantitative or qualitative research design, tools, and analysis; and help prepare the student for methods used in their capstone project. Electives help broaden the student's disciplinary knowledge. For example, incoming students with an undergraduate degree in the natural sciences (e.g., ecology) may be encouraged to take a graduate-level elective course in the social sciences (e.g., politics, economics).

The methods requirement can be met by taking CSP 241/CSP 241L (cross-listed with BIOE 286/BIOE 286L), another course from the list of approved methods courses found here, or by approval of the program director. The selection of the methods and elective courses will be made in consultation with the student's faculty adviser and program, with final approval from the program director.

CSP 281A	Hacking for Oceans—Lean Design Methods	5
CSP 282	Quantitative Methods for Coastal Climate Resilience	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2
CSP 297	Independent Study in Coastal Science and Policy	5
CSP 293	Special Topics in Coastal Science and Policy	5
CSP 271	Fisheries Ecology	2
CSP 292	Special Topics in Coastal Science and Policy	2

CSP 271 and CSP 292 are 2-credit courses and, thus, do not satisfy the required 15 credits of method and elective courses.

CSP 271 is taught in spring quarter in odd calendar years.

Other Requirements

Summer Training

During the summer after their first year, M.S. students either begin work on their capstone, engage in a short-term summer placement, or participate in training to build specific skills relevant to their capstone and career. If a student pursues a short-term summer placement, this will consist of working with a non-academic partner to gain practical experience in a field relevant to the student's capstone and career interest and give them firsthand immersion in the processes involved in domestic or international coastal sustainability projects. Placement projects will be required to include: 1) a real concern of the institutional partner, 2) research and/or solutions development and implementation, and 3) strong interdisciplinary elements. A faculty adviser will oversee the summer work. The intent is that, in collaboration with institutional partners and CSP advisers, the summer experience strengthens students' skills to conduct their capstone project or otherwise advances the student's career trajectory.

Capstone Project

In the second year, students implement a capstone project. To earn credit for implementing their capstone, students enroll and fulfill the requirements for CSP 290, Coastal Science and Policy Capstone Project (10 credits/quarter). The project is typically developed during Year 1 of the program in collaboration with a practitioner partner and a CSP faculty adviser or advisers, and with oversight from the program. The project should: a) address a real concern of the non-academic partner; and b) include research, solutions development, and implementation, and be strongly interdisciplinary in nature. A

program team consisting of the student's CSP faculty adviser and practitioner partner mentor will advise on the capstone project, with programmatic guidance from CSP staff. Mid-year (winter, Year 2), students will provide a mid-term written report. In the final quarter (spring, Year 2), students will provide a final written report to the program and give an oral presentation of the capstone project to CSP students, faculty, institutional partners and the public. The final presentations will be required to address the importance and impact of the project on the field, social science and natural science elements of the selected project, project outcomes and relevant next steps.

CSP 290A	Coastal Science and Policy Capstone Project	10
CSP 290B	Coastal Science and Policy Capstone Project	10
CSP 290C	Coastal Science and Policy Capstone Project	10

Capstone Project Seminar

Each quarter of the second year, students will enroll in CSP 291, Coastal Science and Policy Capstone Seminar (2 credits/quarter). This seminar is offered in an interactive workshop format, in which students share and get feedback on dimensions of their capstone projects. Topics by quarter include, but are not limited to:

- **Fall**–project progress and challenges; midterm capstone report preparation (due winter term).
- **Winter**–sharpen capstone's theory of change, refine outcomes and project communications.
- **Spring**–prepare capstone deliverables, final written report, and oral presentation; rehearse public-facing presentation.

Additional topics across all terms may include career and networking skill-building and support, as well as exposure to real-world collaborative initiatives on coastal sustainability issues.

CSP 291	Coastal Science and Policy Capstone Seminar	2

Planners

	Fall	Winter	Spring
1st Year	CSP 200	CSP 242/ ENVS 240	CSP 244
	CSP 210	CSP 243/ENVS 250	Methods or Elective Course
	CSP 220	CSP 231B	Elective Course
	CSP 230	Methods or Elective Course	
	CSP 231A	CSP 245/ BIOE 262	
2nd Year	CSP 290A (10 credits)	CSP 290B (10 credits)	CSP 290C (10 credits)
	CSP 291 (2 credits)	CSP 291 (2 credits)	CSP 291 (2 credits)

[Optional Catchall]

Applying for Graduation

COASTAL SCIENCE AND POLICY PH.D. DESIGNATED EMPHASIS

Introduction

Students in this program will develop a range of skills, interdisciplinary knowledge, and pragmatic approaches to become more effective leaders at developing practical solutions to coastal sustainability challenges, from watersheds to the open ocean. Thematic foci of the program include coastal resilience and climate change, conservation of biodiversity; fisheries and aquaculture; justice, equity, diversity and inclusion; and innovation for coastal solutions. The training also aims to help advance justice, equity, diversity and inclusion in coastal sustainability. A CSP designated emphasis (DE) will serve Ph.D. students who desire to strengthen their ability to directly connect their science to actionable solutions in collaboration with practitioner organizations.

Students obtaining a DE in Coastal Science and Policy, will develop a range of skills, interdisciplinary knowledge, and trans-disciplinary approaches pertinent to creating real-world solutions to current and emerging concerns for coastal sustainability.

Preparation for Designated Emphasis in Coastal Science and Policy

To receive a designated emphasis in Coastal Science and Policy, graduate students must complete the following requirements in addition to the degree requirements for the doctorate in their home department:

Requirements

Ph.D. students apply for the CSP DE (sample application here) ideally during their first year and complete a minimum of three CSP courses (15 credits) prior to proceeding to Ph.D. candidacy. The DE is available only to UC Santa Cruz-enrolled Ph.D. students; master's students are not eligible.

Committee Composition and Departmental

Approvals

The student must have a DE adviser from the CSP core or affiliated faculty. The DE adviser commits to serving on the Ph.D. qualifying exam committee (typically as the outside member), and the dissertation reading committee.

The Ph.D. student's primary faculty adviser, graduate program coordinator/adviser in the student's UCSC home department, and the CSP program must approve participation in the CSP DE. Only applications from registered students in good standing will be approved for the CSP DE.

The student must meet with their DE faculty adviser to develop a coherent plan for meeting the requirements for the CSP DE, preferably before the end of the student's first year. This plan must be approved by the CSP program director.

Course Requirements

Students are required to complete at least three CSP courses including two required courses (CSP 244 and CSP 245 [BIOE 262]).

Courses taken to fulfill Ph.D. degree requirements within the home department will not count toward the designated emphasis program's required coursework.

CSP 244	Adaptation and Planning	5
BIOE 262	Facilitating Change in Coastal Science Policy	5

Additional Courses

Students work with their CSP adviser to review their academic background and select at least one and up to six additional CSP courses (minimum of five additional credits) to assure overall interdisciplinary competence in: social sciences for sustainability, economics for sustainability, natural sciences for sustainability, statistics, coastal governance, and policy analysis. Select courses from the list below:

CSP 200	Natural Sciences for Coastal Sustainability	5
CSP 210	Social Sciences for Coastal Sustainability	5
CSP 220	Economics for Coastal Sustainability	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2
ENVS 240	Public Policy and Conservation	5
ENVS 250	Coastal Governance	5
CSP 281A	Hacking for Oceans—Lean Design Methods	5
CSP 282	Quantitative Methods for Coastal Climate Resilience	5
CSP 293	Special Topics in Coastal Science and Policy	5
CSP 297	Independent Study in Coastal Science and Policy	5

CSP offers two additional 2-credit courses that are open to students from any discipline including CSP DEs. CSP 271, Fisheries Ecology (taught in spring quarter in odd years), and when available CSP 292, Special Topics in Coastal Science and Policy. While we encourage students to take these courses, they cannot be taken to fulfill the required DE course requirements.

Writing, Research and/or Teaching Requirements

Ph.D. students must work closely with a non-academic practitioner partner (e.g., from a government, business, or non-profit entity) on one interdisciplinary and solution-oriented dissertation chapter on a coastal sustainability issue. In-depth interaction with the practitioner is necessary in the conceptual formation and execution of the work to be reported in the chapter (i.e., the student cannot solely receive and analyze data from the collaborating practitioner).

The CSP program, via core courses, workshops, and mentoring by CSP faculty, provides substantial guidance on how to collaborate with partners in a manner that fits well with the dissertation research process. This requirement ensures that the student's work will bring their knowledge to action, addresses real-world challenges and implements new, cutting-edge solutions.

[Optional Catchall]

Earth and Planetary Sciences

A232 Earth and Marine Sciences Building
(831) 459-4089
https://eps.ucsc.edu

PROGRAMS OFFERED

Earth Sciences B.S. (p. 318)

Environmental Sciences B.S. (p. 335)

Earth Sciences/Anthropology Combined Major (p. 341)

Earth Sciences Minor (p. 346)

Earth Science B.S./M.S Contiguous Pathway (p. 347)

Earth and Planetary Sciences M.S. (p. 349)

Earth and Planetary Sciences Ph.D. (p. 351)

OTHER PROGRAMS OF INTEREST

Environmental Studies B.A. (p. 739)

Chemistry B.S. (p. 289)

Ecology and Evolutionary Biology B.S. (p. 360)

Science Education B.S. (p. 490)

The Earth and Planetary Sciences Department teaches and conducts research in a wide array of topics. We seek to answer questions such as:

- How did the Earth form? How has it evolved since then? What makes up the interior of the Earth? How were Earth's ocean and atmosphere generated, and how have they changed through time?
- What is the history of life on Earth? What are the causes and effects of past mass extinctions?
- How do mountain ranges form? What causes earthquakes? What causes island chains to form? What controls the evolution of glaciers? How do we prevent coastal erosion? How well can we predict tsunamis?
- What has Earth's climate been like in the past? How will climate change in the future? What changes are likely in Earth's atmospheric properties?
- What controls the supply and quality of our freshwater resources?
- How are other planets in our solar system different from Earth? How did they evolve to their present state? How have the impacts of asteroids on Earth and other planets affected their evolution?

A variety of methods and tools are used to help us address these questions. Geologists examine rocks and geologic formations in order to understand the processes that control their formation and evolution. Geochemists and mineralogists examine the chemical and mineral composition of rocks, sediments, and fossils using a variety of sophisticated analytical instruments. Geophysicists use seismometers to not only record earthquakes, but also to learn about the deeper parts of the Earth, which are studied in tandem using high-pressure experiments. Environmental scientists collect samples of the atmosphere, rivers, lakes, and the oceans, sometimes requiring the use of aircraft and ships. Spacecraft have visited and explored all of the planets in our solar system. Space-based satellites have provided a massive amount of data about Earth over the past few decades. Scientists from all disciplines use computer models to help them understand these complex systems.

The Department of Earth and Planetary Sciences offers a number of degrees that teach undergraduate and graduate students the knowledge and skills necessary to address these and many other questions.

Graduates of our department continue on to a variety of careers, such as:

- Business and industry
- Geological and environmental consulting
- Governmental agencies at the federal, state, and local level
- Non-profit organizations
- Research at universities, governmental research institutions, or other scientific agencies
- Graduate/professional school in areas such as science, engineering, teaching, law, public health, business

For more information about the people in the department, their areas of interest, departmental facilities, contact emails and phone numbers, and how to apply to join our department as an undergraduate or graduate student, please see our website.

UNDERGRADUATE PROGRAM

Along with the general Earth sciences major, we offer degrees with concentrations in geology, geophysics, ocean sciences, and planetary sciences. We also offer a combined major with anthropology, and a minor in Earth sciences is also available. We offer courses across a wide range of topics, allowing students to tailor the curriculum to their interests. Courses are comprised of not only classroom lectures, but frequently field trips, laboratories, and computer exercises are involved. Many related courses are offered by other departments such as Ocean Sciences, Microbiology and Environmental Toxicology, Environmental Studies, Biological Sciences, Chemistry and Biochemistry, and Astronomy and Astrophysics. The university capstone requirement is often fulfilled by attending the departmental field camp, or by completing a senior research thesis, but other choices are also possible.

Classes suitable for non majors: EART 1, EART 2, EART 3, EART 5, EART 7, EART 8, EART 10, EART 11, EART 12, EART 20, EART 30, EART 32, EART 66.

GRADUATE PROGRAM

The graduate program in the Earth and Planetary Sciences Department is designed to prepare students for research, industry, consulting, teaching, and numerous other career paths, including business and law. The aim is to develop habits of critical analysis and thorough documentation; skills in quantitative field, computational, and/or laboratory research; and proficiency in one or more fields of research. The fundamental requirements for admission to the program are substantial evidence of superior scholarship, dedication and determination to do quality work, and aptitude for original research. Preparation in the basic sciences equivalent to the requirements for the Earth sciences bachelor's degree at UC Santa Cruz is expected and, for non-undergraduate Earth sciences majors, achieving breadth of knowledge across the Earth and planetary sciences is expected. Excellent scholars from other disciplines, including chemistry, physics, engineering, biology, environmental sciences, or astronomy are both eligible and encouraged to apply. Gaps in knowledge can be made up through coursework.

UC Santa Cruz awards both the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees. The M.S. degree may be the terminal degree for some seeking careers in industry, government, and teaching at the secondary level. It may also be an initial step toward the Ph.D. degree, in which

the student gains knowledge and confidence in carrying out and completing a more complex scientific project.

EARTH SCIENCES B.S.

Information and Policies

Introduction

The bachelor of science (B.S.) program is designed for students who intend to pursue professional careers in Earth and planetary sciences, engineering, policy, law, teaching, or business or who otherwise desire the broad, quantitative training available at the University of California, Santa Cruz. In addition to providing comprehensive preparation in the basic physical sciences, and particular breadth and depth in Earth and planetary sciences, the curriculum is structured to prepare students for the competitive graduate school and career marketplace.

The core of the major includes calculus, physics, chemistry, and a group of comprehensive Earth and planetary sciences courses. For the general B.S., students then select at least six additional courses from a diverse list of upper-division electives, with at least two that involve significant laboratory or field data acquisition and analysis. These electives, often in combination with additional upper-division courses from this and related departments, provide the student with expertise in one or more subdisciplines within Earth sciences.

Elective distributions can be designed to emphasize earthquake and faulting studies, Earth surface processes, Earth system sciences, geologic hazards, geology, crustal and deep-Earth geophysics, marine geophysics, and water resources. Four formal concentrations, all with specific course requirements and leading to an Earth and planetary sciences B.S., are available: geology, geophysics, ocean sciences, and planetary sciences. A senior comprehensive experience (senior thesis, geologic field camp, or intensive capstone course) is required of all majors.

Program Learning Outcomes

Students graduating with a B.S. in Earth and planetary sciences (all concentrations) should be able to:

1. understand the processes governing the properties and evolution of Earth's interior and surface;
2. identify rocks and minerals, and describe their connection to geologic processes;
3. utilize algebraic mathematical tools to quantitatively address questions in the geosciences; and
4. write in a clear, organized, and logical fashion using disciplinary standards for reporting and citation.

Academic Advising for the Program

Academic advising is available at the Department of Earth and Planetary Sciences (EPS) undergraduate advising office located in the Earth and Marine Sciences Building, and via email at epsadvising@ucsc.edu. The EPS undergraduate web pages contain information on all aspects of major advising including: academic planning, upper- and lower-division course descriptions, enrichment opportunities in the major like study abroad and undergraduate research, and how to make an appointment with an adviser. Each student should become familiar with the information posted on the website; for further assistance, contact the EPS undergraduate adviser at epsadvising@ucsc.edu. Transfer students should consult Getting Started in the Major: Transfer Students for more detailed information about academic advising.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required. Students begin with general chemistry and mathematics, and an introductory course in physical geology.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Courses completed at a community college or four year university and/or advanced placement (AP) course equivalencies may be used to fulfill prerequisites.

Every proposed Earth science student will receive emails about advising and first quarter enrollment during the summer. Students with further questions about what to enroll in should email the Earth and Planetary Sciences undergraduate adviser at epsadvising@ucsc.edu.

Transfer Information and Policy

Transfer Admission Screening Policy

The following Transfer Screening policy takes effect in fall 2024 and will be mandatory for all transfer students entering UC Santa Cruz fall 2026 and later. Transfer students entering UCSC prior to fall 2026 are encouraged to complete these requirements, but are not required to meet them.

The Earth and Planetary Sciences Department welcomes applications from transfer students who are prepared to enter as Earth sciences majors. Students should reference assist.org to determine course equivalencies.

Transfer students planning on attending UC Santa Cruz to pursue an Earth sciences major should contact the undergraduate adviser for transfer preparation information and reference assist.org to determine which courses are equivalent to these required courses. Having this coursework completed prior to transferring allows students greater flexibility in scheduling and completing their major.

Take one of the following courses:

To be considered for admission as a proposed Earth Sciences B.S. major, transfer students must complete one of the following courses with a grade of C or better or their equivalents prior to transfer, by the end of the spring term for students planning to enter in the fall.

MATH 11A	Calculus with Applications	5

MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Recommended Courses

In addition, the following courses are recommended prior to transfer to ensure timely graduation:

CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
MATH 11B	Calculus with Applications	5
PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Note: The CHEM requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1C, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Getting Started in the Major: Transfer Students

Once you have submitted your intent to register at UC Santa Cruz, here is a step-by-step guide to transferring your coursework and enrolling:

1. **Confirm you are a proposed Earth sciences major.** If you are not sure of your status, log on to your MyUCSC portal to view your proposed major. If your major is proposed Earth sciences you are all set. If the proposed major listed is not Earth sciences, you will need to meet with the adviser for Earth sciences.
2. **Once your courses have been articulated, you will receive an email from our office.** This email will include suggestions for summer or fall enrollment, and invite you to make an appointment to talk with the EPS major adviser.
3. **Make an appointment to talk to an adviser.** Your confirmation email will include instructions for scheduling an advising appointment. Appointments are available either over Zoom or in person.
4. **Participate in Transfer Orientation and Welcome Week.** Transfer Orientation provides instructions on how to transfer your coursework to UC Santa Cruz, the advising and support available, and how to enroll. Our online transfer orientation provides all the critical information you need to transition to UCSC and begin your major coursework.
   The department also hosts a transfer student welcome in the fall that provides new transfer students an opportunity to meet other transfer students, familiarize themselves with the campus and the available resources. Welcome Week includes presentations on the Earth sciences majors, including an overview of the field courses offered and an introduction on how to get involved in undergraduate research.
5. **Declaring the Earth Sciences major.** In order to declare the Earth sciences major transfer students must complete EART 5/EART 5L, or EART 10/EART 10L or EART 20/EART 20L or an approved equivalent course (with a C or better) and have a signed and approved academic plan on file by the campus declaration deadline.

Major Qualification Policy and Declaration Process

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Major Qualification

To qualify for the Earth sciences B.S. (including all concentrations within the major), a student must complete (with a minimum grade of C) one of the following introductory courses and associated lab in physical geology:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Transfer students may take an approved substitution for one of the above course combinations and should consult assist.org for equivalencies. Transfer students should also review the Transfer and Information Policy section for information about major qualifications.

Appeal Process

If a student completes major qualification courses but does not meet the major qualification criteria, and appeals, the department may accept or reject the appeal or place conditions on the student that will be resolved within at most one more enrolled quarter.

Students who are informed that they are not eligible to declare the major may appeal by submitting a letter to the Earth and Planetary Sciences advisor within 15 days from the date the notification was sent. Within 15 days of receipt of the appeal, the department will notify the student and their affiliated college of the decision.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Students who wish to declare the Earth science major start the process by scheduling an appointment with the department staff adviser to create an academic plan. Once academic planning has been completed students submit the online major declaration petition to begin the major declaration process.

Letter Grade Policy

All courses used to satisfy requirements for the Earth sciences B.S. must be taken for a letter grade with the exception of EART 195, EART 198, EART 199 and OCEA 199. These courses may be taken pass/no pass.

Course Substitution Policy

Relevant courses taken at UC Santa Cruz or other institutions may be substituted for degree requirements by approved petition. Please see the undergraduate adviser for the substitution petition form and more information about this process.

Double Majors and Major/Minor Combinations Policy

Students interested in pursuing multiple majors within the Earth and environmental sciences may NOT declare the following combination of majors:

- Earth Sciences B.S. and Earth Sciences Minor
- Any combination of the following: Earth Sciences B.S., Environmental Sciences B.S., Earth Sciences/Anthropology Combined Major B.A.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Honors

Honors in the major (all concentrations) and in the combined major with anthropology are determined by a review of grades (typically 3.50 or above) at the time a student applies for graduation. A faculty committee makes the decision based on the quality of all coursework, but especially in the courses required for the major. Extra coursework or independent study as well as more intensive or rigorous coursework and the quality of a capstone project may also be taken into consideration. Honors in the combined major with environmental studies are evaluated by the Environmental Studies Department. Highest honors may also be awarded in exceptional cases when a student's overall grade point average (GPA) is above 3.75 and performance in the senior capstone requirement is equally outstanding. The department reserves the right to withhold honors and highest honors based on other criteria, such as an incident of academic dishonesty.

Honors on the senior thesis are determined independently of major honors, and must be approved by two faculty readers.

[Optional Catchall]

General Earth Sciences Major

Course Requirements

Lower-Division Courses

Some courses may be satisfied via exam credit.

Choose one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following courses:

MATH 22	Introduction to Calculus of Several Variables	5
MATH 23A	Vector Calculus	5
EART 111	Mathematics in the Earth Sciences	5
EART 125	Statistics and Data Analysis in the Geosciences	5
EART 119A	Introduction to Scientific Programming	5

Students that have completed a prior course in programming or statistics may petition for equivalency.

Plus all of the following courses:

PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6M	Introductory Physics II Laboratory	1

Upper-Division Courses

All of the following courses:

EART 110A	Evolution of the Earth	7
EART 110B	Earth as a Chemical System	5
EART 110M	Earth as a Chemical System Laboratory	2
EART 110C	The Dynamic Earth	5
EART 110N	The Dynamic Earth Laboratory	2

Two field/laboratory/data analysis courses

Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement. The following courses satisfy this requirement:

EART 109	Elements of Field Geology	5
EART 109L	Field Geology Laboratory	2
EART 116	Hydrology	5
EART 119A	Introduction to Scientific Programming	5
EART 120	Sedimentology and Stratigraphy	5
EART 120L	Sedimentology and Stratigraphy Laboratory	2
EART 125	Statistics and Data Analysis in the Geosciences	5
EART 130	Igneous and Metamorphic Petrology	5
EART 130L	Igneous and Metamorphic Petrology Laboratory	2
EART 140	Geomorphology	5
EART 140L	Geomorphology Laboratory	2
EART 142	Engineering Geology for Environmental Scientists	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 150L	Structural Geology Laboratory	2
EART 189A	Geographic Information Systems with Applications in Earth Sciences	5
EART 189B	Summer Field Study	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5

Courses used to satisfy the senior comprehensive requirement cannot be used to satisfy this requirement.

Electives

Students take four upper-division Earth sciences or ocean sciences courses of 5 or more credits, chosen from EART 100-199 (excluding EART 196B and EART 198) or OCEA 100-199. No more than one quarter of EART 199 or OCEA 199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

ENVS 115A and ENVS 115L are open to Earth science students with permission of the instructor, and taken together are approved as one elective.

Students are encouraged to take more than the minimum number of elective courses and may craft an elective distribution from many areas of specific research and career interests.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) general education requirement. Students in the Earth Sciences B.S. major must complete a minimum of two (2) courses from the list of courses that in combination satisfies the DC general education requirement. Courses taken to satisfy the DC requirement may also satisfy upper-division elective or senior comprehensive requirements. Consult one of the Earth and planetary sciences advisors for the most up-to-date list of scheduled classes. Currently the list (subject to change) consists of:

EART 100	Vertebrate Paleontology	5
EART 101	Invertebrate Paleobiology	5
EART 102	Marine Geology	5
EART 104	Geologic Hazards	5
EART 109	Elements of Field Geology	5
EART 120	Sedimentology and Stratigraphy	5
EART 140	Geomorphology	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 160	Planetary Science	5
EART 189B	Summer Field Study	5
EART 191	Earth Sciences Capstone Seminar	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5
EART 195	Senior Thesis	5

Comprehensive Requirement

All students must satisfy the senior comprehensive requirement. The intent of this requirement is to synthesize knowledge and skills from a student's undergraduate career. Therefore, prior to completing an activity to satisfy the senior comprehensive requirement, students should have already completed EART 110A, one of EART 110B or EART 110C, and three other upper-division courses that fulfill major requirements. Students should consult an advisor if they have any questions about the timing of their proposed comprehensive requirement activity. Enrollment in the senior comprehensive is by petition or application.

Note: Courses used to satisfy the senior comprehensive requirement cannot be used to satisfy the upper-division elective requirement or the field/laboratory/data analysis requirement.

To satisfy the comprehensive requirement, each student in these majors must complete one of the following options:

Satisfactory completion of Summer Field

EART 189A	Geographic Information Systems with Applications in Earth Sciences	5
EART 189B	Summer Field Study	5

Satisfactory completion of a senior thesis

A senior thesis must include a significant element of independent research or original work and can only be undertaken after an agreement is obtained from a faculty member to supervise it. It is recommended that students allocate three quarters for the thesis process.

Students may take EART 199, Independent Study, as part of performing the research for their senior thesis. It is required that each student enroll in and pass EART 195: Senior Thesis, in the academic quarter during which they complete their thesis.

EART 195	Senior Thesis	5

Satisfactory completion of one of the following capstone course offerings:

EART 191	Earth Sciences Capstone Seminar	5
EART 191B	Planetary Capstone	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5

Capstone course offerings vary year to year. If you are interested in completing a capstone course please contact the Earth sciences adviser.

Other Options

Other options such as external field research experiences or internships may be suitable by permission of the faculty adviser.

Please meet with an adviser if you have an idea to propose.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Students planning a professional career in the Earth and planetary sciences should take more than the minimum number of courses required for the major if possible. Four-year students have ample flexibility to take additional electives if they begin with the required courses in their second year. Junior transfers also have flexibility if they have taken most of their preparatory courses in calculus, chemistry, and physics before entry. Further advice can be obtained from the undergraduate adviser and from faculty members.

Sample Four-Year Planner

Year	Fall	Winter	Spring
1st (frosh)	CHEM 3A	MATH 11A or MATH 19A	MATH 11B or MATH 19B
		CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL
		**EART 10 EART 10L	
2nd (soph)	EART 110A*	EART 110B EART	PHYS 6B PHYS 6M

		110M*	
	MATH 23A or EART 111	PHYS 6A PHYS 6L	
3rd (junior)	EART elective	EART elective	EART 110C EART 110N
			EART elective
4th (senior)	EART elective	EART elective	EART 189A* or senior thesis
	(sr thesis only) EART 199†	(sr thesis only) EART 199†	(EART 195)†
	EART elective		

In addition to the specific courses shown in these planners, a student must complete courses satisfying the CC, ER, IM, SR, and TA general education requirements.

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

** EART 5, 10, 20 and corresponding labs are interchangeable.

†Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

Sample Transfer (Two-Year) Planner

This planner assumes that students have completed all general education courses and all lower-division requirements, other than PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M, and advanced math/programming/statistics.

Year	Fall	Winter	Spring
1st (junior)	EART 111	PHYS 6A PHYS 6L	PHYS 6B PHYS 6M
	EART 110A*	EART 110B EART 110M*	EART 110C EART 110N
2nd (senior)	EART elective	EART elective	EART elective
	EART elective	EART elective	EART elective
	(Sr thesis only) EART 199†	(Sr thesis only) EART 199†	EART 189A* or senior thesis (EART 195)†

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

†Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

Geology Concentration

Course Requirements

Lower-Division Courses

Some courses may be satisfied via exam credit.

Choose one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2

CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus all of the following courses:

PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Upper-Division Courses

All of the following courses:

EART 109	Elements of Field Geology	5
EART 109L	Field Geology Laboratory	2
EART 110A	Evolution of the Earth	7
EART 110B	Earth as a Chemical System	5
EART 110M	Earth as a Chemical System Laboratory	2
EART 110C	The Dynamic Earth	5
EART 110N	The Dynamic Earth Laboratory	2
EART 120	Sedimentology and Stratigraphy	5
EART 120L	Sedimentology and Stratigraphy Laboratory	2
EART 150	Structural Geology	5
EART 150L	Structural Geology Laboratory	2

Geology Elective: One of the following:

Where the lab course follows a lecture course the pair of courses counts as a single course.

EART 100	Vertebrate Paleontology	5
EART 100L	Vertebrate Paleontology Laboratory	2
EART 101	Invertebrate Paleobiology	5
EART 101L	Invertebrate Paleobiology Laboratory	1
EART 140	Geomorphology	5
EART 140L	Geomorphology Laboratory	2
EART 142	Engineering Geology for Environmental Scientists	5
EART 146	Groundwater	5

Electives

Students take two upper-division Earth sciences or ocean sciences courses of 5 or more credits, chosen from EART 100-199 (excluding EART 196B and EART 198) or OCEA 100-199. No more than one quarter of EART 199 or OCEA 199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

ENVS 115A and ENVS 115L are open to Earth science students with permission of the instructor, and taken together are approved as one elective.

Students are encouraged to take more than the minimum number of elective courses and may craft an elective distribution from many areas of specific research and career interests.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) general education requirement. Students in the Earth Sciences B.S. major must complete a minimum of two (2) courses from the list of courses that in combination satisfies the DC general education requirement. Courses taken to satisfy the DC requirement may also satisfy upper-division elective or senior comprehensive requirements. Consult one of the Earth and planetary sciences advisers for the most up-to-date list of scheduled classes. Currently the list (subject to change) consists of:

EART 100	Vertebrate Paleontology	5
EART 101	Invertebrate Paleobiology	5
EART 102	Marine Geology	5
EART 104	Geologic Hazards	5
EART 109	Elements of Field Geology	5
EART 120	Sedimentology and Stratigraphy	5
EART 140	Geomorphology	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 160	Planetary Science	5
EART 189B	Summer Field Study	5
EART 191	Earth Sciences Capstone Seminar	5

EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5
EART 195	Senior Thesis	5

Comprehensive Requirement

All students must satisfy the senior comprehensive requirement.

The intent of this requirement is to synthesize knowledge and skills from a student's undergraduate career and to provide the instructional hours in the field needed to prepare students for the California professional geologist licensing requirements. Therefore, prior to completing an activity to satisfy the senior comprehensive requirement, students should have already completed EART 110A, one of EART 110B or EART 110C, and three other upper-division courses that fulfill major requirements. Students should consult an advisor if they have any questions about the timing of their proposed comprehensive requirement activity. Enrollment in the senior comprehensive is by petition or application.

Note: Courses used to satisfy the senior comprehensive requirement **cannot** also be used to fulfill the upper-division elective requirement.

To do so, each student in the geology concentration must complete:

Satisfactory completion of Summer Field

EART 189A	Geographic Information Systems with Applications in Earth Sciences	5
EART 189B	Summer Field Study	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Students planning a professional career in the Earth and planetary sciences should take more than the minimum number of courses required for the major if possible. Four-year students have ample flexibility to take additional electives if they begin with the required courses in their second year. Junior transfers also have flexibility if they have taken most of their preparatory courses in calculus, chemistry, and physics before entry. Further advice can be obtained from the undergraduate adviser and from faculty members.

Sample Four-Year Planner

Year	Fall	Winter	Spring
1st (frosh)	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL
	EART 5 EART 5L	MATH 11A or MATH 19A	MATH 11B or MATH 19B
2nd (soph)	EART 110A	EART 110B EART 110M	EART 109 EART 109L
		PHYS 6A PHYS 6L	PHYS 6B PHYS 6M
3rd (junior)	Upper-division elective	Geology elective	EART 110C EART 110N
			EART 120 EART 120L
4th (senior)	EART 150 EART 150L	Upper-division elective	EART 189A*

EART 5, 10, 20 and corresponding labs are interchangeable.

* Students must also complete EART 189B in summer to fulfill the summer field capstone.

Sample Two-Year Planner

This planner assumes that students have completed all lower-division requirements other than PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M.

Year	Fall	Winter	Spring
1st (junior)	Geology elective	PHYS 6A PHYS 6L	PHYS 6B PHYS 6M
	EART 110A	EART 110B EART 110M	EART 109 EART 109L
2nd (senior)	EART 150 EART 150L	Upper-division elective	EART 120 EART 120L
		Upper-division elective	EART 110C EART

	110N	
	EART 189A*	

*Students must also complete EART 189B in summer to fulfill the summer field capstone.

Planetary Sciences Concentration

The planetary sciences concentration is designed to provide students with a quantitative background appropriate for career pathways in the interdisciplinary study of planets and their satellites. The upper-division elective courses can be tailored for students interested in planetary interiors, atmospheres, and/or surfaces.

Course Requirements

Lower-Division Courses

Some courses may be satisfied via exam credit.

Choose one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5

Plus one of the following courses:

MATH 22	Introduction to Calculus of Several Variables	5
MATH 23A	Vector Calculus	5
EART 111	Mathematics in the Earth Sciences	5

Plus all of the following courses:

PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Upper-Division Courses

All of the following courses:

EART 110A	Evolution of the Earth	7
EART 110B	Earth as a Chemical System	5
EART 110M	Earth as a Chemical System Laboratory	2
EART 110C	The Dynamic Earth	5
EART 110N	The Dynamic Earth Laboratory	2
EART 119A	Introduction to Scientific Programming	5
EART 160	Planetary Science	5

Plus one of the following:

One elective from the following planetary science courses:

EART 162	Planetary Interiors	5
EART 163	Planetary Surfaces	5
EART 164	Planetary Atmospheres	5
EART 165	History and Geochemistry of the Solar System	5

Electives

Students take three upper-division Earth sciences or ocean sciences courses of 5 or more credits, chosen from EART 100-199 (excluding EART 196B and EART 198) or OCEA 100-199. No more than one quarter of EART 199 or OCEA

199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

ENVS 115A and ENVS 115L are open to Earth science students with permission of the instructor, and taken together are approved as one elective.

Students are encouraged to take more than the minimum number of elective courses and may craft an elective distribution from many areas of specific research and career interests.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) general education requirement. Students in the Earth Sciences B.S. major must complete a minimum of two (2) courses from the list of courses that in combination satisfies the DC general education requirement. Courses taken to satisfy the DC requirement may also satisfy upper-division elective or senior comprehensive requirements. Consult one of the Earth and planetary sciences advisers for the most up-to-date list of scheduled classes. Currently the list (subject to change) consists of:

EART 100	Vertebrate Paleontology	5
EART 101	Invertebrate Paleobiology	5
EART 102	Marine Geology	5
EART 104	Geologic Hazards	5
EART 109	Elements of Field Geology	5
EART 120	Sedimentology and Stratigraphy	5
EART 140	Geomorphology	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 160	Planetary Science	5
EART 189B	Summer Field Study	5
EART 191	Earth Sciences Capstone Seminar	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5
EART 195	Senior Thesis	5

Comprehensive Requirement

All students must satisfy the senior comprehensive requirement. The intent of this requirement is to synthesize knowledge and skills from a student's undergraduate career. Therefore, prior to completing an activity to satisfy the senior comprehensive requirement, students should have already completed EART 110A, one of EART 110B or EART 110C, and three other upper-division courses that fulfill major requirements. Students should consult an adviser if they have any questions about the timing of their proposed comprehensive requirement activity. Enrollment in the senior comprehensive is by petition or application.

Note: Courses used to satisfy the senior comprehensive requirement **cannot** also be used to fulfill the upper-division elective requirement.

To satisfy the comprehensive requirement, each student in these majors must complete one of the following options:

Satisfactory Completion of Summer Field

EART 189A	Geographic Information Systems with Applications in Earth Sciences	5
EART 189B	Summer Field Study	5

Satisfactory Completion of a Senior Thesis

A senior thesis must include a significant element of independent research or original work and can only be undertaken after an agreement is obtained from a faculty member to supervise it. It is recommended that students allocate three quarters for the thesis process.

Students may take EART 199: Independent Study, as part of performing the research for their senior thesis. It is required that each student enroll in and pass EART 195: Senior Thesis, in the academic quarter during which they complete their thesis.

Satisfactory Completion of One of the Following Capstone Course Offerings:

EART 191	Earth Sciences Capstone Seminar	5
EART 191B	Planetary Capstone	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5

Capstone course offerings vary year to year. If you are interested in completing a capstone course please contact the Earth sciences adviser.

Other options

Other options such as external field research experiences or internships may be suitable by permission of the faculty adviser.

Please meet with an advisor if you have an idea to propose.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Four-Year Planner

Year	Fall	Winter	Spring	Summer (optional)
Entering				College 1A Summer Edge (optional

)

1st (frosh)	MATH 19A	MATH 19B	CHEM 3C CHEM 3CL
	CHEM 3A	CHEM 3B CHEM 3BL	
		EART 10 EART 10L	
		WRIT 1/WRIT 1E (if needed)	
2nd (soph)	EART 110A*	EART 110B EART 110M*	EART 110C EART 110N
	MATH 23A or EART 111	PHYS 6A PHYS 6L	PHYS 6B PHYS 6M
	WRIT 2**		
3rd (junior)	EART 160	EART elective	EART elective
	EART 119A		
4th (senior)	(Sr thesis only) EART 199†	(Sr thesis only) EART 199†	Sr thesis (EART 195)† or EART 189A*
		EART 162	EART elective

EART 5, 10, 20 and corresponding labs are interchangeable.

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

** WRIT 2 should be taken in or before spring quarter of the second year.

† Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require two or three quarters for completion.

Sample Two-Year Planner

This planner assumes that students have completed all lower-division requirements other than PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M, and advanced math.

Year	Fall	Winter	Spring	Summer (optional)
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	EART 160	PHYS 6A PHYS 6L	PHYS 6B PHYS 6M	
	EART 110A*	EART 110B EART 110M*	EART 110C EART 110N	
2nd (senior)	EART 111	EART 162	EART elective	
	EART 119A	EART elective	EART elective	
	(Sr thesis only) EART 199†	(Sr thesis only) EART 199†	EART 189A* or sr thesis (EART 195)†	

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART

110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

†Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

Ocean Sciences Concentration

The ocean sciences concentration is intended to provide quantitative preparation for career pathways that include oceanography and biogeochemistry. An additional biology course is required for this concentration along with other distributions of upper-division requirements and electives.

Course Requirements

Lower-Division Courses

Some courses may be satisfied via exam credit.

Choose one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus one of the following options:

Where the lab course follows a lecture course the pair of courses counts as a single course.

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following courses:

MATH 22	Introduction to Calculus of Several Variables	5
MATH 23A	Vector Calculus	5
EART 111	Mathematics in the Earth Sciences	5

Plus all of the following courses:

Where the lab course follows a lecture course the pair of courses counts as a single course.

BIOE 20C	Ecology and Evolution	5
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Upper-Division Courses

All of the following courses:

EART 110A	Evolution of the Earth	7
EART 110B	Earth as a Chemical System	5
EART 110M	Earth as a Chemical System Laboratory	2
EART 110C	The Dynamic Earth	5
EART 110N	The Dynamic Earth Laboratory	2

Plus one of the following courses:

OCEA 101	The Marine Environment	5
OCEA 102	Oceans and Climate: Past, Present, and Future	5

Electives

Students take four upper-division Earth sciences or ocean sciences courses of 5 or more credits, chosen from EART 100-199 (excluding EART 196B and EART 198) or OCEA 100-199. No more than one quarter of EART 199 or OCEA

199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

ENVS 115A and ENVS 115L are open to Earth science students with permission of the instructor, and taken together are approved as one elective.

Students are encouraged to take more than the minimum number of elective courses and may craft an elective distribution from many areas of specific research and career interests.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) general education requirement. Students in the Earth Sciences B.S. major must complete a minimum of two (2) courses from the list of courses that in combination satisfies the DC general education requirement. Courses taken to satisfy the DC requirement may also satisfy upper-division elective or senior comprehensive requirements. Consult one of the Earth and planetary sciences advisers for the most up-to-date list of scheduled classes. Currently the list (subject to change) consists of:

EART 100	Vertebrate Paleontology	5
EART 101	Invertebrate Paleobiology	5
EART 102	Marine Geology	5
EART 104	Geologic Hazards	5
EART 109	Elements of Field Geology	5
EART 120	Sedimentology and Stratigraphy	5
EART 140	Geomorphology	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 160	Planetary Science	5
EART 189B	Summer Field Study	5
EART 191	Earth Sciences Capstone Seminar	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5
EART 195	Senior Thesis	5

Comprehensive Requirement

All students must satisfy the senior comprehensive requirement. The intent of this requirement is to synthesize knowledge and skills from a student's undergraduate career. Therefore, prior to completing an activity to satisfy the senior comprehensive requirement, students should have already completed EART 110A, one of EART 110B or EART 110C, and three other upper-division courses that fulfill major requirements. Students should consult an adviser if they have any questions about the timing of their proposed comprehensive requirement activity. Enrollment in the senior comprehensive is by petition or application.

Note: Courses used to satisfy the senior comprehensive requirement **cannot** also be used to fulfill the upper-division elective requirement.

To satisfy the comprehensive requirement, each student in these majors must complete one of the following options:

Satisfactory completion of Summer Field

EART 189A	Geographic Information Systems with Applications in Earth Sciences	5
EART 189B	Summer Field Study	5

Satisfactory completion of a senior thesis

A senior thesis must include a significant element of independent research or original work and can only be undertaken after an agreement is obtained from a faculty member to supervise it. It is recommended that students allocate three quarters for the thesis process.

Students may take EART 199: Independent Study, as part of performing the research for their senior thesis. It is required that each student enroll in and pass EART 195: Senior Thesis, in the academic quarter during which they complete their thesis.

Satisfactory completion of one of the following capstone course offerings:

EART 191	Earth Sciences Capstone Seminar	5
EART 191B	Planetary Capstone	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5

Capstone course offerings vary year to year. If you are interested in completing a capstone course please contact the Earth sciences adviser.

Other options

Other options such as external field research experiences or internships may be suitable by permission of the faculty adviser.

Please meet with an adviser if you have an idea to propose.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Four-Year Planner

Year	Fall	Winter	Spring	Summer (optional)
Entering				College 1A Summer Edge (optional)

1st (frosh)	CHEM 3A	CHEM 3B & CHEM 3 BL	CHEM 3C & CHEM 3CL
		MATH 11A or MATH 19A	MATH 11B or MATH 19B
		EART 10 & EART 10L	
		WRIT 1/WRIT 1E (if needed)	
2nd (soph)	EART 110A*	EART 110B & EART 110M*	EART 110C & EART 110N
	BIOE 20C	PHYS 6A & PHYS 6L	PHYS 6B & PHYS 6M
	WRIT 2**		
3rd (junior)	EART elective	OCEA 101	EART elective
	MATH 23A or EART 111	EART elective	
4th (senior)	(Sr thesis only) EART 199†	EART elective	
		(Sr thesis only) EART 199†	Senior thesis (EART 195)† or EART 189A*

EART 5, EART 10, and EART 20 and corresponding labs are interchangeable.

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

** WRIT 2 should be taken in or before spring quarter of the second year.

† Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require two or three quarters for completion.

Sample Two-Year Planner

This planner assumes that students have completed all lower-division requirements other PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M, and advanced math.

Year	Fall	Winter	Spring	Summer (optional)
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	EART 111	PHYS 6A & PHYS 6L	PHYS 6B & PHYS 6M	
	EART 110A*	EART 110B & EART 110M*	EART 110C & EART 110N	
2nd (senior)	EART elective	EART elective	EART elective	
	EART elective	OCEA 101	EART 189A* or senior thesis (EART	

195)†

(Sr thesis only) EART 199†	(Sr thesis only) EART 199†

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

†Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

Geophysics Concentration

The geophysics concentration provides quantitative, rigorous instruction in the geophysical sciences. Solid Earth geophysics is an internationally recognized field that includes seismology, geodesy, geodynamics and applied methods to image the Earth's interior. All of these subdisciplines have in common a strong mathematical, physical, and computational underpinning, and students wishing to pursue these subjects need training in mathematics, physics, and computer science as well as geosciences. This program will guide students through these fundamentals and then train them to apply the tools to problems in geophysics. Graduates will be prepared to pursue careers in natural hazard research and mitigation, the energy industry, or environmental consultancy.

Course Requirements

Lower-Division Courses

Some courses may be satisfied via exam credit.

Choose one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5

MATH 19A and MATH 19B are strongly preferred.

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

Plus one of the following courses:

MATH 22	Introduction to Calculus of Several Variables	5
MATH 23A	Vector Calculus	5
EART 111	Mathematics in the Earth Sciences	5

All of the following courses:

PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Upper-Division Courses

All of the following courses:

EART 110A	Evolution of the Earth	7
EART 110B	Earth as a Chemical System	5
EART 110M	Earth as a Chemical System Laboratory	2
EART 110C	The Dynamic Earth	5
EART 110N	The Dynamic Earth Laboratory	2

Plus one of these courses:

EART 112	Geophysical Data Science	5
EART 119A	Introduction to Scientific Programming	5

Plus one of these courses:

EART 118	Seismotectonics	5
EART 126	Geomechanics	5
EART 162	Planetary Interiors	5

Electives

Students take four upper-division Earth sciences or ocean sciences courses of 5 or more credits, chosen from EART 100-199 (excluding EART 196B and EART 198) or OCEA 100-199. No more than one quarter of EART 199 or OCEA 199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

ENVS 115A and ENVS 115L are open to Earth science students with permission of the instructor, and taken together are approved as one elective. Relevant courses in physics or mathematics may be substituted by petition.

Students are encouraged to take more than the minimum number of elective courses and may craft an elective distribution from many areas of specific research and career interests.

Choosing from the following list is recommended, but not mandatory:

EART 104	Geologic Hazards	5
EART 109	Elements of Field Geology	5
EART 109L	Field Geology Laboratory	2
EART 112	Geophysical Data Science	5
EART 116	Hydrology	5
EART 118	Seismotectonics	5
EART 119A	Introduction to Scientific Programming	5
EART 125	Statistics and Data Analysis in the Geosciences	5
EART 126	Geomechanics	5
EART 140	Geomorphology	5
EART 140L	Geomorphology Laboratory	2
EART 142	Engineering Geology for Environmental Scientists	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 150L	Structural Geology Laboratory	2
EART 152	Tectonics	5
EART 160	Planetary Science	5
EART 162	Planetary Interiors	5
EART 163	Planetary Surfaces	5
EART 164	Planetary Atmospheres	5
EART 165	History and Geochemistry of the Solar System	5
EART 172	Geophysical Fluid Dynamics	5
EART 270	Global Seismology	5
EART 273	Earthquake Physics	5
EART 278A	Advanced Seismology	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) general education requirement. Students in the Earth Sciences B.S. major must complete a minimum of two (2) courses from the list of courses that in combination satisfies the DC general education requirement. Courses taken to satisfy the DC requirement may also satisfy upper-division elective or senior comprehensive requirements. Consult one of the Earth and planetary sciences advisers for the most up-to-date list of scheduled classes. Currently the list (subject to change) consists of:

EART 100	Vertebrate Paleontology	5
EART 101	Invertebrate Paleobiology	5
EART 102	Marine Geology	5
EART 104	Geologic Hazards	5
EART 109	Elements of Field Geology	5
EART 120	Sedimentology and Stratigraphy	5
EART 140	Geomorphology	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 160	Planetary Science	5
EART 189B	Summer Field Study	5
EART 191	Earth Sciences Capstone Seminar	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5
EART 195	Senior Thesis	5

Comprehensive Requirement

All students must satisfy the senior comprehensive requirement.

The intent of this requirement is to synthesize knowledge and skills from a student's undergraduate career. Therefore, prior to completing an activity to satisfy the senior comprehensive requirement, students should have already completed EART 110A, one of EART 110B or EART 110C, and three other upper-division courses that fulfill major requirements. Students should consult an adviser if they have any questions about the timing of their proposed comprehensive requirement activity. Enrollment in the senior comprehensive is by petition or application.

Note: Courses used to satisfy the senior comprehensive requirement **cannot** also be used to fulfill the upper-division elective requirement.

To do so, each student in the geophysics concentration must complete one of the following capstone options:

Satisfactory completion of a senior thesis

A senior thesis must include a significant element of independent research or original work and can only be undertaken after an agreement is obtained from a faculty member to supervise it. It is recommended that students allocate three quarters for the thesis process.

Students may take EART 199: Independent Study, as part of performing the research for their senior thesis. It is required that each student enroll in and pass EART 195: Senior Thesis, in the academic quarter during which they complete their thesis.

Satisfactory completion of one of the following capstone course offerings:

EART 191C	Practical Geophysics	5

Capstone course offerings vary year to year. If you are interested in completing a capstone course please contact the Earth sciences adviser.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Four-Year Planner

Year	Fall	Winter	Spring	Summer (optional)
Entering				College 1A Summer Edge (optional)
1st (frosh)	CHEM 3A College 1	CHEM 3B CHEM 3BL MATH 19A EART 10 EART 10L WRIT 1/WRIT 1E (if needed)	CHEM 3C CHEM 3CL MATH 19B	
2nd (soph)	EART 110A MATH 23A or EART 111 WRIT 2*	EART 110B EART 110M PHYS 6A PHYS 6L AM 10 or MATH 21	EART 110C EART 110N PHYS 6B PHYS 6M	
3rd (junior)	EART elective EART 119A or EART 112	EART elective EART 118 or EART 126 or EART 162	EART elective	
4th (senior)	EART 199† (Sr thesis only)	EART 199† (Sr thesis only)or EART 191C† EART elective	Senior thesis (EART 195)†	

EART 5, 10, 20 and corresponding labs are interchangeable.

* WRIT 2 should be taken in or before spring quarter of the second year.

† Students may fulfill the comprehensive requirement with either EART 191C or EART 195. Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require two or three quarters for completion.

Sample Two-Year Planner

This planner assumes that students have completed all lower-division requirements except PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M, AM 10 or MATH 21, and advanced math.

Yea	Fal	Winter	Sp	Su

r	l		ring	mmer (optional)
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	EART 110A	EART 110B EART 110M	EART 110C EART 110N	
	PHYS 6A PHYS 6L	PHYS 6B PHYS 6M AM 10 or MATH 21	EART elective	
2nd (senior)	EART 111 or MATH 23A	EART 118 or EART 126 or EART 162	EART elective	
	EART 119A or EART 112	EART elective	Senior thesis (EART 195)†	
	EART elective	EART 191C†		

† Students may fulfill the comprehensive requirement with either EART 191C or EART 195. Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

ENVIRONMENTAL SCIENCES B.S.

Information and Policies

Introduction

The University of California, Santa Cruz environmental sciences (ESCI) major is an interdepartmental, undergraduate-only program. The purpose of the ESCI major is to educate students interested in environmental science problems and issues, with a focus on issues within the physical sciences (as opposed to focusing on biological sciences). The major specializes primarily on the following areas:

- Hydrosphere: water resources, water quality, aquatic chemistry, physical oceanography, chemical oceanography, glaciology
- Pollution and transport: environmental toxicology, environmental transport/fluid mechanics, environmental monitoring
- Global scale environment: climate, climate dynamics, global cycles of water, carbon and nutrients, remote sensing of the environment
- Atmosphere: meteorology, air quality, atmospheric chemistry

The core faculty of the major are primarily from two departments, Earth and Planetary Sciences and Ocean Sciences. Faculty from other departments such as Microbiology and Environmental Toxicology and Environmental Studies may also be involved.

In addition to providing comprehensive preparation in the basic physical sciences, and particular breadth and depth in environmental sciences, the curriculum is structured to prepare students for the competitive graduate school and career marketplace. The core of the major includes calculus, physics, chemistry, and core foundational upper-division environmental sciences courses.

Graduates of the ESCI major are expected to continue on to a variety of careers, such as:

- Business and industry
- Environmental consulting
- Governmental agencies at the federal, state, and local level
- Non-profit organizations
- Research at universities, governmental research institutions, or other scientific agencies
- Graduate/professional school in areas such as science, engineering, teaching, law, public health, business

For more information about the affiliated faculty and staff for the major, including areas of interest and facilities, contact e-mails and phone numbers, and how to declare this major, please see our website.

Program Learning Outcomes

The ESCI major has three broad program learning outcomes, each with three specific learning outcomes:

PLO 1: Disciplinary Knowledge Goals

- Reservoirs: Understand and describe the properties of the various environmental "reservoirs", which represent different, interacting physical regimes. For example, a global model might have the atmosphere, oceans, plants and soils as four primary interacting reservoirs.
- Processes: Understand and describe the processes governing the properties and evolution of Earth's physical environment, i.e., the properties and evolution of reservoirs and their interactions.
- Application: Apply the knowledge of reservoirs and processes to explain, analyze and predict phenomena within the environmental sciences.

PLO 2: Quantitative Reasoning Goals

- Calculation: Utilize mathematical tools (e.g. algebra, calculus) to address questions in the environmental sciences.
- Visualization: Interpret and produce visual representations of data in the environmental sciences (e.g. graphs and charts) that conform to disciplinary standards.
- Analysis: Use quantitative analysis as the basis for drawing insights and conclusions, while expressing the appropriate assumptions and qualifications.

PLO 3: Written Communication Goals

- Mechanics: Write sentences with correct grammar, punctuation, and spelling.
- Conventions: Accurately utilize the formatting, stylistic, citation and bibliographic conventions of environmental sciences in the written document.
- Organization: Construct paragraphs, sections and an overall document that flows logically and persuasively argues a thesis.

Academic Advising for the Program

Academic advising is available at the Department of Earth and Planetary Sciences (EPS) undergraduate advising office located in the Earth and Marine Sciences Building, and via email at epsadvising@ucsc.edu. The Environmental Sciences undergraduate web pages contain information on all aspects of major advising including: academic planning, upper and lower-division course descriptions, enrichment opportunities in the major like study abroad and undergraduate research, and how to make an appointment with an adviser. Each student should become familiar with the information posted on the website; for further assistance, contact the EPS undergraduate adviser. Transfer students should consult Getting Started in the Major: Transfer Students for more detailed information about academic advising.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required. Students begin with general chemistry and mathematics, and an introductory course in physical geology.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Courses completed at a community college or four-year university and/or advanced placement (AP) course equivalencies may be used to fulfill prerequisites.

Every proposed environmental science student will receive emails about advising and first quarter enrollment during the summer. Students with further questions about what to enroll in should email the Environmental Sciences undergraduate adviser.

Transfer Information and Policy

Transfer Admission Screening Policy

The environmental sciences program welcomes applications from prospective transfer students. Students should reference assist.org to determine course equivalencies.

To be considered for admission as a proposed ESCI B.S. major, transfer students must complete the following courses or their equivalents prior to transfer, by the end of the spring term for students planning to enter in the fall.

A minimum GPA of 2.00 must be obtained in the courses listed above.

One of these options

Either these courses

CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1C, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus these courses

MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1

Recommended Courses

In addition, the following courses are recommended prior to transfer to ensure timely graduation:

PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Getting Started in the Major: Transfer Students

Once you have submitted your intent to register at UC Santa Cruz, here is a step-by-step guide to transferring your coursework and getting enrolled:

1. **Confirm you are a proposed environmental sciences major.**
   If you are not sure of your status, log on to your MyUCSC portal to view your proposed major. If your major is proposed environmental sciences you are all set. If the proposed major listed is not environmental sciences, you will need to meet with the adviser for environmental sciences.
2. **Once your courses have been articulated, you will receive an email from the EPS advising office.**
   This email will include suggestions for summer or fall enrollment, and invite you to make an appointment to talk with the EPS major adviser.
3. **Make an appointment to talk to an adviser.**
   Your confirmation email will include instructions for scheduling an advising appointment. Appointments are available over Zoom or in person.
4. **Participate in Transfer Orientation and Welcome Week.**
   Transfer Orientation provides instructions on how to transfer your coursework to UC Santa Cruz, the advising and support available, and how to enroll. Our online transfer orientation provides all the critical information you need to transition to UC Santa Cruz and begin your major coursework. The department also hosts a transfer student welcome in the fall that provides new transfer students an opportunity to meet other transfer students, familiarize themselves with the campus and the available resources. Welcome Week includes presentations on the environmental sciences major, including an overview of the courses offered and an introduction on how to get involved in undergraduate research.
5. **Declaring the environmental sciences major.**
   In order to declare the environmental sciences major, transfer students entering at the junior level must complete the CHEM 3 series (CHEM 3A, CHEM 3B, CHEM 3BL, CHEM 3C and CHEM 3CL), or the CHEM 4 series (CHEM 4A, CHEM 4AL, CHEM 4B and CHEM 4BL), plus MATH 11A, MATH 11B, and PHYS 6A and PHYS 6L or an approved equivalent course (with a C or better) by the end of their first quarter at UC Santa Cruz and meet with the Environmental Sciences adviser by the declaration deadline.

Major Qualification Policy and Declaration Process

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Major Qualification

Transfer students should consult the Transfer and Information Policy section for information about major qualification.

Students are expected to complete the academic planning and online petition by the campus declaration deadline.

Students who satisfy the major qualification requirements and who petition to declare the major by the campus major declaration deadline (i.e., before enrolling in their third year or the equivalent) will be admitted to the major.

To qualify for the environmental sciences major, a student must have an academic planning form signed and approved by an adviser. All major qualification courses must be taken for a letter grade and passed with a grade of C or higher. Some courses may be satisfied via exam credit.

Complete one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1C, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus the following courses:

MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1

Appeal Process

Students who do not satisfy the major qualification requirements by the campus major declaration deadline and are notified that they are not eligible to declare the major may submit a major declaration appeal. Students must submit their major declaration appeal within 15 days from the date the notification was sent. Within 15 days of receipt of the appeal, the department will notify the student and their affiliated college of the decision. Appeals will be considered on a case-by-case basis and decisions are final. Students may not appeal more than one time.

How to Declare a Major

Students who qualify start the declaration process by creating an academic plan and then scheduling an appointment with the department staff adviser. You must consult with the department's undergraduate staff adviser to have your academic plan reviewed and approved prior to being able to declare the environmental sciences major. Students should petition to declare the major as soon as they have met qualification requirements and/or reached their declaration deadline quarter, whichever comes first.

Letter Grade Policy

All courses used to satisfy requirements for the environmental sciences major must be taken for a letter grade, with the exception of the following courses, which may be taken pass/no pass: ESCI 195, EART 198 and EART 199 and OCEA 199.

[Optional Catchall]

Course Substitution Policy

Relevant courses taken at UC Santa Cruz or other institutions may be substituted for degree requirements by approved petition. Please see the undergraduate adviser for the substitution petition form and more information about this process.

Double Majors and Major/Minor Combinations Policy

Students interested in pursuing multiple majors within the Earth and environmental sciences may NOT declare the following combination of majors:

- Environmental Sciences B.S. and Earth Sciences Minor
- Any combination of the following: Earth Sciences B.S., Environmental Sciences B.S., Earth Sciences/Anthropology Combined Major B.A.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

Honors

Honors in the major are determined by a review of grades (typically 3.50 or above) at the time a student applies for graduation. A faculty committee makes the decision based on the quality of all coursework, but especially in the courses required for the major. Extra coursework or independent study as well as more intensive or rigorous coursework and the quality of a capstone project may also be taken into consideration. Highest honors may also be awarded in exceptional cases when a student's overall grade point average (GPA) is above 3.75 and performance in the senior capstone requirement is equally outstanding. The program reserves the right to withhold honors and highest honors based on other criteria, such as an incident of academic dishonesty.

Honors in the senior thesis are determined independently of major honors, and must be approved by two faculty readers.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

One of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1C, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus all of the following courses:

ENVS 25	Environmental Politics, Economics and Justice	5
ESCI 30	Biological Principles of Environmental Sciences	5
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

* ESCI 30 students who were formerly proposed or declared majors in biology, biochemistry, bioengineering, or other related majors may have other options to fulfill this requirement. Please inquire with the adviser.

Upper-Division Courses

All of the following courses:

ESCI 100A	Fundamentals of Environmental Sciences	5
ESCI 100B	Fundamentals of Environmental Processes	5
ESCI 160	Data Analysis in the Environmental Sciences	5

At least five elective courses.

Students take five upper-division Earth sciences, ocean sciences, and/or environmental sciences courses of 5 credits or more, chosen from EART 100-199 (excluding EART 196B and 198), OCEA 100-199, and/or ESCI (100-189). No more than one quarter of EART 199 or OCEA 199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

ENVS 115A and 115L, taken together, are approved as one elective. METX 150 and ECE 180J are also allowed as electives. Up to two courses from other departments may be considered for upper-division elective credit by permission of a faculty advisor. Please consult with an advisor for more details.

Students are encouraged to take more than the minimum number of elective courses and may craft an elective distribution from many areas of specific research and career interests.

Electives

Disciplinary Communication (DC) Requirement

Students fulfill the disciplinary communication (DC) requirement through successful completion of either (1) one of the environmental sciences senior capstone seminars (ESCI 191) or (2) a senior thesis based on original research performed by the student (completion of ESCI 195: Senior Thesis is required).

ESCI 191	Capstone Seminar	5

	OR	
ESCI 195	Senior Thesis	5

Comprehensive Requirement

All students must satisfy the senior comprehensive requirement. The intent of this requirement is to synthesize knowledge and skills from a student's undergraduate career. Students should consult an adviser if they have any questions about the timing of their proposed comprehensive requirement activity.

Other capstones will not be considered unless they also satisfy the DC requirement.

Courses that are used to satisfy the capstone may not also count toward fulfilling the upper-division elective requirement.

Satisfactory completion of one of the following capstone course offerings:

Senior Thesis

ESCI 195	Senior Thesis	5

ESCI 195 requires original research performed by the student. Approval from a faculty sponsor is required prior to embarking on a senior thesis. Completion of the senior thesis is necessary to pass ESCI 195.

ESCI 195 also satisfies the DC requirement.

Capstone Seminar

ESCI 191	Capstone Seminar	5

Enrollment in ESCI 191 is limited to environmental science majors with senior standing.

ESCI 191 also satisfies the DC requirement.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Students planning a professional career in environmental sciences should take more than the minimum number of courses required for the major, if possible. Four-year students have ample flexibility to take additional electives if they begin with the required courses in their second year. Junior transfers also have flexibility if they have taken most of their lower-division preparatory courses before entry. Further advice can be obtained from the undergraduate adviser and from faculty members.

Sample Four-Year Planner

Note: CHEM 3A is offered in fall and winter. CHEM 3B is offered in winter and spring, and CHEM 3BL is offered every quarter. CHEM 3C is offered every quarter, but CHEM 3CL is offered in fall and spring only. CHEM 4A and CHEM 4AL are offered in fall, and CHEM 4B and CHEM 4BL are offered in winter. MATH 11A and MATH 11B are offered every quarter. PHYS 6A and PHYS 6L are offered every quarter, but PHYS 6B and PHYS 6M are not offered in fall.

Year	Fall	Winter	Spring	**Summer** (optional)
Entering				College 1A Summer Edge (optional)
1st (frosh)	College 1	MATH 11A	MATH 11B	
	CHEM 3A	CHEM 3B CHEM 3BL *EART 10 EART 10L WRIT 1/WRIT 1E (if needed)	CHEM 3C CHEM 3CL	
2nd (soph)	ESCI 30 PHYS 6A PHYS 6L WRIT 2**	ESCI 100A PHYS 6B PHYS 6M	ESCI 100B Upper-division elective	
3rd (junior)	ESCI 160	ENVS 25 Upper-divisi	Upper-division elective	

		on elective	
4th (senior)	Upper-division elective	Upper-division elective	ESCI 191 or ESCI 195***

* EART 5, EART 10, EART 20 and corresponding labs are interchangeable.

** WRIT 2 should be taken in or before spring quarter of the second year.

***Students expecting to write a senior thesis (ESCI 195) for their comprehensive requirement should contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least three quarters for completion.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the CC, ER, IM, SR, TA, PE, and PR general education requirements.

Sample Transfer (Two-Year) Planner

This planner assumes that students have completed all lower-division requirements other than ESCI 30, ENVS 25, and EART 20 and EART 20L.

Year	Fall	Winter	Spring	**Summer** (optional)
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	ESCI 30 ESCI 160	ENVS 25 ESCI 100A	ESCI 100B EART 20 EART 20L	
4th (senior)	Upper-division	Upper-division	ESCI 191 or ESCI 195*	
	Upper-division elective	Upper-division elective	Upper-division elective	

*Students expecting to write a senior thesis (ESCI 195) for their comprehensive requirement should contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least three quarters for completion.

EARTH SCIENCES/ANTHROPOLOGY COMBINED MAJOR B.A.

Information and Policies

Introduction

The Earth sciences/anthropology combined major is intended for students with interests in Earth sciences and the laboratory-based aspect of anthropology. These include anthropology students interested in archaeology or paleoanthropology who desire more intensive training in natural sciences and Earth sciences students interested in paleobiology or archaeology. The combined major provides a rigorous training in both anthropology and Earth sciences and will permit students to enter graduate programs in Earth sciences, archaeology, or paleoanthropology. The combined major has a significantly different set of cognate science and required lower- and upper-division courses than the standard major; therefore, students are advised to plan carefully and to contact academic advisers in the Earth and Planetary Sciences and Anthropology departments early if they have questions.

Program Learning Outcomes

Students graduating with a B.A. in Earth sciences/anthropology should be able to:

1. understand the processes governing the properties and evolution of Earth's interior and surface;
2. identify rocks and minerals, and describe their connection to geologic processes;
3. utilize algebraic mathematical tools to quantitatively address questions in the geosciences; and
4. write in a clear, organized, and logical fashion using disciplinary standards for reporting and citation.

Academic Advising for the Program

A student who wants to become an Earth sciences/anthropology combined major should contact the Earth and Planetary Sciences Department undergraduate staff

adviser at epsadvising@ucsc.edu, as soon as possible. Students will submit a declaration of major petition, and are required to meet with the undergraduate adviser to plan their program in detail. Transfer students should consult the Transfer Information and Policy section for more detailed information about academic advising.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required. Students begin with introductory anthropology, general chemistry and mathematics, and an introductory course in physical geology.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Courses completed at a community college or four-year university and/or advanced placement (AP) course equivalencies may be used to fulfill prerequisites.

Every proposed Earth sciences/anthropology combined major student will receive emails about advising and first quarter enrollment during the summer. Students with further questions about what to enroll in should email the Earth and Planetary Sciences undergraduate adviser at epsadvising@ucsc.edu.

Transfer Information and Policy

Transfer Admission Screening Policy

The Earth and Planetary Sciences Department welcomes applications from prospective transfer students who are prepared for the major. Students should reference assist.org to determine course equivalencies.

No major preparation courses are required prior to transfer; however, the following courses or their equivalents are recommended to ensure timely graduation:

One of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

All of the following courses:

ANTH 1	Introduction to Biological Anthropology	5
ANTH 2	Introduction to Cultural Anthropology	5
ANTH 3	Introduction to Archaeology	5

Plus one of the following options:

EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	OR	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	OR	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Five lower-division science courses (plus laboratories) chosen from the following:

Where the lab course follows a lecture course the pair of courses counts as a single course.

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Getting Started in the Major: Transfer Students

Once you have submitted your intent to register at UC Santa Cruz, here is a step-by-step guide to getting started:

1. Confirm you are a proposed Earth sciences/anthropology major.

If you are not sure of your status, log on to your MyUCSC portal to view your proposed major. If your major is proposed Earth sciences/anthropology you are all set. If the proposed major listed is not Earth sciences/anthropology, you will need to meet with the adviser for Earth sciences.

2. Once your courses have been articulated, you will receive an email from our office.
This email will include information on how your coursework articulated, suggestions for summer or fall enrollment, and invite you to make an appointment to talk with your major adviser.

3. Make an appointment to talk to an advisor.
Your confirmation email will include instructions for scheduling an advising appointment. Appointments are available over Zoom or in person.

4. Participate in Transfer Orientation and Welcome Week.
Transfer orientation provides instructions on how to transfer your coursework to UC Santa Cruz, the advising and support available, and how to enroll. Our online transfer orientation provides all the critical information you need to transition to UC Santa Cruz and begin your major coursework.

The department also hosts a transfer student welcome in the fall that provides new transfer students an opportunity to meet other transfer students, familiarize themselves with the campus and the available resources. Welcome Week includes presentations on the Earth sciences majors, including an overview of the field courses offered and an introduction on how to get involved in undergraduate research.

5. Declaring the Earth Sciences/Anthropology combined major.

In order to declare the Earth sciences/anthropology combined major, transfer students must complete EART 5/EART 5L, or EART 10/EART 10L, or EART 20/EART 20L or an approved equivalent course (with a C or better) and meet with the Earth and Planetary Sciences Department adviser by the declaration deadline.

Major Qualification Policy and Declaration Process

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Major Qualification

To qualify for the combined Earth sciences and anthropology major, a student must complete (with a minimum grade of C) one of the following introductory courses in physical geology and the associated lab:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Transfer students may take an approved substitution for one of the above courses and should consult assist.org for equivalencies and the Transfer and Information Policy section for information about major qualifications.

Appeal Process

If a student completes major qualification courses but does not meet the major qualification criteria and files an appeal, the department may accept or reject the appeal or place conditions on the student that will be resolved within at most one more enrolled quarter.

Students who are informed that they are not eligible to declare the major may appeal by submitting a letter to the Earth and Planetary Sciences advisor within 15 days from the date the notification was sent. Within 15 days of receipt of the appeal, the department will notify the student and their affiliated college of the decision.

How to Declare a Major

Students who wish to declare the Earth sciences/anthropology combined major start the process by scheduling an appointment with the department staff adviser to create an academic plan. Once academic planning has been completed, students submit the online major declaration petition to begin the major declaration process. Students should petition to declare the major as soon as they have met qualification requirements and/or reached their declaration deadline quarter, whichever comes first.

Letter Grade Policy

This program does not have a letter grade policy. Students must adhere to the campus letter grade policy.

[Optional Catchall]

Course Substitution Policy

Relevant courses taken at UC Santa Cruz or other institutions may be substituted for degree requirements by approved petition. Please see the undergraduate adviser for the substitution petition form and more information about this process.

Double Majors and Major/Minor Combinations Policy

Students interested in pursuing multiple majors within the Earth and environmental sciences may **NOT** declare the following combination of majors:

- Earth Sciences/Anthropology Combined Major B.A. and Earth Sciences Minor
- Any combination of the following: Earth Sciences B.S., Environmental Sciences B.S., Earth Sciences/Anthropology Combined Major B.A.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

Honors

Honors in the major (all concentrations) and in the combined major with anthropology are determined by a review of grades (typically 3.50 or above) at the time a student applies for graduation. A faculty committee makes the decision based on the quality of all coursework, but especially in the courses required for the major. Extra coursework or independent study as well as more intensive or rigorous coursework and the quality of a capstone project may also be taken into consideration. Highest honors may also be awarded in

exceptional cases when a student's overall grade point average (GPA) is above 3.75 and performance in the senior capstone requirement is equally outstanding. The department reserves the right to withhold honors and highest honors based on other criteria, such as an incident of academic dishonesty.

Honors on the senior thesis are determined independently of major honors, and must be approved by two faculty readers.

Keys to Success in the Major

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

All of the following courses:

ANTH 1	Introduction to Biological Anthropology	5
ANTH 2	Introduction to Cultural Anthropology	5
ANTH 3	Introduction to Archaeology	5

Plus one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus one of the following options:

MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	OR	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus five lower-division science courses

Students choose five courses from the following list. Where the lab course follows a lecture course, the lab must be taken. The pair of courses counts as a single course.

CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
BIOL 20A	Cell and Molecular Biology	5
CHEM 4BL	Advanced General Chemistry Lab	2
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1

Upper-Division Courses

Take the following course:

EART 110A	Evolution of the Earth	7

Electives

Students complete seven electives, three in Earth sdciences and four in anthropology, as follows:

Earth Sciences Electives

Three upper-division Earth sciences courses of 5 or more credits, chosen from EART 100-199 (excluding EART 196B and EART 198). No more than one quarter of EART 199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

Anthropology Electives

Four 5-credit or more upper-division archeology, biological, medical, or environmental anthropology courses. Students should consult the Anthropology Department's course list, and reference courses listed under the Archeology heading or the Biological/Medical/Environmental Anthropology courses heading.

Disciplinary Communication (DC) Requirement

In order to satisfy the DC requirement, students must fulfill one of the two options:

Take two courses from this list:

EART 100	Vertebrate Paleontology	5
EART 101	Invertebrate Paleobiology	5
EART 102	Marine Geology	5
EART 104	Geologic Hazards	5
EART 109	Elements of Field Geology	5
EART 120	Sedimentology and Stratigraphy	5
EART 140	Geomorphology	5
EART 146	Groundwater	5
EART 148	Glaciology	5
EART 150	Structural Geology	5
EART 160	Planetary Science	5
EART 189B	Summer Field Study	5

EART 191	Earth Sciences Capstone Seminar	5
EART 195	Senior Thesis	5
EART 191C	Practical Geophysics	5
EART 191D	Practical Geochemistry	5

EART 189B formerly EART 188B

Or one course from this list:

Students may complete one Anthropology 194 or 196 series senior seminar in physical anthropology or archaeology, listed below.

Courses may simultaneously satisfy both the DC requirement and the upper-division Earth sciences or anthropology elective requirement.

ANTH 194C	Feminist Anthropology	5
ANTH 194H	Paleoanthropology	5
ANTH 194L	Archaeology of the African Diaspora	5
ANTH 194U	Environmental Anthropology: Nature, Culture, Politics	5
ANTH 194V	Who Owns the Past? Ethical and Political Dimensions of Contemporary Archaeology	5
ANTH 194Y	Archaeologies of Space and Landscape	5
ANTH 196L	Archaeology of the American Southwest	5
ANTH 196T	Archaeology of Technology	5
ANTH 196U	Historical Anthropology	5
ANTH 196W	Anthropology of Weather and Exposure	5

Comprehensive Requirement

All students must satisfy the senior comprehensive requirement. The intent of this requirement is to synthesize knowledge and skills from a student's undergraduate career. Therefore, prior to completing an activity to satisfy the senior comprehensive requirement, students should have already completed EART 110A, and three other upper-division courses that fulfill major requirements. Students should consult an adviser if they have any questions about the timing of their proposed comprehensive requirement activity.

Note: Courses used to satisfy the senior comprehensive requirement **cannot** also be used to fulfill the upper-division elective requirement.

To satisfy the comprehensive requirement, each student in this major must complete one of the following options:

Option 1: Satisfactory completion of an Anthropology 194 or 196 series senior seminar in physical anthropology or archaeology, listed in the DC section above.

Option 2: Satisfactory completion of EART 189A and EART 189B*, Geographic Information Systems with Applications in Earth Sciences and Summer Field Internship.

Option 3: Satisfactory completion of EART 191 or EART 191D, Earth Sciences Capstone Seminar or Practical Geochemistry.

Option 4: Satisfactory completion of a senior thesis (EART 195) with faculty readers from both departments, which must include a significant element of independent research or original work and can only be undertaken after agreement is obtained from faculty members to supervise it (at least three quarters in advance of completion).

Option 5: Satisfactory completion of a 5-credit internship (EART 198) under the guidance of an on-site supervisor, with coordination and prior approval of the Earth and Planetary Science Department's internship director. The project must include a comprehensive final written report.

* EART 189A and EART 189B have as prerequisites EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Four-Year Planner

Year	Fall	Winter	Spring	Summer (optional)
Entering				College 1A Summer Edge (optional)
1st (frosh)	ANTH 1 College 1	ANTH 2 WRIT 1/WRIT 1E (if needed)	ANTH 3 EART 20 EART 20L*	
2nd (soph)	MATH 11A or MATH 19A ANTH elective	MATH 11B or MATH 19B CHEM, PHYS or BIO	CHEM, PHYS or BIO CHEM, PHYS	

			or BIO
	WRIT 2**		
3rd (junior)	EART 110A	EART elective	ANTH elective
	CHEM, PHYS or BIO	CHEM, PHYS or BIO	EART elective
4th (senior)	ANTH elective	EART elective	ANTH elective
	Sr comp	Sr comp	Sr comp

* EART 5, EART 10, EART 20 and corresponding labs are interchangeable.

** WRIT 2 should be taken in or before spring quarter of the second year.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the CC, ER, IM, SR, and TA general education requirements.

Sample Two-Year Planner

This planner assumes that students have completed all lower-division requirements except ANTH 1 and EART 5 and EART 5L, or EART 10 and EART 10L, or EART 20 and EART 20L.

Year	Fall	Winter	Spring	Summer (optional)
Entering				KRSG 1T
				Summer Edge (optional)
1st (junior)	ANTH 1	EART elective	EART elective	
	EART 5 EART 5L	ANTH elective	ANTH elective	
2nd (senior)	ANTH elective	ANTH elective	ANTH 194+ or ANTH 196+ or EART 189A*or EART 191 or sr thesis (EART 195)†	
	EART 110A*	EART elective		
	(Sr thesis only) EART 199†	(Sr thesis only) EART 199†		

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 EART 109L, EART 110A, and EART 110B EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

+Satisfactory completion of ANTH 194 or ANTH 196 series (any senior seminar in physical anthropology or archaeology) fulfills the capstone. Enrollment in ANTH 194 and ANTH 196 series courses is restricted to seniors.

†Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

EARTH SCIENCES MINOR

Course Requirements

Students can earn a minor in Earth sciences by taking the following courses:

Lower-Division Courses

Choose one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	

EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Upper-Division Courses

Students take five upper-division Earth sciences or ocean sciences courses of 5 credits or more, chosen from EART 100-199 (excluding EART 196B and EART 198) or OCEA 100-199. No more than one quarter of EART 199 or OCEA 199 may be used as an elective. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

ENVS 115A and ENVS 115L are open to Earth science students with permission of the instructor, and taken together are approved as one elective.

Students are encouraged to take more than the minimum number of elective courses and may craft an elective distribution from many areas of specific research and career interests.

Letter Grade Policy

All courses used to satisfy requirements for the Earth sciences minor must be taken for a letter grade with the exception of EART 195, EART 198, EART 199 and OCEA 199. These courses may be taken pass/no pass.

EARTH AND PLANETARY SCIENCES CONTIGUOUS BACHELORS MASTERS PATHWAY

Information and Policies

Introduction

The Earth and Planetary Sciences contiguous five-year Bachelor's/Master's program allows motivated students to complete a B.S. in Earth sciences or environmental sciences, and then an M.S. in Earth sciences in five years with appropriate planning. The program is designed for students who have demonstrated aptitude for fundamental course work in the classroom, as well as the capacity, interest, and motivation to conduct independent research through collaborations with a faculty mentor.

Eligibility Requirements

Students enrolled in the Earth sciences B.S. or environmental sciences B.S. programs who will complete their undergraduate degree within normative time (four years for students who enter the B.S. program as frosh, three years for sophomore transfer students, or two years for junior transfer students) are eligible for the contiguous Bachelor's/Master's program. Interested students from other majors may petition the department for admission to the pathway, provided that they have been participating in research with faculty in Earth and Planetary Sciences and have a coursework foundation that will enable success in the graduate curriculum. A GPA in the major of 3.0 or higher is required, as well as demonstrated research progress and a strong endorsement from a sponsoring faculty adviser. Students must complete their undergraduate degree requirements by the end of the summer quarter prior to enrolling in the M.S. program in the fall.

Application Process

Interested students should attend an information session during their junior year and complete an associated survey to declare their interest in the Bachelor's/Master's program. During the fall quarter of their senior year, students must formally apply to the master's program during the normal admissions cycle and through the standard graduate application process. The application deadline is typically in early January.

Course Requirements

Program Requirements

Students in the Bachelor's/Master's program must take a minimum of 35 credits total of graduate and upper-division undergraduate courses, of which no more than 15 credits may be upper-division undergraduate courses. Of the required graduate-level courses, a minimum of 20 credits must be courses other than supervised research (EART 297 - Independent Study) except by special exception of the Graduate Council. All Bachelor's/Master's program students will take the required graduate core series of EART 203 - Introductory Teaching Seminar, EART 204 - Earth And Planetary Sciences Foundations, and EART 206 - Great Papers in the Earth Sciences.

In addition, students in the program must choose at least one "subject" course focusing on specific Earth and planetary sciences content, and one "analytical" course focusing on a quantitative method. The classes that fulfill these requirements are listed in the EPS Graduate Student Handbook and in the course lists below. Other classes may be allowed with special approval from the faculty graduate representative.

Analytical and subject classes may be taken in the senior year; the credits will count toward 180 undergraduate credits and the course can count toward the B.S. degree upper-division elective requirement, but the analytical or subject content will fulfill the M.S. program requirement. However, class credits cannot be double counted in both B.S. and M.S. degrees, so students are still required to complete 35 credits (no more than 15 of which may be upper-division undergraduate) during their M.S. career. In addition, EART 195 cannot count toward the M.S. degree and students cannot earn credit for a graduate course when they have previously taken the cross-listed undergraduate version. In order to fulfill the capstone requirement for the M.S. degree, students must also complete a master's thesis (Plan I).

The M.S. thesis is a scholarly contribution consisting of results of an original research project by a student. Students are strongly encouraged to prepare their results for publication in peer-reviewed literature and to present their work publicly

at conferences. Students in the Contiguous Bachelors Masters Pathway are expected to complete the M.S. degree in one year, by the end of summer quarter.

Subject Courses

EART 207	Tectonics	5
EART 208	Methods in Paleoclimatology	5
EART 220	Ground Water Modeling	5
EART 254	The Climate System	5
EART 258	Deep Time Paleoclimates	5
EART 262	Planetary Interiors	5
EART 263	Planetary Surfaces	5
EART 264	Planetary Atmospheres	5
EART 270	Global Seismology	5
EART 272	Geophysical Fluid Dynamics	5
EART 273	Earthquake Physics	5
EART 274	Crustal Deformation	5
AM 275	Magnetohydrodynamics	5
OCEA 213	Biogeochemical Cycles	5

EART 208 currently not offered.

Analytical Courses

EART 225	Statistics and Data Analysis in the Geosciences	5
EART 229	Isotopic Methods in Environmental Science	5
EART 265	Order of Magnitude Estimation	5
EART 266	Geologic Signal Processing and Inverse Theory	5
AM 100	Mathematical Methods for Engineers	5
AM 147	Computational Methods and Applications	5
AM 211	Foundations of Applied Mathematics	5
AM 215	Stochastic Modeling in Biology	5
ASTR 260	Instrumentation for Astronomy	5
CHEM 122	Principles of Instrumental Analysis	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2
ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215L	Exercises in Geographic Information Systems	2
MATH 106	Systems of Ordinary Differential Equations	5
MATH 107	Partial Differential Equations	5
OCEA 215	Predicting the Atmosphere, Ocean, and Climate	5
OCEA 260	Introductory Data Analysis in the Ocean and Earth Sciences	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 116D	Mathematical Methods in Physics	5
PHYS 160	Practical Electronics	5
PHYS 242	Computational Physics	5
STAT 132	Classical and Bayesian Inference	5
STAT 206	Applied Bayesian Statistics	5
STAT 226	Spatial Statistics	5

Planners

Below are 5- and 3-year planners for students in the Bachelor's/Master's program who enter UC Santa Cruz as frosh and as junior transfer students.

Five-Year Planner for Students Entering the Earth Sciences B.S. as Frosh

Year	Fall	Winter	Spring
1st (frosh)	EART 5 EART 5L	MATH 11A or MATH 19A	MATH 11B or MATH 19B
	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL
2nd (soph)	EART 110A*	EART 110B EART 110M*	PHYS 6B PHYS 6M
	PHYS 6A PHYS 6L	Advanced math/coding	EART 110C EART 110N
3rd (junior)	EART elective	EART elective	EART elective
			EART elective
4th (senior)	EART 199†	EART 199†	EART 195† and/or
	EART elective	EART elective	EART 189A*
5th (master's)	EART 203	EART 206	
	EART 204	Subject or Analytical Class††	Subject or Analytical Class††

	EART 297	EART 297	EART 297

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone. In addition to the specific courses shown in these planners, a student must complete courses satisfying the CC, ER, IM, SR, and TA general education requirements.

†Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

†† In consultation with their research adviser and faculty graduate representative, the student will select at least one "subject" course focusing on specific Earth and planetary sciences content and one "analytical" course that builds quantitative analytical skills (from a list in the EPS Graduate Handbook) and also included above.

Three-Year Planner for Students Entering the Earth Sciences B.S. as Junior Transfers

This planner assumes that students have completed all lower-division requirements, other than PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M, and advanced math/coding.

Year	Fall	Winter	Spring
1st (junior)	Advanced math/coding	PHYS 6A PHYS 6L	PHYS 6B PHYS 6M
	EART 110A*	EART 110B EART 110M*	EART 110C EART 110N
		EART elective	EART elective
2nd (senior)	EART elective		EART elective
	EART elective	EART elective	EART 189A* and/or
	EART 199†	EART 199†	EART 195†
3rd (master's)		EART 206	
	EART 203	Subject or Analytical Class††	Subject or Analytical Class††
	EART 204	EART 297	EART 297

*Students who wish to complete their capstone with EART 189A and EART 189B should be aware that the following courses are prerequisites: EART 109 and EART 109L, EART 110A, and EART 110B and EART 110M. Students must also complete EART 189B in summer to fulfill the summer field capstone.

†Students expecting to write a senior thesis for their comprehensive requirement are required to contact the department at least three quarters before graduation to identify the intended project and faculty adviser. Senior theses usually require at least two or three quarters for completion.

†† In consultation with their research advisor and faculty graduate representative, the student will select at least one "subject" course focusing on specific Earth and planetary sciences content and one "analytical" course that builds quantitative analytical skills (from a list in the EPS Graduate Handbook) and also included above.

EARTH AND PLANETARY SCIENCES M.S.

Introduction

The graduate program in the Earth and Planetary Sciences Department is designed to prepare students for research, industry, consulting, teaching, and numerous other career paths, including business and law. The aim is to develop habits of critical analysis and thorough documentation; skills in quantitative field, computational, and/or laboratory research; and proficiency in one or more fields of research. The fundamental requirements for admission to the program are substantial evidence of superior scholarship, dedication and determination to do quality work, and aptitude for original research. Preparation in the basic sciences equivalent to the requirements for the Earth sciences bachelor's degree at UC Santa Cruz is expected and, for non-undergraduate Earth sciences majors, achieving breadth of knowledge across the Earth and planetary sciences is expected. Excellent scholars from other disciplines, including chemistry, physics, engineering, biology, or astronomy are both eligible and encouraged to apply. Gaps in knowledge can be made up through coursework.

UC Santa Cruz awards both the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees. The M.S. degree may be the terminal degree for someone seeking careers in industry, government, or teaching at the secondary level. It may also be an initial step toward the Ph.D. degree, in which the student gains knowledge and confidence in carrying out and completing a more complex scientific project. Details regarding admission to graduate standing, financial aid, examinations, and the requirements for the Master of Science and Doctor of Philosophy degrees are available from the Earth and Planetary Sciences Department graduate studies webpage. Additional details can be found at the UC Santa Cruz Division of Graduate Studies.

Requirements

Course Requirements

Plan I - Thesis M.S. Track

Prior to the first quarter of study, each first-year thesis track student must meet with their faculty advisor to determine a customized study plan designed to improve breadth and enable research goals. Immediately afterwards, a meeting is scheduled with the faculty graduate representative to finalize and approve this initial discussion with a written course plan. Yearly academic review meetings with the primary advisor will then reassess the student's progress in completing these courses and independent research.

In their first year, all Plan I thesis-track graduate students register for:

EART 203	Introductory Teaching Seminar	1
EART 204	Earth and Planetary Sciences Foundations	5
EART 206	Great Papers in the Earth Sciences	5

Subject Courses

EART 207	Tectonics	5
EART 208	Methods in Paleoclimatology	5
EART 220	Ground Water Modeling	5
EART 254	The Climate System	5
EART 258	Deep Time Paleoclimates	5
EART 262	Planetary Interiors	5
EART 263	Planetary Surfaces	5
EART 264	Planetary Atmospheres	5
EART 270	Global Seismology	5
EART 272	Geophysical Fluid Dynamics	5
EART 273	Earthquake Physics	5
EART 274	Crustal Deformation	5
AM 275	Magnetohydrodynamics	5
OCEA 213	Biogeochemical Cycles	5

EART 208 currently not offered.

Analytical Courses

EART 225	Statistics and Data Analysis in the Geosciences	5
EART 229	Isotopic Methods in Environmental Science	5
EART 265	Order of Magnitude Estimation	5
EART 266	Geologic Signal Processing and Inverse Theory	5
AM 100	Mathematical Methods for Engineers	5
AM 147	Computational Methods and Applications	5
AM 211	Foundations of Applied Mathematics	5
AM 215	Stochastic Modeling in Biology	5
ASTR 260	Instrumentation for Astronomy	5
CHEM 122	Principles of Instrumental Analysis	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2
ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215L	Exercises in Geographic Information Systems	2
MATH 106	Systems of Ordinary Differential Equations	5
MATH 107	Partial Differential Equations	5
OCEA 215	Predicting the Atmosphere, Ocean, and Climate	5
OCEA 260	Introductory Data Analysis in the Ocean and Earth Sciences	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 116D	Mathematical Methods in Physics	5
PHYS 160	Practical Electronics	5
PHYS 242	Computational Physics	5
STAT 132	Classical and Bayesian Inference	5
STAT 206	Applied Bayesian Statistics	5
STAT 226	Spatial Statistics	5

In subsequent years, all students participate in:

EART 293	Graduate Research Seminar	1

Plan II - Coursework M.S. Track

The Plan II Coursework M.S. track is a professional program designed to allow students to increase their breadth, quantitative depth, or emphasis on a particular specialty; to provide the student with a stronger background toward competition for jobs or an enhancement of skills for current employment (e.g., K–14 teaching); and to allow students from other disciplines (e.g., biology, physics, chemistry, mathematics, environmental studies) to acquire advanced training in Earth and planetary sciences. Prior to the first quarter of study, students meet with their faculty advisor to develop a study plan of at least nine 5-credit courses, and a statement of objectives. Of these courses, only one can be from the EART 280-EART 290 series, and at least 20 credits must come from graduate courses numbered EART 200-EART 279. One of the nine courses can be an independent study involving a focused research project. It is expected that the course plan will comprise a minimum of 45 quarter credits at the graduate-level and quantitative, upper-division, undergraduate-level elective courses. The course plan must be approved by the graduate representative. Students in the Plan II Coursework M.S. track are expected to complete the degree in one year, by the end of summer quarter.

Plan II Coursework M.S. students are required to fulfill one of the following capstone options: a substantial review/research manuscript or a comprehensive oral examination based on their coursework.

Pre-Qualifying Requirements

Admission to the Plan II Coursework M.S. track requires explicit documented sponsorship by an EPS faculty member.

Foreign Language Requirements

There is no foreign-language requirement other than demonstrated proficiency in English. Applicants from countries where English is not the primary language must take either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) test.

Teaching Experience

It is recommended that all thesis-track graduate students attain some teaching experience while at UC Santa Cruz.

Other Requirements

Applying for Graduation

EARTH AND PLANETARY SCIENCES PH.D.

Introduction

The graduate program in the Earth and Planetary Sciences Department is designed to prepare students for research, industry, consulting, teaching, and numerous other career paths, including business and law. The aim is to develop habits of critical analysis and thorough documentation; skills in quantitative field, computational, and/or laboratory research; and proficiency in one or more fields of research. The fundamental requirements for admission to the program are substantial evidence of superior scholarship, dedication and determination to do quality work, and aptitude for original research. Preparation in the basic sciences equivalent to the requirements for the Earth sciences bachelor's degree at UC Santa Cruz is expected and, for non-undergraduate Earth sciences majors, achieving breadth of knowledge across the Earth and planetary sciences is expected. Excellent scholars from other disciplines, including chemistry, physics, engineering, biology, environmental sciences, or astronomy are both eligible and encouraged to apply. Gaps in knowledge can be made up through coursework.

UC Santa Cruz awards both the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees. The M.S. degree may be the terminal degree for someone seeking careers in industry, government, or teaching at the secondary level. It may also be an initial step toward the Ph.D. degree, in which the student gains knowledge and confidence in carrying out and completing a more complex scientific project. Details regarding admission to graduate standing, financial aid, examinations, and the requirements for the Master of Science and Doctor of Philosophy degrees are available from the Earth and Planetary Sciences Department graduate studies webpage. Additional details can be found at the UC Santa Cruz Division of Graduate Studies.

Advancement to Candidacy

Course Requirements

In their first year, all Ph.D. students register for:

EART 203	Introductory Teaching Seminar	1
EART 204	Earth and Planetary Sciences Foundations	5
EART 206	Great Papers in the Earth Sciences	5

Subject Courses

EART 207	Tectonics	5
EART 208	Methods in Paleoclimatology	5
EART 220	Ground Water Modeling	5
EART 254	The Climate System	5
EART 258	Deep Time Paleoclimates	5
EART 262	Planetary Interiors	5
EART 263	Planetary Surfaces	5
EART 264	Planetary Atmospheres	5
EART 270	Global Seismology	5
EART 272	Geophysical Fluid Dynamics	5
EART 273	Earthquake Physics	5
EART 274	Crustal Deformation	5
AM 275	Magnetohydrodynamics	5
OCEA 213	Biogeochemical Cycles	5

Analytical Courses

EART 225	Statistics and Data Analysis in the Geosciences	5
EART 229	Isotopic Methods in Environmental Science	5
EART 265	Order of Magnitude Estimation	5
EART 266	Geologic Signal Processing and Inverse Theory	5
AM 100	Mathematical Methods for Engineers	5
AM 147	Computational Methods and Applications	5
AM 211	Foundations of Applied Mathematics	5
AM 215	Stochastic Modeling in Biology	5
ASTR 260	Instrumentation for Astronomy	5
CHEM 122	Principles of Instrumental Analysis	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2
ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215L	Exercises in Geographic Information Systems	2
MATH 106	Systems of Ordinary Differential Equations	5
MATH 107	Partial Differential Equations	5
OCEA 215	Predicting the Atmosphere, Ocean, and Climate	5

OCEA 260	Introductory Data Analysis in the Ocean and Earth Sciences	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 116D	Mathematical Methods in Physics	5
PHYS 160	Practical Electronics	5
PHYS 242	Computational Physics	5
STAT 132	Classical and Bayesian Inference	5
STAT 206	Applied Bayesian Statistics	5
STAT 226	Spatial Statistics	5

In subsequent years, all Ph.D. students participate in:

EART 293	Graduate Research Seminar	1

Foreign Language Requirements

There is no foreign-language requirement other than demonstrated proficiency in English. Applicants from countries where English is not the primary language must take either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) test.

Teaching Experience

It is recommended that all thesis-track graduate students attain some teaching experience while at UC Santa Cruz.

Pre-Qualifying Requirements

Qualifying Examination

To qualify for candidacy in the Ph.D. program, each student must pass an oral examination in their area of specialization by the end of their third year of graduate study (second year if entering with a master's degree in the same field). The examination is based on a written research proposal presenting one or more specific questions to be researched by the student in the course of completing their Ph.D. thesis. Students are expected to have in-depth knowledge of fields relevant to the proposal, including familiarity with the professional literature. For additional details, please review the EPS Graduate Handbook.

Post-Qualifying Requirements

[Optional Catchall]

Dissertation

Dissertation

The Ph.D. dissertation is a scholarly contribution to knowledge that embodies the results of original and creative effort by the student. Students are urged to prepare their dissertations for publication in peer-reviewed professional journals.

The dissertation, completed in the format specified by the Graduate Council and approved by the dissertation committee, must be submitted to the Graduate Division no later than the last day of the term in which the degree is to be awarded. As stated in the Graduate Division's Graduate Handbook, a Ph.D. student must complete their degree within three calendar years from Advancing to Candidacy, in order to remain in good academic standing. All full-time Ph.D. students are expected to complete their degree objectives within six calendar years from the date of first enrollment in the program.

Dissertation Defense

A public oral defense of the dissertation is required prior to completion of the Ph.D. degree.

Academic Progress

Prior to the first quarter of study, each first-year Ph.D. student must meet with their faculty advisor to determine a customized study plan designed to improve breadth and enable research goals. Immediately afterwards, a meeting is scheduled with the faculty graduate representative to finalize and approve this initial discussion with a written course plan. Yearly academic review meetings will then reassess the student's progress in completing these courses and independent research, initially with the primary advisor but eventually with a reading committee.

Applying for Graduation

Optional Catchall

Ecology and Evolutionary Biology

130 McAllister Way
Coastal Science Campus
https://www.eeb.ucsc.edu

PROGRAMS OFFERED

Biology B.A. (p. 353)

Ecology and Evolution B.S. (p. 360)

Marine Biology B.S. (p. 369)

Plant Sciences B.S. (p. 377)

Ecology and Evolutionary Biology Bachelor's/Master's Contiguous Pathway (p. 385)

Ecology and Evolutionary Biology M.A. (p. 387)

Ecology and Evolutionary Biology Ph.D. (p. 388)

Ecology and Evolutionary Biology Designated Emphasis (p. 389)

OTHER PROGRAMS OF INTEREST

Science Education B.S. (p. 490)

Environmental Studies/Biology Combined Major B.A. (p. 763)

UNDERGRADUATE PROGRAM

The Department of Ecology and Evolutionary Biology (EEB) is devoted to the study of ecological and evolutionary processes across marine, terrestrial, and freshwater environments. Our approach is to blend an emphasis on key ideas and concepts with a focus on organismal biology and natural history. Recent advances in both analytical and genetic methods have given us a far richer understanding of the complexities of ecological and evolutionary processes in the natural world, allowing us to tackle ever more sophisticated questions. Biologists at UC Santa Cruz have played and will continue to play an important part in these advances, and the campus programs offer unique educational opportunities in biology that feature small class sizes, field studies, and extensive faculty-student interactions.

Class offerings and student research opportunities leverage the varied natural environments in the Monterey Bay region, throughout the western US, and in more distant locations such as Africa, Europe, Mexico, Tahiti, Australia, and East Asia. This emphasis on field and laboratory studies is the hallmark of our undergraduate majors. Within this context they address not only basic ecological and evolutionary processes, but also the application of this knowledge to advance environmental, conservation and sustainability science.

An outstanding group of faculty, each with a vigorous, internationally recognized research program, is available to teach courses in their specialties as well as core courses for the major. Areas of research strength within the department include plant biology, animal behavior, physiology, evolution, ecology, and marine biology. UC Santa Cruz is unique in the UC system in providing exceptional opportunities for undergraduate research, allowing students to interact one-on-one with faculty and other researchers in a laboratory or field setting.

Students may plan a program that leads to one of several bachelor of arts (B.A.) and bachelor of science (B.S.) degrees. These different majors overlap considerably in content and differ mainly in providing students with flexibility to take a few more courses that focus on the major subject. Students may choose from the following major options:

Biology B.A. (p. 353)

Ecology and Evolution B.S. (p. 360)

Marine Biology B.S. (p. 369)

Plant Sciences B.S. (p. 377)

Environmental Studies/Biology combined major B.A. (p. 763) (administered by the Environmental Studies Department).

EEB offers a variety of independent research opportunities for students. Advanced undergraduates, with the guidance of faculty mentors, have access to extensive departmental laboratories, including state-of-the-art genetics, physiology, and marine science facilities, for independent research.

Fieldwork draws on a remarkable variety of terrestrial, marine, and freshwater ecosystems, all in close proximity to campus. Terrestrial studies are supported by the UC Santa Cruz reserve on campus, an arboretum, greenhouse facility, and vehicles to transport students to field sites off campus. Freshwater studies have access to a number of coastal tributaries and laboratory facilities at the Coastal Biology Building. Marine studies are supported on the Coastal Science Campus with running seawater facilities, a boating program, and an AAUS accredited SCUBA diving program for underwater classes and research. Año Nuevo Island, north of Santa Cruz, is the site of extensive behavioral studies of marine mammals. The Norris Center, located in the Environmental Studies Department on the main campus, provides a natural history hub for the entire campus and offers opportunities for students to learn about natural history and museum techniques. In addition to coursework, there is an array of opportunities for directed independent study that enables majors to enhance their upper-division programs to reflect and strengthen their own interests and goals in the sciences.

Descriptions of faculty research interests and nearby coastal and marine environments, institutions, and facilities are available through the Ecology and Evolutionary Biology (EEB) Department website.

GRADUATE PROGRAM

The ecology and evolutionary biology (EEB) graduate program at UC Santa Cruz reflects the remarkable local and global diversity of species and environments studied by the EEB faculty and students. The vision of the EEB graduate program is to provide a nurturing, creative, and intellectual environment conducive to the development of world-class scientists. The EEB graduate program encourages close working relations between students and faculty in an informal atmosphere advantageous to rapid learning and professional growth. Interdisciplinary collaborations with oceanographers, geologists, mathematicians, environmental and conservation biologists, toxicologists, and others enable students to explore the conceptual connections between related fields as they acquire mastery in their areas of specialization.

The graduate program in EEB at UC Santa Cruz is one of the premier EEB programs in the country. UCSC graduate students in EEB regularly win prestigious research fellowships and awards for their presentations at international meetings in addition to publishing their work in the best journals of their fields. Students take advantage of local field sites and state-of-the-art departmental laboratories, more than two-thirds of the EEB faculty also participate in field studies throughout the world, especially in Africa, Latin America, Antarctica, the Arctic, and around the Pacific Rim. Research in EEB comprises four core areas: ecology, evolutionary biology, physiology, and behavior.

BIOLOGY B.A.

Information and Policies

Introduction

The general biology bachelor of arts major permits flexibility, but demands careful attention to a student's own interests and plans. Each student should select courses on the basis of up-to-date information in consultation with an Ecology and Evolutionary Biology (EEB) Department advisor or faculty advisor whose interests reflect the student's interests. A hallmark of the major is the many field courses that introduce students to a diversity of ecosystems and the skills to conduct field research. See the Ecology and Evolutionary Biology undergraduate webpage for more information on these courses.

Program Learning Outcomes

The undergraduate curriculum offered by the Department of Ecology and Evolutionary Biology (EEB) is designed to ensure that all students declared in any EEB-sponsored major will achieve the following seven program learning outcomes.

1. Students will demonstrate broad-based knowledge of the fundamentals of ecology, behavior, evolution, and physiology and the relationships among these disciplines.
2. Students will demonstrate skills in the observation and experimental study of organisms, using both field-based and laboratory-based approaches.
3. Students will demonstrate skills in identifying, accessing, comprehending, and synthesizing scientific information, including interpretation of the primary scientific literature. This includes understanding key questions and hypotheses, interpreting results and conclusions, and evaluating quality through critique.
4. Students will demonstrate the ability to conceive and execute independent scientific research, including developing their own questions and hypotheses, designing an appropriate theoretical or empirical/experimental approach, executing that approach, and analyzing and interpreting data.
5. Students will demonstrate an ability to understand and apply fundamental quantitative skills, including models and statistical analyses, so as to properly interpret published research and apply such skills in their own research.
6. Students will demonstrate the ability to communicate scientific work, such as a scientific paper, proposal, essay, or notebook, in written, oral or poster format.
7. Students will exhibit strong teamwork and problem-solving skills. They will demonstrate the ability to make arguments from evidence and work together to find optimal solutions.

Academic Advising for the Program

Academic advising is available at the Department of Ecology and Evolutionary Biology (EEB) undergraduate advising office located in the Coastal Biology Building on the University of California, Santa Cruz Coastal Science Campus, and via email at eebadvising@ucsc.edu. The undergraduate webpages contain advice and information pertinent to students' most frequently voiced questions. Each student should review the information posted on the website; for further assistance, contact an EEB undergraduate advisor at eebadvising@ucsc.edu. Transfer students should also review the Transfer Information and Policy Section.

Getting Started in the Major: Frosh

Prerequisites

An online mathematics placement is required to enroll in a mathematics course or CHEM 3A or CHEM 4A. Students are expected to take this examination prior to orientation, or at least well before the enrollment appointment for their first planned quarter at UCSC. Students are encouraged to work in the learning modules, and assess/reassess (three total assessments allowed) until they place into MATH 16A (recommended) or MATH 11A or MATH 19A. For more information, see the mathematics placement website.

The introductory biology sequence is prerequisite to virtually all upper-division biology courses. BIOL 20A (offered by the Molecular, Cell, and Developmental Biology Department) has a prerequisite of CHEM 3A or CHEM 4A. Therefore, it is essential for students to start chemistry as soon as possible. Students who have not taken CHEM 3A or CHEM 4A may begin the introductory sequence with BIOE 20C. The entire introductory biology sequence should be taken in the first and second year, concurrently with or following the general chemistry sequence, with all completed by the sixth quarter campus declaration deadline. We also strongly recommend completing the lower-division physics requirements early in your academic career.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall. Some courses may be satisfied via exam credit.

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
	AND	
	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

A letter grade of C or above must be earned in all major screening courses.

Getting Started in the Major: Transfer Students

Transfer students who satisfy the major screening requirements may declare the major at any time after matriculation only after their official transcripts have been posted to their MyUCSC student portal by the UC Santa Cruz Office of Admissions.

Beginning in late June and early July (for fall transfer students), EEB Advising will review admitted students' reported transfer course work and determine how it applies to their major's requirements.
EEB Advising will contact admitted students via email. The email will include information on how students' transfer coursework fulfills major requirements. We will suggest courses for students' fall enrollment, and invite you to make an appointment to talk with EEB Undergraduate Advising or direct questions to eebadvising@ucsc.edu. Transfer students may also expect to receive regular email messages from EEB Advising in June, July, and August with additional information about the major.

Major Qualification Policy and Declaration Process

Major Qualification

All courses must be taken for a letter grade. The following qualification courses, or their equivalents, must be completed with a grade of C (2.0) or better. Some courses may be satisfied via exam credit.

All of the following courses:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

And one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

How to Declare a Major

Students may log into MyUCSC and submit the Petition for Major/Minor via MyUCSC as soon as they have completed the EEB major qualification requirements and/or reached their declaration deadline quarter, whichever comes first. Information on major declaration can be found here.

Additional questions may be directed to eebadvising@ucsc.edu.

Appeal Process

Students who are not eligible to declare the major may appeal this decision by submitting an appeal letter to EEB undergraduate advising. The department will declare the student's major, deny the student admission to the major, or set conditions for admission (provided the conditions may be met within no more than one quarter of enrollment). Within 15 business days of receipt of the appeal, the department will notify the student and college of the decision. For more information about the appeal process, see the appeal process website.

Letter Grade Policy

All courses used to satisfy any major requirement must be taken for a letter grade, except for approved courses which are ONLY offered as Pass/No Pass (P/NP).

[Optional Catchall]

Course Substitution Policy

To discuss the process for a course substitution, contact an EEB undergraduate advisor.

At least half of the upper-division courses (numbered BIOE 100 – BIOE 179) required for each major must be taken in EEB at UC Santa Cruz and not as transfer credits from another department or institution.

Transfer students are advised to contact an EEB undergraduate advisor before enrolling in any upper-division courses at other institutions. For more information on transferring courses to UC Santa Cruz, please consult the Transfer Coursework website. Additional information for transfer students is provided above in the “Transfer Students” section.

Only one upper-division course requirement may be met with a research-based independent study or graduate-level UC Santa Cruz biology course.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., or Plant Sciences B.S. and any other major/minor offered by the EEB Department, nor by the Departments of Chemistry and Biochemistry; Microbiology and Environmental Toxicology; or MCD Biology, including the Global and Community Health B.S. major.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (UCEAP) offers qualified students unique opportunities to broaden their educational horizons. The EEB Department encourages interested students to participate. It is possible to satisfy major requirements

abroad and graduate on time; consult with an EEB undergraduate advisor early in the planning process.

Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

There are excellent programs in Costa Rica, Australia, New Zealand, the United Kingdom, Denmark, and Germany, among others. The Costa Rica Tropical Biology Program is of note to students interested in tropical biology and ecology. Held spring and fall quarters at the Monteverde research station, this program gives students experience with hands-on field research and offers a homestay program. The University of Queensland (Australia) offers an intensive, full-semester marine science program, which includes stays at research stations on the Great Barrier Reef and in sheltered mangrove and seagrass habitats near Brisbane.

Students interested in study abroad need to get an early start on their introductory requirements, including chemistry, mathematics, and biology and must declare their major prior to going abroad. Visit the UCEAP office as soon as possible to begin planning and seek advice and approval for your UCEAP plan from an EEB undergraduate advisor prior to participation in UCEAP.

Honors

Honors in the biological sciences majors are awarded to graduating students whose academic performance in all major-required lower and upper-division course options taken at UCSC demonstrates excellence at a grade point average (GPA) of 3.5 to 3.79.

Highest honors are awarded to those students whose performance in all major-required lower and upper-division course options taken at UCSC demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

Introductory Biology:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

General Chemistry:

Choose one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2

Students may choose to complete the Chemistry 3 or 4 series.

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

Statistics:

Choose one of the following options:

STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Physics:

Choose one of the following options. Enrollment in PHYS 6A requires concurrent enrollment in the PHYS 6L laboratory as well as either MATH 11A, MATH 16A or MATH 19A (or their equivalents) as a prerequisite.

PHYS 1A	Physics for Everyone	5
PHYS 1B	Physics for Everyone	5
PHYS 6A	Introductory Physics I	5

Upper-Division Courses

A total of **eight (8)** upper-division biology courses, including electives, as follows:

Lecture/Lab Combination Notes:

Lecture and lab combinations generally count as one course. For 5-credit lectures with required, concurrent 2-credit labs, successful completion of both the lab and lecture is required and counts as one course. For 5-credit lectures with optional labs, only the lecture must be successfully completed to count as one course (except for DC requirements). Successful completion of the optional lab will count as overall unit credit and may count toward the comprehensive requirement. 5-credit lectures with 5-credit labs count as two courses. 7-credit labs count as one course.

Three core courses:

	Either this course	
BIOE 106	Principles of Genetics for EEB	5
	or this course	
BIOL 105	Genetics	5
	AND	
BIOE 107	Ecology	5
BIOE 109	Evolution	5

Note: BIOE 106, Principles of Genetics for EEB, is the recommended genetics course for students pursuing an EEB-sponsored major (Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., and Plant Sciences B.S.).

One of the following anatomy or physiology courses:

BIOE 131	Animal Physiology	5
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133	Exercise Physiology	5
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134	Comparative Vertebrate Anatomy	5
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135	Plant Physiology	5
BIOE 135L	Plant Physiology Laboratory	2
BIOE 136	Environmental Physiology	5
METX 135	Functional Anatomy	5
METX 135L	Functional Anatomy Lab	3

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 131 BIOE 131L: Laboratory optional (concurrent enrollment not required).

Electives

Four additional **BIOE courses numbered 100 - 179 of 5 or more credits**, or the following courses:

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5
METX 100	Introduction to Microbiology	5
METX 100L	Microbiology Laboratory	5
METX 115	Environmental Health Science	5
METX 133	Medical Microbiology	5
METX 150	Applied and Environmental Microbiology	5

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

Some of these electives may have prerequisites that do not satisfy major or minor requirements.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in the biology bachelor of arts degree is satisfied by completing **two** of the following Ecology and Evolutionary Biology courses:

Note: Lecture and 2-credit lab combinations count as a single course.

BIOE 108	Marine Ecology	5
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 125	Ecosystems of California	5
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 157B	Ichthyology Field Class in Southern Africa	7
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 171	Disciplinary Communication for Biologists	5
BIOE 172	Population Genetics	5
BIOE 174	Evolutionary Medicine	5

Note: Lecture and 2-credit lab combinations count as a single course. BIOE 117 and BIOE 137 require concurrent enrollment in 2-credit labs, BIOE 117L and BIOE 137L, but these are not part of the DC requirement.

NRS/XBIO 188/XENV 188, California Ecology and Conservation course, taken spring 2023 or later, will satisfy 1/2 DC credit. For more information about this course contact an EEB undergraduate advisor or email eebadvising@ucsc.edu.

Comprehensive Requirement

All majors in the biological sciences require completion of a comprehensive requirement. This requirement can be satisfied in one of the following ways:

- receiving a passing grade in an independent research course, or field/laboratory course listed below.
- completing a senior thesis.

Comprehensive courses offered by Ecology and Evolutionary Biology

Note: Lab courses may have associated prerequisite or corequisite lecture courses.

BIOE 112L	Ornithology Field Studies	2
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120L	Marine Botany Laboratory	2
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124L	Mammalogy Laboratory	2
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135L	Plant Physiology Laboratory	2
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 142L	Animal Behavior in the Wild (A Virtual Field Course)	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
BIOE 153A	Introduction to Arctic Ecology	5
BIOE 153B	Arctic Ecology	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 155L	Freshwater Ecology Laboratory	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 159B	Marine Ecology Field Quarter: Ichthyology with Laboratory	5
BIOE 159C	Marine Ecology Field Quarter: Methods in Field Ecology	5
BIOE 159D	Marine Ecology Field Quarter: Methods in Field Ecology Laboratory	5
BIOE 159E	Marine Ecology Field Quarter: Behavioral Ecology	5
BIOE 159F	Marine Ecology Field Quarter: Global Change Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOE 183W	Undergraduate Research in EEB--Writing	2

Comprehensive courses offered in METX

METX 100L	Microbiology Laboratory	5
METX 135L	Functional Anatomy Lab	3
CRSN 152	IDEASS Laboratory Practicum	3

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the C, CC, ER, IM, MF, PE, PR, and TA campus general education requirements.

Sample Frosh Planner

Year	Fall	Winter	Spring	Summer
Enter				Colleg

ing				e 1A Summer Edge (optional)
1st (frosh)	BIOE 20C	CHEM 3A	CHEM 3B CHEM 3BL	
	College 1	WRIT 1/WRIT 1E (if needed)	STAT 5 or STAT 7 STAT 7L	
2nd (soph)	BIOL 20A	BIOE 20B	BIOL 105	
	WRIT 2*	PHYS 1A or PHYS 1B or PHYS 6A		
3rd (junior)	BIOE 109	BIOE 107	Anatomy/Physiology	
	Biology elective			
4th (senior)	Biology elective	Biology elective	Biology elective	

Two of the upper-division course options must satisfy DC requirements.

One of the upper-division course options must satisfy the Senior Comprehensive Requirement.

*WRIT 2 should be taken in or before spring quarter of the second year.

Additional Frosh sample planners may be found on the EEB website.

Sample Transfer Planner

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	BIOL 105	BIOE 107	Anatomy/Physiology	
		BIOE 109	STAT 5 or STAT 7 STAT 7L	
	WRIT 2*			
4th (senior)	Biology elective	Biology elective	Biology elective	
	Biology elective	PHYS 1A or PHYS 1B or PHYS 6A		

Two of the upper-division course options must satisfy DC requirements.

One of the upper-division course options must satisfy the Senior Comprehensive Requirement.

*If WRIT 2 is not completed prior to transfer, it should be taken in the first enrolled quarter at UCSC.

Additional Transfer student sample planners may be found on the EEB website.

ECOLOGY AND EVOLUTION B.S.

Information and Policies

Introduction

The ecology and evolution major focuses on general topics that are not specific to taxonomic group or habitat. As such it provides students with interdisciplinary skills necessary for understanding and solving complex problems in ecology, evolution, behavior, and physiology. All of these disciplines address questions on larger spatial and temporal scales that can be applied to important environmental problems, including genetic and ecological aspects of conservation biology and biodiversity.

Students majoring in ecology and evolution will receive a B.S. degree based on an integrated series of courses providing breadth in fundamental areas of biology and allied sciences that enhance understanding of evolutionary and ecological processes. A hallmark of this curriculum is a suite of field courses providing students unique opportunities to learn and conduct research in a host of ecological systems. Students are encouraged to take field courses in their areas of specialization. Other opportunities include participation in research projects with faculty sponsors and the intensive UC Education Abroad Programs (UCEAP) in Costa Rica (tropical biology) and Australia (marine sciences).

Program Learning Outcomes

The undergraduate curriculum offered by EEB is designed to ensure that all students declared in any EEB-sponsored major will achieve the following seven program learning outcomes:

1. Students will demonstrate broad-based knowledge of the fundamentals of ecology, behavior, evolution and physiology and the relationships among these disciplines.
2. Students will demonstrate skills in the observation and experimental study of organisms, using both field-based and laboratory-based approaches.
3. Students will demonstrate skills in identifying, accessing, comprehending and synthesizing scientific information, including interpretation of the primary scientific literature. This includes understanding key questions and hypotheses, interpreting results and conclusions, and evaluating quality through critique.
4. Students will demonstrate the ability to conceive and execute independent scientific research, including developing their own questions and hypotheses, designing an appropriate theoretical or empirical/experimental approach, executing that approach, and analyzing and interpreting data.
5. Students will demonstrate an ability to understand and apply fundamental quantitative skills, including models and statistical analyses, so as to properly interpret published research and apply such skills in their own research.
6. Students will demonstrate the ability to communicate scientific work, such as a scientific paper, proposal, essay, or notebook, in written, oral or poster format.
7. Students will exhibit strong teamwork and problem solving skills. They will demonstrate the ability to make arguments from evidence and work together to find optimal solutions.

Academic Advising for the Program

Academic advising is available at the Department of Ecology and Evolutionary Biology (EEB) undergraduate advising office located in the Coastal Biology Building on the UC Santa Cruz Coastal Science Campus, and via email at eebadvising@ucsc.edu. The undergraduate webpages contain advice and information pertinent to students' most frequently voiced questions. Each student should review the information posted on the website; for further assistance, contact an EEB undergraduate advisor at eebadvising@ucsc.edu. Transfer students should also review the Transfer Information and Policy Section.

Getting Started in the Major: Frosh

Prerequisites

An online mathematics placement is required to enroll in a mathematics course or CHEM 3A or CHEM 4A. Students are expected to take this examination prior to orientation, or at least well before the enrollment appointment for their first planned quarter at UCSC. Students are encouraged to work in the learning modules, and assess/reassess (three total assessments allowed) until they place into MATH 16A (recommended) or MATH 11A or MATH 19A. For more information see the mathematics placement website.

The introductory biology sequence is prerequisite to virtually all upper-division biology courses. BIOL 20A (offered by the Molecular, Cell, and Developmental Biology Department) has a prerequisite of CHEM 3A or CHEM 4A. Therefore, it is essential for students to start chemistry as soon as possible. Students who have not taken CHEM 3A or CHEM 4A may begin the introductory sequence with BIOE 20C. The entire introductory biology sequence should be taken the first and second year, concurrently with or following the general chemistry sequence, with all completed by the sixth quarter campus declaration deadline. We also strongly recommend completing the lower-division physics requirements early in your academic career.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning

to enter in the fall. Some courses may be satisfied via exam credit.

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
	AND	
	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus, one of the following mathematics courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

A letter grade C or above must be earned in all major screening courses.

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following mathematics courses:

MATH 11B	Calculus with Applications	5
MATH 16B	Mathematics for Life Sciences	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Choose one of the following options:

	Either these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6C	Introductory Physics III	5

Plus one of the following statistics options:

STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Getting Started in the Major: Transfer Students

Transfer students who satisfy the major screening requirements may declare the major at any time after matriculation only after their official transcripts have been posted to their MyUCSC student portal by the UC Santa Cruz Office of Admissions.

Beginning in late June and early July (for fall transfer students), EEB advising will review admitted students' reported transfer course work and determine how it applies to their major's requirements.

EEB advising will contact admitted students via email. The email will include information on how students' transfer coursework fulfills major requirements. We will suggest courses for students' fall enrollment and invite you to make an appointment to talk with EEB Undergraduate Advising or direct questions to eebadvising@ucsc.edu. Transfer students may also expect to receive regular email messages from EEB advising in June, July, and August with additional information about the major.

Major Qualification Policy and Declaration Process

Major Qualification

All courses must be taken for a letter grade. The following qualification courses, or their equivalents, must be completed with a grade of C (2.0) or better. Some courses may be satisfied via exam credit.

All of the following courses:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

And one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM

1M, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

And one of the following courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Note: MATH 16A/MATH 16B is the recommended mathematics series for the following EEB majors, Ecology and Evolutionary Biology B.S., Marine Biology B.S., and Plant Sciences B.S.

How to Declare a Major

Students may log into MyUCSC and submit the Petition for Major/Minor via MyUCSC as soon as they have completed the EEB major qualification requirements and/or reached their declaration deadline quarter, whichever comes first. Information on major declaration can be found here.

Additional questions may be directed to eebadvising@ucsc.edu.

Appeal Process

Students who are not eligible to declare the major may appeal this decision by submitting an appeal letter to EEB undergraduate advising. The department will declare the student's major, deny the student admission to the major, or set conditions for admission (provided the conditions may be met within no more than one quarter of enrollment). Within 15 business days of receipt of the appeal, the department will notify the student and college of the decision. For more information about the appeal process, see the appeal process website.

Letter Grade Policy

All courses used to satisfy any major requirement must be taken for a letter grade, except for approved courses which are ONLY offered as Pass/No Pass (P/NP).

[Optional Catchall]

Course Substitution Policy

To discuss the process for a course substitution, contact an EEB undergraduate advisor.

At least half of the upper-division courses (numbered BIOE 100 – BIOE 179) required for each major must be taken in EEB at UC Santa Cruz and not as transfer credits from another department or institution.

Transfer students are advised to contact an EEB undergraduate advisor before enrolling in any upper-division courses at other institutions. For more information on transferring courses to UC Santa Cruz, please consult the Transfer Coursework website. Additional information for transfer students is provided above in the “Transfer Students” section.

Only one upper-division course requirement may be met with a research-based independent study or graduate-level UC Santa Cruz biology course.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., or Plant Sciences B.S. and any other major/minor offered by the EEB Department, nor by the Departments of Chemistry and Biochemistry; Microbiology and Environmental Toxicology; or MCD Biology, including the Global and Community Health B.S. major.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (UCEAP) offers qualified students unique opportunities to broaden their educational horizons. The EEB Department encourages interested students to participate. It is possible to satisfy major requirements abroad and graduate on time; consult with an EEB undergraduate advisor early in the planning process.

Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

There are excellent programs in Costa Rica, Australia, New Zealand, the United Kingdom, Denmark, and Germany, among others. The Costa Rica Tropical Biology Program is of note to students interested in tropical biology and ecology. Held spring and fall quarters at the Monteverde research station, this program gives students experience with hands-on field research and offers a homestay program. The University of Queensland (Australia) offers an intensive, full-semester marine science program, which includes stays at research stations on the Great Barrier Reef and in sheltered mangrove and seagrass habitats near Brisbane.

Students interested in study abroad need to get an early start on their introductory requirements, including chemistry, mathematics, and biology and must declare their major prior to going abroad. Visit the UCEAP office as soon as possible to begin planning and seek advice and approval for your UCEAP plan from an EEB undergraduate advisor prior to participation in UCEAP.

Honors

Honors in the biological sciences majors are awarded to graduating students whose academic performance in all major-required lower- and upper-division course options taken at UCSC demonstrates excellence at a grade point average (GPA) of 3.5 to 3.79.

Highest honors are awarded to those students whose performance in all major-required lower- and upper-division

course options taken at UCSC demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

Introductory Biology:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

General Chemistry:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Student may complete either the Chemistry 3 or 4 series.

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

Mathematics:

Choose one of the following options:

	Either these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Note: MATH 16A/MATH 16B is the recommended mathematics series for the following EEB majors, Ecology & Evolutionary Biology B.S., Marine Biology B.S., and Plant Sciences B.S.

Biostatistics:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Physics:

	Either these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6C	Introductory Physics III	5

Upper-Division Courses

A total of **eleven (11)** upper-division courses, including relevant electives; two must include laboratory or fieldwork; two must apply to the Disciplinary Communication requirement. Courses appearing in more than one category can fulfill only one requirement.

Lecture/Lab Combination Notes:

Lecture and lab combinations generally count as one course. For 5-credit lectures with required, concurrent 2-credit labs, successful completion of both the lab and lecture is required and counts as one course (except for DC requirements). For 5-credit lectures with optional labs, only the lecture must be successfully completed to count as one course. Successful completion of the optional lab will count as overall unit credit and may count toward the comprehensive requirement. 5-credit lectures with 5-credit labs count as two courses. 7-credit labs count as one course.

Three core courses:

	Either this course	
BIOE 106	Principles of Genetics for EEB	5
	or this course	
BIOL 105	Genetics	5
	AND	
BIOE 107	Ecology	5
BIOE 109	Evolution	5

Note: BIOE 106, Principles of Genetics for EEB, is the recommended genetics course for students pursuing an EEB-

sponsored major (Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., and Plant Sciences B.S.).

One of the following physiology courses:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 131	Animal Physiology	5
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133	Exercise Physiology	5
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134	Comparative Vertebrate Anatomy	5
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135	Plant Physiology	5
BIOE 135L	Plant Physiology Laboratory	2
BIOE 136	Environmental Physiology	5

BIOE 131/BIOE 131L: Laboratory optional to satisfy the requirement (concurrent enrollment not required).

One of the following organism courses:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 112	Ornithology	5
BIOE 112L	Ornithology Field Studies	2
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124	Mammalogy	5
BIOE 124L	Mammalogy Laboratory	2
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
METX 100	Introduction to Microbiology	5
METX 100L	Microbiology Laboratory	5

BIOE 129/BIOE 129L: Both lecture and lab are required to satisfy the Organism requirement.

Electives

Three topical electives chosen from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 108	Marine Ecology	5
BIOE 112	Ornithology	5
BIOE 112L	Ornithology Field Studies	2
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 118	Plants and Society: the Biology of Food, Shelter, and Medicine	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 121	Plants, Earth, Climate	5
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124	Mammalogy	5
BIOE 124L	Mammalogy Laboratory	2
BIOE 125	Ecosystems of California	5
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 131	Animal Physiology	5
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133	Exercise Physiology	5
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134	Comparative Vertebrate Anatomy	5
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135	Plant Physiology	5
BIOE 135L	Plant Physiology Laboratory	2
BIOE 136	Environmental Physiology	5
BIOE 137	Molecular Ecology	5
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 138	Modeling Evolution and Ecology	5

BIOE 139	Mathematical Modeling and Data Science in Ecology and Evolution	5
BIOE 140	Behavioral Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 142L	Animal Behavior in the Wild (A Virtual Field Course)	5
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 146	Acoustic Ecology	5
BIOE 147	Community Ecology	5
BIOE 149	Disease Ecology	5
BIOE 150	Ecological Field Methods	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
BIOE 153A	Introduction to Arctic Ecology	5
BIOE 153B	Arctic Ecology	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 155	Freshwater Ecology	5
BIOE 155L	Freshwater Ecology Laboratory	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 159B	Marine Ecology Field Quarter: Ichthyology with Laboratory	5
BIOE 159C	Marine Ecology Field Quarter: Methods in Field Ecology	5
BIOE 159D	Marine Ecology Field Quarter: Methods in Field Ecology Laboratory	5
BIOE 159E	Marine Ecology Field Quarter: Behavioral Ecology	5
BIOE 159F	Marine Ecology Field Quarter: Global Change Ecology	5
BIOE 161	Kelp Forest Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 163	Ecology of Reefs, Mangroves, and Seagrasses	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOE 165	Marine Conservation Biology	5
BIOE 172	Population Genetics	5
BIOE 173	Contemporary Genetics	5
BIOE 174	Evolutionary Medicine	5
BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5
OCEA 118	Marine Microbial Ecology	5
METX 100L	Microbiology Laboratory	5

BIOE 129/BIOE 129L, and BIOE 131/BIOE 131L: Laboratory optional (concurrent enrollment not required.

Please note that BIOE 129 can satisfy a topical elective without BIOE 129L, but to count as an Organism requirement or for one of two required DC courses, both the lecture and lab must be successfully completed.

Three general electives chosen from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

Biological Sciences-EEB

Any upper-division BIOE course numbered BIOE 100 - BIOE 179 of 5 or more credits.

Biological Sciences-MCDB

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5

Earth Sciences

EART 100	Vertebrate Paleontology	5
EART 100L	Vertebrate Paleontology Laboratory	2
EART 101	Invertebrate Paleobiology	5
EART 101L	Invertebrate Paleobiology Laboratory	1
EART 102	Marine Geology	5
EART 105	Coasts and Beaches	5

Economics

ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5

Environmental Studies (enrollment by permission of instructor)

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5

ENVS 115A	Geographic Information Systems and Environmental Applications	5
ENVS 115L	Exercises in Geographic Information Systems	2
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 131	Insect Ecology	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 163	Plant Disease Ecology	5
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 168	Biogeochemistry and the Global Environment	5

Microbiology and Environmental Toxicology

METX 100	Introduction to Microbiology	5
METX 100L	Microbiology Laboratory	5
METX 115	Environmental Health Science	5
METX 133	Medical Microbiology	5
METX 150	Applied and Environmental Microbiology	5

Ocean Sciences

OCEA 118	Marine Microbial Ecology	5
OCEA 122	Chemical Oceanography	5
OCEA 130	Biological Oceanography	5

Psychology

PSYC 123	Cognitive Neuroscience	5

Some of the electives may have prerequisites that do not satisfy major or minor requirements.

One of the following may also be used as an upper-division general elective:

Biological Sciences-EEB

Any 5 credits of undergraduate research from:

BIOE 183W	Undergraduate Research in EEB--Writing	2
BIOE 183L	Undergraduate Research in EEB	3
BIOE 193	Independent Research in EEB	5
BIOE 193F	Independent Research in EEB	2
BIOE 195	Senior Thesis	5

Environmental Studies

ENVS 183	Environmental Studies Internship	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in ecology and evolution is satisfied by completing **two** of the following ecology and evolutionary biology courses:

NOTE: Lecture and 2-credit lab combinations count as a single course.

BIOE 108	Marine Ecology	5
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 125	Ecosystems of California	5
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 157B	Ichthyology Field Class in Southern Africa	7
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 171	Disciplinary Communication for Biologists	5
BIOE 172	Population Genetics	5
BIOE 174	Evolutionary Medicine	5

Note: Lecture and 2-credit lab combinations count as a single course. BIOE 117 and BIOE 137 require concurrent enrollment in 2-credit labs, BIOE 117L and BIOE 137L, but these are not part of the DC requirement.

To receive DC credit for BIOE 129, BIOE 129L must be successfully completed. BIOE 129 without the lab may satisfy electives, as noted above, however.

NRS/BIOL 188, California Ecology and Conservation course, taken spring 2023 or later, will satisfy 1/2 DC credit. For more information about this course contact an EEB undergraduate advisor or email eebadvising@ucsc.edu.

Comprehensive Requirement

All majors in the biological sciences require completion of a comprehensive requirement. This requirement can be satisfied in one of the following ways:

- receiving a passing grade in an independent research course, or field/laboratory course listed below.
- completing a senior thesis.

Comprehensive courses offered by Ecology and Evolutionary Biology

NOTE: Lab courses may have associated prerequisite or corequisite lecture courses.

BIOE 112L	Ornithology Field Studies	2
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120L	Marine Botany Laboratory	2
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124L	Mammalogy Laboratory	2
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135L	Plant Physiology Laboratory	2
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 142L	Animal Behavior in the Wild (A Virtual Field Course)	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
BIOE 153A	Introduction to Arctic Ecology	5
BIOE 153B	Arctic Ecology	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 155L	Freshwater Ecology Laboratory	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 159B	Marine Ecology Field Quarter: Ichthyology with Laboratory	5
BIOE 159C	Marine Ecology Field Quarter: Methods in Field Ecology	5
BIOE 159D	Marine Ecology Field Quarter: Methods in Field Ecology Laboratory	5
BIOE 159E	Marine Ecology Field Quarter: Behavioral Ecology	5
BIOE 159F	Marine Ecology Field Quarter: Global Change Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOE 183W	Undergraduate Research in EEB--Writing	2

Comprehensive courses offered in other departments

METX 100L	Microbiology Laboratory	5
CRSN 152	IDEASS Laboratory Practicum	3

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the C, CC, ER, IM, PE, PR, and TA campus general education requirements.

Sample Frosh Planner

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	BIOE 20C College 1	**MATH 16A** or MATH 11A or MATH 19A CHEM 3A WRIT 1/WRIT 1E (if needed)	**MATH 16B** or MATH 11B or MATH 19B CHEM 3B CHEM 3BL	
2nd (soph)	BIOL 20A CHEM 3C CHEM 3CL WRIT 2*	BIOE 20B PHYS 6A PHYS 6L	STAT 7 STAT 7L PHYS 6B or PHYS 6C	
3rd (junior)	BIOL 105 BIOE 107	Physiology core ECEV topical elective	BIOE 109 Organismal core	
4th (senior)	ECEV topical elective	ECEV topical elective	EEB general elective	EEB general elective

Two of the upper-division course options must satisfy DC requirements.

One of the upper-division course options must satisfy the Senior Comprehensive Requirement.

* WRIT 2 should be taken in or before spring quarter of the second year.

Additional Frosh sample planners may be found on the EEB website.

Sample Transfer Planner

For students who transferred after completing the transfer screening courses **and**:

- **MATH 16B** or MATH 11B or MATH 19B
- CHEM 3C and CHEM 3CL
- PHYS 6A PHYS 6L, and PHYS 6B or PHYS 6C

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	BIOL 105 ECEV topical elective STAT 7 STAT 7L	BIOE 107 ECEV topical elective	BIOE 109 EEB general elective	
4th (senior)	Organism course	ECEV topical elective	Physiology course	

EEB general elective	EEB general elective

Two of the upper-division electives must satisfy DC requirements.

One of the upper-division electives must satisfy the Senior Comprehensive Requirements.

Additional Frosh sample planners may be found on the EEB website.

MARINE BIOLOGY B.S.

Information and Policies

Introduction

The marine biology major is designed to introduce students to the great diversity of marine organisms and the biological and physical processes that affect these organisms, their populations, and their coastal and oceanic ecosystems. Curricular emphasis is on basic principles that help in understanding the processes that shape life in marine environments. The Department of Ecology and Evolutionary Biology (EEB) is located on the University of California, Santa Cruz, Coastal Science Campus (CSC). CSC is situated on Monterey Bay and its great diversity of coastal marine ecosystems, nature reserves, and state, federal, and private marine research institutions and management agencies. Both the National Marine Fisheries Service and the California Department of Fish and Game have laboratories located on the CSC, providing students with research and internship opportunities. Long Marine Laboratory on the CSC provides logistical support including diving and boating facilities, running seawater systems, and marine mammal facilities. Descriptions of nearby environments, institutions, and facilities are available through the EEB Department website. These resources, combined with computing and analytical facilities on main campus and the CSC, make for exceptional opportunities for the study of marine biology and its application to coastal conservation and management. Students can readily engage in basic and applied (e.g., fisheries management) research from estuaries to the deep sea, and plankton to whales.

Program Learning Outcomes

The undergraduate curriculum offered by the Department of Ecology and Evolutionary Biology (EEB) is designed to ensure that all students declared in any EEB-sponsored major will achieve the following seven program learning outcomes:

1. Students will demonstrate broad-based knowledge of the fundamentals of ecology, behavior, evolution and physiology and the relationships among these disciplines.
2. Students will demonstrate skills in the observation and experimental study of organisms, using both field-based and laboratory-based approaches.
3. Students will demonstrate skills in identifying, accessing, comprehending and synthesizing scientific information, including interpretation of the primary scientific literature. This includes understanding key questions and hypotheses, interpreting results and conclusions, and evaluating quality through critique.
4. Students will demonstrate the ability to conceive and execute independent scientific research, including developing their own questions and hypotheses, designing an appropriate theoretical or empirical/experimental approach, executing that approach, and analyzing and interpreting data.
5. Students will demonstrate an ability to understand and apply fundamental quantitative skills, including models and statistical analyses, so as to properly interpret published research and apply such skills in their own research.
6. Students will demonstrate the ability to communicate scientific work, such as a scientific paper, proposal, essay, or notebook, in written, oral or poster format.
7. Students will exhibit strong teamwork and problem solving skills. They will demonstrate the ability to make arguments from evidence and work together to find optimal solutions.

Academic Advising for the Program

Academic advising is available at the Department of Ecology and Evolutionary Biology (EEB) undergraduate advising office located in the Coastal Biology Building on the UC Santa Cruz Coastal Science Campus, and via email at eebadvising@ucsc.edu. The undergraduate webpages contain advice and information pertinent to students' most frequently voiced questions. Each student should review the information posted on the website. For further assistance, contact an EEB undergraduate advisor at eebadvising@ucsc.edu. Transfer students should also review the Transfer Information and Policy Section.

Getting Started in the Major: Frosh

Prerequisites

An online mathematics placement is required to enroll in a mathematics course or CHEM 3A or CHEM 4A. Students are expected to take this examination before orientation, or at least well before the enrollment appointment for their first planned quarter at UCSC. Students are encouraged to work in the learning modules, and assess/reassess (three total assessments allowed) until they place into MATH 16A (recommended) or MATH 11A or MATH 19A. For more information, see the mathematics placement website.

The introductory biology sequence is prerequisite to virtually all upper-division biology courses. BIOL 20A (offered by the Molecular, Cell, and Developmental Biology Department) has

a prerequisite of CHEM 3A or CHEM 4A. Therefore, it is essential for students to start chemistry as soon as possible. Students who have not taken CHEM 3A or CHEM 4A may begin the introductory sequence with BIOE 20C. The entire introductory biology sequence should be taken in the first and second year, concurrently with or following the general chemistry sequence, with all completed by the sixth quarter campus declaration deadline. We also strongly recommend completing the lower-division physics requirements early in your academic career.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall. A letter grade of C or above must be earned in all major screening courses.

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
	AND	
	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus, one of the following mathematics courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

	Either these courses	
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following mathematics courses:

MATH 11B	Calculus with Applications	5
MATH 16B	Mathematics for Life Sciences	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Choose one of the following options:

	Either these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6C	Introductory Physics III	5

Plus one of the following statistics options:

STAT 5	Statistics	5
	OR	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Getting Started in the Major: Transfer Students

Transfer students who satisfy the major screening requirements may declare the major at any time after matriculation only after their official transcripts have been posted to their MyUCSC student portal by the UC Santa Cruz Office of Admissions.

Beginning in late June and early July (for fall transfer students), EEB advising will review admitted students' reported transfer course work and determine how it applies to their major's requirements.

EEB advising will contact admitted students via email. The email will include information on how students' transfer coursework fulfills major requirements. We will suggest courses for students' Fall enrollment, and invite you to make an appointment to talk with EEB undergraduate advising or direct questions to eebadvising@ucsc.edu. Transfer students may also expect to receive regular email messages from EEB advising in June, July, and August with additional information about the major.

Major Qualification Policy and Declaration Process

Major Qualification

All courses must be taken for a letter grade. The following qualification courses, or their equivalents, must be completed with a grade of C (2.0) or better. Some courses may be satisfied via exam credit.

All of the following courses:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

And one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

And one of the following mathematics courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Note: MATH 16A/MATH 16B is the recommended mathematics series for the following EEB majors: Ecology and Evolutionary Biology B.S., Marine Biology B.S., and Plant Sciences B.S.

How to Declare a Major

Students may log into their MyUCSC and submit the Petition for Major/Minor via MyUCSC as soon as they have completed the EEB major qualification requirements and/or reached their declaration deadline quarter, whichever comes first. Information on major declaration can be found here.

Additional questions may be directed to eebadvising@ucsc.edu.

Appeal Process

Students who are not eligible to declare the major may appeal this decision by submitting an appeal letter to EEB undergraduate advising. The department will declare the student's major, deny the student admission to the major, or set conditions for admission (provided the conditions may be met within no more than one quarter of enrollment). Within 15 business days of receipt of the appeal, the department will notify the student and college of the decision. For more information about the appeal process, see the appeal process website.

Letter Grade Policy

All courses used to satisfy any major requirement must be taken for a letter grade, except for approved courses which are **ONLY** offered as Pass/No Pass (P/NP).

[Optional Catchall]

Course Substitution Policy

To discuss the process for a course substitution, contact an EEB undergraduate advisor.

At least half of the upper-division courses (numbered BIOE 100 – BIOE 179) required for each major must be taken in EEB at UC Santa Cruz and not as transfer credits from another department or institution.

Transfer students are advised to contact an EEB undergraduate advisor before enrolling in any upper-division courses at other institutions. For more information on transferring courses to UC Santa Cruz, please consult the Transfer Coursework website. Additional information for transfer students is provided above in the “Transfer Students” section.

Only one upper-division course requirement may be met with a research-based independent study or graduate-level UC Santa Cruz biology course.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., or Plant Sciences B.S. and any other major/minor offered by the EEB Department, nor by the Departments of Chemistry and Biochemistry; Microbiology and Environmental Toxicology; or MCD Biology, including the Global and Community Health B.S. major.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (UCEAP) offers qualified students unique opportunities to broaden their educational horizons. The EEB Department encourages interested students to participate. It is possible to satisfy major requirements abroad and graduate on time; consult with an EEB undergraduate advisor early in the planning process.

Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

There are excellent programs in Costa Rica, Australia, New Zealand, the United Kingdom, Denmark, and Germany, among others. The Costa Rica Tropical Biology Program is of note to students interested in tropical biology and ecology. Held spring and fall quarters at the Monteverde research station, this program gives students experience with hands-on field research and offers a homestay program. The University of Queensland (Australia) offers an intensive, full-semester marine science program, which includes stays at research

stations on the Great Barrier Reef and in sheltered mangrove and seagrass habitats near Brisbane.

Students interested in study abroad need to get an early start on their introductory requirements, including chemistry, mathematics, and biology and must declare their major prior to going abroad. Visit the UCEAP office as soon as possible to begin planning and seek advice and approval for your UCEAP plan from an EEB undergraduate advisor prior to participation in UCEAP.

Honors

Honors in the biological sciences majors are awarded to graduating students whose academic performance in all major-required lower- and upper-division course options taken at UCSC demonstrates excellence at a grade point average (GPA) of 3.5 to 3.79.

Highest honors are awarded to those students whose performance in all major-required lower- and upper-division course options taken at UCSC demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

Introductory Biology:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

General Chemistry:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Students may choose to complete the Chemistry 3 **or** 4 series.

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

Mathematics:

Choose one of the following options:

	Either these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Note: MATH 16A/MATH 16B is the recommended mathematics series for the following EEB majors, Ecology and Evolutionary Biology B.S., Marine Biology B.S., and Plant Sciences B.S.

Biostatistics:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Physics:

	Either these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6C	Introductory Physics III	5

Upper-Division Courses

A total of **eleven (11)** upper-division courses, including relevant electives; two must include laboratory or fieldwork; two must apply to the Disciplinary Communication requirement. Courses appearing in more than one category can fulfill only one requirement.

Lecture/Lab Combination Notes:

Lecture and lab combinations generally count as one course. For 5-credit lectures with required, concurrent 2-credit labs, successful completion of both the lab and lecture is required and counts as one course (except for DC requirements). For 5-credit lectures with optional labs, only the lecture must be

successfully completed to count as one course. Successful completion of the optional lab will count as overall unit credit and may count toward the comprehensive requirement. 5-credit lectures with 5-credit labs count as two courses. 7-credit labs count as one course.

Two core courses:

	Either this course	
BIOE 106	Principles of Genetics for EEB	5
	or this course	
BIOL 105	Genetics	5
	AND	
BIOE 109	Evolution	5

Note: BIOE 106, Principles of Genetics for EEB, is the recommended genetics course for students pursuing an EEB-sponsored major (Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., and Plant Sciences B.S.).

One ecology course:

BIOE 107	Ecology	5
BIOE 108	Marine Ecology	5

One marine-environment course:

OCEA 101	The Marine Environment	5
OCEA 130	Biological Oceanography	5

One marine course:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2

BIOE 129/BIOE 129L: Laboratory optional to satisfy the requirement (concurrent enrollment not required).

Electives

Three topical electives chosen from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 108	Marine Ecology	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 136	Environmental Physiology	5
BIOE 155	Freshwater Ecology	5
BIOE 155L	Freshwater Ecology Laboratory	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 159B	Marine Ecology Field Quarter: Ichthyology with Laboratory	5
BIOE 159C	Marine Ecology Field Quarter: Methods in Field Ecology	5
BIOE 159D	Marine Ecology Field Quarter: Methods in Field Ecology Laboratory	5
BIOE 159E	Marine Ecology Field Quarter: Behavioral Ecology	5
BIOE 159F	Marine Ecology Field Quarter: Global Change Ecology	5
BIOE 161	Kelp Forest Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 163	Ecology of Reefs, Mangroves, and Seagrasses	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOE 165	Marine Conservation Biology	5
EART 102	Marine Geology	5
EART 105	Coasts and Beaches	5
OCEA 118	Marine Microbial Ecology	5
OCEA 122	Chemical Oceanography	5
OCEA 130	Biological Oceanography	5

Three general electives chosen from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

Biological Sciences-EEB

Any upper-division BIOE course numbered BIOE 100 - BIOE 179 of 5 or more credits.

Biological Sciences-MCDB

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5

Earth and Planetary Sciences

EART 100	Vertebrate Paleontology	5
EART 100L	Vertebrate Paleontology Laboratory	2
EART 101	Invertebrate Paleobiology	5
EART 101L	Invertebrate Paleobiology Laboratory	1
EART 102	Marine Geology	5
EART 105	Coasts and Beaches	5

Economics

ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5

Environmental Studies (enrollment by permission of instructor)

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5
ENVS 115A	Geographic Information Systems and Environmental Applications	5
ENVS 115L	Exercises in Geographic Information Systems	2
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 131	Insect Ecology	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 163	Plant Disease Ecology	5
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 168	Biogeochemistry and the Global Environment	5

Microbiology and Environmental Toxicology

METX 100	Introduction to Microbiology	5
METX 100L	Microbiology Laboratory	5
METX 115	Environmental Health Science	5
METX 133	Medical Microbiology	5
METX 150	Applied and Environmental Microbiology	5

Ocean Sciences

OCEA 118	Marine Microbial Ecology	5
OCEA 122	Chemical Oceanography	5
OCEA 130	Biological Oceanography	5

Psychology

PSYC 123	Cognitive Neuroscience	5

Some of the electives may have prerequisites that do not satisfy major or minor requirements.

One of the following may also be used as an upper-division general elective:

Biological Sciences-EEB

Any 5 credits of undergraduate research

BIOE 183W	Undergraduate Research in EEB--Writing	2
BIOE 183L	Undergraduate Research in EEB	3
BIOE 193	Independent Research in EEB	5
BIOE 193F	Independent Research in EEB	2
BIOE 195	Senior Thesis	5

Environmental Studies

ENVS 183	Environmental Studies Internship	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) Requirement. The DC requirement in marine biology is satisfied by completing **two** of the following ecology and evolutionary biology courses:

Note: Lecture and 2-credit lab combinations count as a single course.

BIOE 108	Marine Ecology	5
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 125	Ecosystems of California	5
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5

BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 157B	Ichthyology Field Class in Southern Africa	7
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 171	Disciplinary Communication for Biologists	5
BIOE 172	Population Genetics	5
BIOE 174	Evolutionary Medicine	5

Note: Lecture and 2-credit lab combinations count as a single course. BIOE 117 and BIOE 137 require concurrent enrollment in 2-credit labs, BIOE 117L and BIOE 137L, but these are not part of the DC requirement.

To receive DC credit for BIOE 129, BIOE 129L must also be successfully completed. BIOE 129 without the lab can satisfy electives as noted above, however.

NRS/BIOL 188, California Ecology and Conservation course, taken spring 2023 or later, will satisfy 1/2 DC credit. For more information about this course contact an EEB undergraduate advisor or email eebadvising@ucsc.edu.

Comprehensive Requirement

All majors in the biological sciences require completion of a comprehensive requirement. This requirement can be satisfied in one of the following ways:

- receiving a passing grade in an independent research course, or field/laboratory course listed below.
- completing a senior thesis.

Comprehensive courses offered by Ecology and Evolutionary Biology

Note: Lab courses may have associated prerequisite or corequisite lecture courses.

BIOE 112L	Ornithology Field Studies	2
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120L	Marine Botany Laboratory	2
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124L	Mammalogy Laboratory	2
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135L	Plant Physiology Laboratory	2
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 142L	Animal Behavior in the Wild (A Virtual Field Course)	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
BIOE 153A	Introduction to Arctic Ecology	5
BIOE 153B	Arctic Ecology	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 155L	Freshwater Ecology Laboratory	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 159B	Marine Ecology Field Quarter: Ichthyology with Laboratory	5
BIOE 159C	Marine Ecology Field Quarter: Methods in Field Ecology	5

BIOE 159D	Marine Ecology Field Quarter: Methods in Field Ecology Laboratory	5
BIOE 159E	Marine Ecology Field Quarter: Behavioral Ecology	5
BIOE 159F	Marine Ecology Field Quarter: Global Change Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOE 183W	Undergraduate Research in EEB--Writing	2

Comprehensive courses offered in other departments

METX 100L	Microbiology Laboratory	5
CRSN 152	IDEASS Laboratory Practicum	3

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the C, CC, ER, IM, PE, PR, and TA campus general education requirements.

Sample Frosh Planner

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	BIOE 20C College 1	**MATH 16A** or MATH 11A or MATH 19A CHEM 3A	**MATH 16B** or MATH 11B or MATH 19B CHEM 3B	CHEM 3BL WRIT 1/WRIT 1E (if needed)
2nd (soph)	BIOL 20A CHEM 3C CHEM 3CL WRIT 2*	BIOE 20B STAT 7 STAT 7L	BIOL 105 PHYS 6A PHYS 6L	
3rd (junior)	BIOE 109 PHYS 6B 6M	BIOE 107 or BIOE 108 Marine core	EEB general elective MABI topical elective	
4th (senior)	EEB general elective MABI topical elective	Marine environment core MABI topical elective	EEB general elective	

Two of the upper-division course options must satisfy DC requirements.

One of the upper-division course options must satisfy the Senior Comprehensive Requirement.

*WRIT 2 should be taken in or before spring quarter of the second year.

Additional Frosh sample planners may be found on the EEB website.

Sample Transfer Planner

For students who transferred after completing the transfer screening courses and:

- MATH 16B or MATH 11B or MATH 19B
- CHEM 3C and CHEM 3CL
- PHYS 6A PHYS 6L, and PHYS 6B or PHYS 6C

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	BIOL 105	BIOE 107 or BIOE 108	BIOE 109	
	MABI topical elective STAT 7 STAT 7L	MABI topical elective	MABI topical elective	
4th (senior)	Marine core	Marine environment core	EEB general elective	
	EEB general elective	EEB general elective		

Two of the upper division course options must satisfy DC requirements.

One of the upper division course options must satisfy the Senior Comprehensive Requirement.

Additional Transfer sample planners may be found on the EEB website.

PLANT SCIENCES B.S.

Information and Policies

Introduction

The University of California, Santa Cruz, has a strong program in the plant sciences (sometimes called botany). Resources that support the plant sciences major include state-of-the-art greenhouse facilities, natural ecosystems on the campus from coastal wetlands to redwood forests, the collections of the UC Santa Cruz Arboretum, and the Center for Agroecology and Sustainable Food Systems (including the UC Santa Cruz Farm and Garden). A hallmark of the major is the many field courses that introduce students to a diversity of terrestrial and aquatic ecosystems and the skills to conduct field research. See the Ecology Evolutionary Biology undergraduate webpage for more information on these courses.

The plant sciences major is designed for students with an interest in plant biology and its associated curricular fields such as plant ecology and evolution, plant physiology, plant pathology, plant genetics, soils, and applied plant sciences. After completion of the core courses, students can proceed in one of several directions depending on their interests. For example, a more in-depth study of physiology and evolution courses can serve as preparation for work in biotechnology or plant breeding; further studies in plant ecology, tropical ecology, or restoration ecology can lead to careers in resource ecology and management or biodiversity exploration; upper-division training in agroecology can lead to careers in agriculture or food systems. There are many opportunities for internships both on the UC Santa Cruz campus and in the greater community.

Program Learning Outcomes

The undergraduate curriculum offered by the Department of Ecology and Evolutionary Biology (EEB) is designed to ensure that all students declared in any EEB-sponsored major will achieve the following seven program learning outcomes:

1. Students will demonstrate broad-based knowledge of the fundamentals of ecology, behavior, evolution and physiology and the relationships among these disciplines.
2. Students will demonstrate skills in the observation and experimental study of organisms, using both field-based and laboratory-based approaches.
3. Students will demonstrate skills in identifying, accessing, comprehending and synthesizing scientific information, including interpretation of the primary scientific literature. This includes understanding key questions and hypotheses, interpreting results and conclusions, and evaluating quality through critique.
4. Students will demonstrate the ability to conceive and execute independent scientific research, including developing their own questions and hypotheses, designing an appropriate theoretical or empirical/experimental approach, executing that approach, and analyzing and interpreting data.

5. Students will demonstrate an ability to understand and apply fundamental quantitative skills, including models and statistical analyses, so as to properly interpret published research and apply such skills in their own research.
6. Students will demonstrate the ability to communicate scientific work, such as a scientific paper, proposal, essay, or notebook, in written, oral or poster format.
7. Students will exhibit strong teamwork and problem solving skills. They will demonstrate the ability to make arguments from evidence and work together to find optimal solutions.

Academic Advising for the Program

Academic advising is available at the Department of Ecology and Evolutionary Biology (EEB) undergraduate advising office located in the Coastal Biology Building on the UC Santa Cruz Coastal Science Campus, and via email at eebadvising@ucsc.edu. The undergraduate webpages contain advice and information pertinent to students' most frequently voiced questions. Each student should review the information posted on the website; for further assistance, contact an EEB undergraduate advisor at eebadvising@ucsc.edu. Transfer students should also review the Transfer Information and Policy Section.

Getting Started in the Major: Frosh

Prerequisites

An online mathematics placement is required to enroll in a mathematics course or CHEM 3A or CHEM 4A. Students are expected to take this examination prior to orientation, or at least well before the enrollment appointment for their first planned quarter at UCSC. Students are encouraged to work in the learning modules, and assess/reassess (three total assessments allowed) until they place into MATH 16A (recommended) or MATH 11A or MATH 19A. For more information see the mathematics placement website.

The introductory biology sequence is prerequisite to virtually all upper-division biology courses. BIOL 20A (offered by the Molecular, Cell, and Developmental Biology Department) has a prerequisite of CHEM 3A or CHEM 4A. Therefore, it is essential for students to start chemistry as soon as possible. Students who have not taken CHEM 3A or CHEM 4A may begin the introductory sequence with BIOE 20C. The entire introductory biology sequence should be taken the first and second year, concurrently with or following the general chemistry sequence, with all completed by the sixth quarter campus declaration deadline. We also strongly recommend completing the lower-division physics requirements early in your academic career.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall. Some courses may be satisfied via exam credit.

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
	AND	
	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus, one of the following mathematics courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

A letter grade of C or above must be earned in all major screening courses.

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

Either these courses

CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2

Or these courses

CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following mathematics courses:

MATH 11B	Calculus with Applications	5
MATH 16B	Mathematics for Life Sciences	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Choose one of the following options:

	Either these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
	or these courses	
PHYS 6A	Introductory Physics I	5

PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6C	Introductory Physics III	5

Plus the following statistics options:

STAT 5	Statistics	5
	OR	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Getting Started in the Major: Transfer Students

Transfer students who satisfy the major screening requirements may declare the major at any time after matriculation only after their official transcripts have been posted to their MyUCSC student portal by the UC Santa Cruz Office of Admissions.

Beginning in late June and early July (for fall transfer students), EEB advising will review admitted students' reported transfer course work and determine how it applies to their major's requirements.
EEB advising will contact admitted students via email. The email will include information on how students' transfer coursework fulfills major requirements. We will suggest courses for students' fall enrollment, and invite you to make an appointment to talk with EEB undergraduate advising or direct questions to eebadvising@ucsc.edu. Transfer students may also expect to receive regular email messages from EEB advising in June, July, and August with additional information about the major.

Major Qualification Policy and Declaration Process

Major Qualification

All courses must be taken for a letter grade. The following qualification courses, or their equivalents, must be completed with a grade of C (2.0) or better. Some courses may be satisfied via exam credit.

All of the following courses:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

And one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
	or this course	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

And one of the following mathematics courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Note: MATH 16A/MATH 16B is the recommended mathematics series for the following EEB majors, Ecology and Evolutionary Biology B.S., Marine Biology B.S., and Plant Sciences B.S.

How to Declare a Major

Students may log into MyUCSC and submit the Petition for Major/Minor via MyUCSC as soon as they have completed the EEB major qualification requirements and/or reached their declaration deadline quarter, whichever comes first. Information on major declaration can be found here.

Additional questions may be directed to eebadvising@ucsc.edu.

Appeal Process

Students who are not eligible to declare the major may appeal this decision by submitting an appeal letter to EEB undergraduate advising. The department will declare the student's major, deny the student admission to the major, or set conditions for admission (provided the conditions may be met within no more than one quarter of enrollment). Within 15 business days of receipt of the appeal, the department will notify the student and college of the decision. For more information about the appeal process, see the appeal process website.

Letter Grade Policy

All courses used to satisfy any major requirement must be taken for a letter grade except for approved courses which are ONLY offered as Pass/No Pass (P/NP).

[Optional Catchall]

Course Substitution Policy

To discuss the process for a course substitution, contact an EEB undergraduate advisor.

At least half of the upper-division courses (numbered BIOE 100 – BIOE 179) required for each major must be taken in EEB at UC Santa Cruz and not as transfer credits from another department or institution.

Transfer students are advised to contact an EEB undergraduate advisor before enrolling in any upper-division courses at other institutions. For more information on transferring courses to UC Santa Cruz, please consult the Transfer Coursework website. Additional information for transfer students is provided above in the "Transfer Students" section.

Only one upper-division course requirement may be met with a research-based independent study or graduate-level UC Santa Cruz biology course.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., or Plant Sciences B.S. and any other major/minor offered by the EEB Department, nor by the Departments of Chemistry and Biochemistry; Microbiology and Environmental Toxicology; or MCD Biology, including the Global and Community Health B.S. major.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (UCEAP) offers qualified students unique opportunities to broaden their educational horizons. The EEB Department encourages interested students to participate. It is possible to satisfy major requirements abroad and graduate on time; consult with an EEB undergraduate advisor early in the planning process.

Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

There are excellent programs in Costa Rica, Australia, New Zealand, the United Kingdom, Denmark, and Germany, among others. The Costa Rica Tropical Biology Program is of note to students interested in tropical biology and ecology. Held spring and fall quarters at the Monteverde research station, this program gives students experience with hands-on field research and offers a homestay program. The University of Queensland (Australia) offers an intensive, full-semester marine science program, which includes stays at research stations on the Great Barrier Reef and in sheltered mangrove and seagrass habitats near Brisbane.

Students interested in study abroad need to get an early start on their introductory requirements, including chemistry, mathematics, and biology and must declare their major prior to going abroad. Visit the UCEAP office as soon as possible to begin planning and seek advice and approval for your UCEAP plan from an EEB undergraduate advisor prior to participation in UCEAP.

Honors

Honors in the biological sciences majors are awarded to graduating students whose academic performance in all major-required lower and upper division course options taken at UCSC demonstrates excellence at a grade point average (GPA) of 3.5 to 3.79.

Highest honors are awarded to those students whose performance in all major-required lower and upper division course options taken at UCSC demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

Introductory Biology:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

General Chemistry:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Students may choose to complete the Chemistry 3 **or** 4 series.

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, and CHEM 1N or equivalent. See an EEB undergraduate advisor for additional information.

Mathematics:

Choose one of the following options:

	Either these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	

MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Note: MATH 16A/MATH 16B is the recommended mathematics series for the following EEB majors, Ecology and Evolutionary Biology B.S., Marine Biology B.S., and Plant Sciences B.S.

Biostatistics:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Physics:

	Either these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6C	Introductory Physics III	5

Upper-Division Courses

A total of **eleven (11)** upper-division courses, including relevant electives; two must include laboratory or fieldwork; two must apply to the Disciplinary Communication requirement. Courses appearing in more than one category can fulfill only one requirement.

Lecture/Lab Combination Notes:

Lecture and lab combinations generally count as one course. For 5-credit lectures with required, concurrent 2-credit labs, successful completion of both the lab and lecture is required and counts as one course (except for DC requirements). For 5-credit lectures with optional labs, only the lecture must be successfully completed to count as one course. Successful completion of the optional lab will count as overall unit credit and may count toward the comprehensive requirement. 5-credit lectures with 5-credit labs count as two courses. 7-credit labs count as one course.

Two core courses:

	Either this course	
BIOE 106	Principles of Genetics for EEB	5
	or this course	
BIOL 105	Genetics	5
	AND	
BIOE 109	Evolution	5

Note: BIOE 106, Principles of Genetics for EEB, is the recommended genetics course for students pursuing an EEB-sponsored major (Biology B.A., Ecology and Evolution B.S., Marine Biology B.S., and Plant Sciences B.S.).

One Ecology Course:

BIOE 107	Ecology	5
BIOE 145	Plant Ecology	5

One plant physiology course from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 135	Plant Physiology	5
BIOE 135L	Plant Physiology Laboratory	2
ENVS 162	Plant Physiological Ecology	5

One botany course from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2

Electives

Three topical electives chosen from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

Biological Sciences-EEB

BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 118	Plants and Society: the Biology of Food, Shelter, and Medicine	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 121	Plants, Earth, Climate	5
BIOE 125	Ecosystems of California	5
BIOE 135	Plant Physiology	5
BIOE 135L	Plant Physiology Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 138	Modeling Evolution and Ecology	5
BIOE 139	Mathematical Modeling and Data Science in Ecology and Evolution	5

BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 149	Disease Ecology	5
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
BIOE 153A	Introduction to Arctic Ecology	5
BIOE 153B	Arctic Ecology	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 161	Kelp Forest Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5

Biological Sciences-MCDB

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5

Environmental Studies (enrollment by permission of instructor)

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 131	Insect Ecology	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 163	Plant Disease Ecology	5

Science Communication

SCIC 160	Introduction to Science Writing	5

Three general electives chosen from the following:

Note: Lecture/lab combinations count as a single course. See note under "Upper-Division Courses" for more details.

Biological Sciences-EEB

Any upper-division BIOE course numbered BIOE 100 - BIOE 179 of 5 or more credits.

Biological Sciences-MCDB

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5

Earth and Planetary Sciences

EART 100	Vertebrate Paleontology	5
EART 100L	Vertebrate Paleontology Laboratory	2
EART 101	Invertebrate Paleobiology	5
EART 101L	Invertebrate Paleobiology Laboratory	1
EART 102	Marine Geology	5
EART 105	Coasts and Beaches	5

Economics

ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5

Environmental Studies (enrollment by permission of instructor)

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5
ENVS 115A	Geographic Information Systems and Environmental Applications	5
ENVS 115L	Exercises in Geographic Information Systems	2
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 131	Insect Ecology	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 163	Plant Disease Ecology	5
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 168	Biogeochemistry and the Global Environment	5

Microbiology and Environmental Toxicology

METX 100	Introduction to Microbiology	5
METX 100L	Microbiology Laboratory	5
METX 115	Environmental Health Science	5
METX 133	Medical Microbiology	5
METX 150	Applied and Environmental Microbiology	5

Ocean Sciences

OCEA 118	Marine Microbial Ecology	5
OCEA 122	Chemical Oceanography	5
OCEA 130	Biological Oceanography	5

Psychology

PSYC 123	Cognitive Neuroscience	5

One of the following may also be used as an upper-division general elective:

Biological Sciences-EEB

Any 5 credits of undergraduate research

BIOE 183W	Undergraduate Research in EEB--Writing	2
BIOE 183L	Undergraduate Research in EEB	3
BIOE 193	Independent Research in EEB	5
BIOE 193F	Independent Research in EEB	2
BIOE 195	Senior Thesis	5

Environmental Studies

ENVS 183	Environmental Studies Internship	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in plant sciences is satisfied by completing **two** of the following ecology and evolutionary biology courses:

Note: Lecture and 2-credit lab combinations count as a single course.

BIOE 108	Marine Ecology	5
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 125	Ecosystems of California	5
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 157B	Ichthyology Field Class in Southern Africa	7
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 171	Disciplinary Communication for Biologists	5
BIOE 172	Population Genetics	5
BIOE 174	Evolutionary Medicine	5

Note: Lecture and 2-credit lab combinations count as a single course. BIOE 117 and BIOE 137 require concurrent enrollment in 2-credit labs, BIOE 117L and BIOE 137L, but these are not part of the DC requirement.

To receive DC credit for BIOE 129, BIOE 129L must be successfully completed. BIOE 129 without the lab can satisfy electives as noted above, however.

NRS/BIOL 188, California Ecology and Conservation course, taken spring 2023 or later, will satisfy 1/2 DC credit. For more information about this course contact an EEB undergraduate advisor or email eebadvising@ucsc.edu.

Comprehensive Requirement

All majors in the biological sciences require completion of a comprehensive requirement. This requirement can be satisfied in one of the following ways:

- receiving a passing grade in an independent research course, or field/laboratory course listed below.
- completing a senior thesis.

Comprehensive courses offered by Ecology and Evolutionary Biology

Note: Lab courses may have associated prerequisite or corequisite lecture courses.

BIOE 112L	Ornithology Field Studies	2
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120L	Marine Botany Laboratory	2
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124L	Mammalogy Laboratory	2
BIOE 127L	Ichthyology Laboratory	2

BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135L	Plant Physiology Laboratory	2
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 142L	Animal Behavior in the Wild (A Virtual Field Course)	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
BIOE 153A	Introduction to Arctic Ecology	5
BIOE 153B	Arctic Ecology	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 155L	Freshwater Ecology Laboratory	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 159B	Marine Ecology Field Quarter: Ichthyology with Laboratory	5
BIOE 159C	Marine Ecology Field Quarter: Methods in Field Ecology	5
BIOE 159D	Marine Ecology Field Quarter: Methods in Field Ecology Laboratory	5
BIOE 159E	Marine Ecology Field Quarter: Behavioral Ecology	5
BIOE 159F	Marine Ecology Field Quarter: Global Change Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOE 183W	Undergraduate Research in EEB--Writing	2

Comprehensive courses offered in other departments

METX 100L	Microbiology Laboratory	5
CRSN 152	IDEASS Laboratory Practicum	3

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

In addition to the specific courses shown in these planners, a student must complete courses satisfying the C, CC, ER, IM, PE, PR, and TA campus general education requirements.

Sample Frosh Planner

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	BIOE 20C College 1	MATH 16A or MATH 11A or MATH 19A CHEM 3A WRIT 1/WRIT 1E (if needed)	MATH 16B or MATH 11B or MATH 19B CHEM 3B CHEM 3BL	
2nd (soph)	BIOL 20A CHEM	BIOE 20B STAT	BIOL 105 PHYS	

	3C CHEM 3CL WRIT 2*	7 STAT 7L	6A PHYS 6L
3rd (junior)	BIOE 109 PHYS 6B or PHYS 6C	BIOE 107 PLNT topical elective	EEB general elective Botany lab
4th (senior)	EEB general elective Plant physiology	PLNT topical elective PLNT topical elective	EEB general elective

Two of the upper division course options must satisfy DC requirements.

One of the upper division course options must satisfy the Senior Comprehensive Requirement.

* WRIT 2 should be taken in or before spring quarter of the second year.

Additional Frosh sample planners may be found on the EEB website.

Sample Transfer Planner

For students who transferred after completing the transfer screening courses **and**:

- MATH 16B or MATH 11B or MATH 19B
- CHEM 3C and 3CL
- PHYS 6A PHYS 6L, and PHYS 6B or PHYS 6C

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	BIOL 105 PLNT topical elective STAT 7 STAT 7L	BIOE 107 PLNT topical elective	BIOE 109 PLNT topical elective	
4th (senior)	EEB general elective Plant physiology	Botany lab EEB general elective	EEB general elective	

Two of the upper-division courses must satisfy DC requirements.

One of the upper-division courses must satisfy the Senior Comprehensive Requirement.

Additional sample Transfer student sample planners may be found on the EEB website.

ECOLOGY AND EVOLUTIONARY BIOLOGY BACHELOR'S/MASTER'S CONTIGUOUS PATHWAY

The Ecology and Evolutionary Biology (EEB) Department offers a contiguous bachelor’s/master's path program, which can be completed with an appropriate bachelor’s degree at UC Santa Cruz in five years. The program provides highly motivated undergraduate majors the opportunity to earn separate bachelor’s (B.A.) and master’s (M.A.) degrees. This pathway provides an additional level of preparation and experience to help students pursue careers in industry or government, or to increase their competitiveness for doctoral programs.

The requirements for the bachelor’s/master's pathway program in EEB allow an undergraduate student to complete graduate-level research culminating in a thesis that is original

in content and substantial enough to be published in a scientific journal. Students in the master's program share some coursework requirements with Ph.D. students but are not required to take comprehensive or qualifying exams that are required for the doctoral degree. In addition to coursework, a thesis, formal defense, and department seminar are required for those pursuing the M.A.

Students applying to the EEB Contiguous Bachelor's/Masters Path must be UC Santa Cruz undergraduates who are in the process of developing or conducting an independent research project with an EEB ladder rank faculty as their advisor or co-advisor. The undergraduate thesis advisor is the person who recommends applicants to the contiguous B.A./M.A. program and agrees to continue serving as their master's advisor or co-advisor. Students applying to this program will either be completing an undergraduate degree in one of the majors administered by EEB (i.e., biology, ecology and evolutionary biology, marine biology, or plant science) or completing an undergraduate degree in a related field and have completed and done well in the EEB coursework relevant to their proposed research. The master's degree consists of 35 total credits, a minimum of 20 credits must be in the required EEB core graduate-level courses.

Applications to the contiguous B.A./M.A path are completed in a two-step process. In spring of the undergraduate's junior year, they will complete the EEB departmental application form as described in the checklist below. If approved for the additional-year Contiguous Bachelor's/Master's Path, students will go through the regular EEB master's program application process in fall of their senior year. Admission to the program is not guaranteed; significant progress on the thesis research project combined with an excellent academic track record will indicate the preparedness of the student to undertake this accelerated master's program.

Checklist for Bachelor's/Master's Students

1. Read the program information on the Contiguous Bachelor's/Master's Path website, including requirements and deadlines. **Note:** The M.A. is a Plan I Thesis Track master's.
2. To be able to take advantage of this program, by the middle of your **junior year** you will need to find an EEB ladder rank faculty advisor or co-advisor with whom you will design and complete your research project. If you choose to work with an adjunct or affiliated faculty, you must also have a ladder rank faculty as your co-advisor. At this point the research project may develop either into an undergraduate senior thesis project or a master's research project.
3. By spring of the **junior year**, submit your EEB departmental application for consideration to apply to the contiguous B.A./M.A. program. This must include:
    a. a letter from a ladder rank faculty in EEB who agrees to be your master's advisor or co-advisor;
    b. a brief description (maximum one page) of your planned research;
    c. a curricular plan that has been reviewed by your proposed EEB faculty advisor and any other proposed faculty co-advisors, Biology Advising (or the appropriate advising for your undergraduate major at UCSC) and the EEB Graduate Program coordinator to ensure you can complete all coursework required for both degrees in five years.
4. In the fall of your senior year, if your departmental application is approved and you and your advisor still believe the research project could develop into a master's thesis, apply for admission through the UCSC Graduate Division portal to the M.A. Program (due date Dec. 10).
    a. Your statement of purpose must include a proposed research plan for your master's thesis.
    b. You must include a letter of recommendation from a ladder rank EEB faculty advisor or co-advisor stating that they approve this plan and agree to serve as your advisor or co-advisor for your master's research and thesis.
5. By the end of senior year, complete all requirements for your bachelor's degree from UCSC and submit an undergraduate thesis, which includes a section on your proposed research extension (for the master's thesis), following the same guidelines as the existing Two-Year Master's Program. This thesis must be read and approved by your EEB ladder rank faculty advisor. Recommendation: enroll in a graduate-level class at some time during your senior year and also attend EEB departmental seminars (BIOE 294). Entry-level graduate classes include BIOE 203, BIOE 215, BIOE 238, BIOE 239, and BIOE 245.
6. During the master's year, complete the graduate course and seminar requirements while working on your master's thesis - total of seven classes.
    a. You will enroll in BIOE 200A, BIOE 200B in fall quarter, BIOE 200C and BIOE 200D in winter quarter, and attend EEB departmental seminars (BIOE 294) every quarter. One graduate-level statistics class is required (such as BIOE 286/BIOE 286L) and two elective EEB graduate classes. A student may take BIOE 203 and BIOE 215 during their senior undergraduate year as long as these courses are not used to meet course and credit requirements for their undergraduate degree. Establish a master's thesis committee consisting of your research advisor (chair) plus two other ladder rank faculty.
7. Master's Thesis/Master's Thesis Defense
    a. At the beginning of your senior undergraduate year, develop a timeline with your advisor that includes deadlines for all components of the thesis; a complete draft should be submitted to your advisor by early April at the latest. There is

usually an extensive revision process prior to giving the thesis to the other committee members.

b. By Friday of week 10 of winter quarter schedule your defense and public seminar with yourmaster's thesis committee members through the departmental graduate coordinator.

c. One month (30 days) before the thesis defense date (at the latest), email the thesis to all thesis committee members.

d. During your defense, you will present your work to be reviewed by your committee. They may also ask general knowledge questions to test your mastery of the subject area. Corrections and/or additions to your thesis may be suggested.

e. Next, a formal, public research seminar will be presented by the student. This seminar should be scheduled with the EEB Graduate Program coordinator for the regular time slot when possible, and may not be scheduled for less than a week after the closed defense meeting. It is important to leave enough time before the public seminar for the student to make changes to the thesis manuscript that are requested by the committee. The M.A. Thesis Reading Committee chair signs the title sheet only after the research has been presented in a public seminar.

f. Submit the final version of your master's thesis and complete your final appointment with the Graduate Division. To participate in the graduation ceremony, students must submit all documentation to the Graduate Division by the deadline as stated in the Academic and Administrative Calendar. This usually occurs during week nine of spring quarter.

If a student completes their UCSC bachelor's degree and is admitted to the Contiguous Bachelor's/Master's Path, but does not successfully complete all requirements expected for this program, then they would revert to the existing EEB Master's Program requirements. They must remain in good standing in the program and follow all existing guidelines of the EEB Master's Program. The baseline assumption is that students admitted to the Contiguous Bachelor's/Master's Path will be self-funded throughout their enrollment in the master's program.

ECOLOGY AND EVOLUTIONARY BIOLOGY M.A.

Introduction

All curricular requirements are aimed at preparing students for timely and successful completion of a master thesis. The master of arts (M.A.) curriculum in Ecology and Evolutionary Biology (EEB) includes two stages: 1) required coursework, 2) the research, writing, and defense of the master thesis.

Requirements

The purpose of the master's program in EEB is to allow a student to complete graduate-level research that is usually more directed and shorter-term than that done by doctoral students. Students in the master's program share some coursework requirements with Ph.D. students but do not take the comprehensive or qualifying exams. A thesis, formal defense, and public seminar are required.

Course Requirements

M.A. students must take BIOE 200A, BIOE 200B, BIOE 200C, BIOE 200D, a statistics course and two elective graduate-level classes within their first two years. BIOE 281, BIOE 294, and BIOE 297 (Independent Study) must be taken every quarter the student is in residence. All students must be enrolled in at least 15 credits per quarter, unless on approved part-time status. No more than 15 credits from upper-division undergraduate courses may be used as part the student's coursework.

Core Courses

BIOE 200A	Scientific Skills	5
BIOE 200B	Advanced Organismal Biology	5
BIOE 200C	Evolutionary Ecology	5
BIOE 200D	Foundations in Ecology & Evolutionary Biology	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2

BIOE 200A and BIOE 200B are offered each fall quarter, BIOE 200C and BIOE 200D are offered each winter quarter. At least one class on statistics must be completed. Graduate-level (200-level) statistic courses in UCSC departments outside of EEB may meet this requirement upon approval by the EEB Graduate Advisory Committee.

Elective Courses

BIOE 203	Introductory Seminar in Ecology and Evolutionary Biology	3
BIOE 215	Advanced Seminar in Ecology and Evolutionary Biology	3
BIOE 208	Marine Ecology	5
BIOE 245	Plant Ecology	5
BIOE 245L	Field Methods in Plant Ecology Laboratory	5
BIOE 247	Community Ecology	5
BIOE 238	Modeling Evolution and Ecology	5

BIOE 239	Mathematical Modeling and Data Science in Ecology and Evolution	5
BIOE 258L	Experimental Marine Ecology	5
BIOE 262	Facilitating Change in Coastal Science Policy	5
BIOE 271	Disciplinary Communication for Biologists	5
BIOE 272	Population Genetics	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2

Note that BIOE 203 and BIOE 215 seminar topics are variable and will be announced each quarter.

The following courses must be taken every quarter the student is in residence.

BIOE 281	Graduate Seminar
BIOE 294	Ecology, Evolutionary Biology Seminar
BIOE 297	Independent Study

All students must be enrolled in at least 15 credits per quarter, unless on approved part-time or leave of absence status.

Other Requirements

EEB requires that each student must, in consultation with their supervisor, assemble a thesis committee no later than spring quarter of their first year. The student's supervisor will serve as the chair of the committee. The thesis committee has the responsibility for ensuring the standards and goals of the department and university and will evaluate the student research in two phases. In the fall of the second year, each master's student will schedule their thesis proposal meeting at which time the merit of the proposed research is evaluated. Once the proposal has been accepted, the student has approximately one year to complete the work and format their master thesis manuscript. In order to graduate, the thesis is defended in a closed oral examination, presented in a departmental seminar and submitted as a formal dissertation to the Graduate Division. The master's dissertation is typically one chapter that comprises original research which is substantial enough to be published in a scientific journal. The target time for the master's program is two years.

Deadlines at each stage must be confirmed with the graduate program coordinator.

Academic Progress

Normative time to degree for the M.A. program is two years. Academic progress is formally reviewed in the spring quarter of each academic year by means of an annual report.

Optional Catchall

Applying for Graduation

Information on applying for graduation may be found on the EEB Graduate Program website. Deadlines should always be confirmed with the graduate program coordinator.

ECOLOGY AND EVOLUTIONARY BIOLOGY PH.D.

Introduction

All curricular requirements are aimed at preparing students for timely and successful completion of a doctoral dissertation. The Ph.D. curriculum in Ecology and Evolutionary Biology (EEB) includes six stages: 1) required coursework, 2) the comprehensive examination, 3) the qualifying examination, 4) two quarters of teaching experience, 5) submission of at least one paper for publication, 6) the research, writing, and defense of the dissertation.

Advancement to Candidacy

Course Requirements

Core Courses

Ph.D. students must take BIOE 200A and BIOE 200B in the fall of the first year, and BIOE 200C and BIOE 200D in the winter of the first year. All course requirements should be completed by the end of the third year and before the student's proposal defense (QE defense). There are three electives beyond the core courses including at least one course in statistics.

BIOE 200A	Scientific Skills	5
BIOE 200B	Advanced Organismal Biology	5
BIOE 200C	Evolutionary Ecology	5
BIOE 200D	Foundations in Ecology & Evolutionary Biology	5

Statistics requirement

BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2

Graduate-level (200-level) statistic courses in other UCSC departments may fulfill this requirement upon approval by EEB GAC.

Elective Graduate Course List (2 required)

BIOE 203	Introductory Seminar in Ecology and Evolutionary Biology	3
BIOE 215	Advanced Seminar in Ecology and Evolutionary Biology	3
BIOE 208	Marine Ecology	5
BIOE 245	Plant Ecology	5

BIOE 245L	Field Methods in Plant Ecology Laboratory	5
BIOE 247	Community Ecology	5
BIOE 239	Mathematical Modeling and Data Science in Ecology and Evolution	5
BIOE 238	Modeling Evolution and Ecology	5
BIOE 258L	Experimental Marine Ecology	5
BIOE 262	Facilitating Change in Coastal Science Policy	5
BIOE 271	Disciplinary Communication for Biologists	5
BIOE 272	Population Genetics	5

Two elective BIOE-graduate-level courses are required. Note that BIOE 203 and BIOE 215 seminar topics are variable and will be announced each quarter.

The following courses must be taken every quarter the student is in residence.

All students must be enrolled in at least 15 credits per quarter, unless on approved part-time status.

BIOE 281	Graduate Seminar
	AND
BIOE 294	Ecology, Evolutionary Biology Seminar
	AND
	Either this course
BIOE 297	Independent Study
	or this course
BIOE 299	Thesis Research

BIOE 297 or BIOE 299 is required, not both. BIOE 297 is taken until the student advances to candidacy. BIOE 299, Thesis Research, is taken after the student advances to candidacy.

Foreign Language Requirements

Teaching Requirement

Each Ph.D. student is expected to complete at least two academic quarters as a teaching assistant during their graduate career.

Pre-Qualifying Requirements

The comprehensive examination is completed in the spring quarter of the first year. This is a written examination, the goal of which is to examine the student's breadth and depth of knowledge of evolution, ecology, organismal biology (including physiology and behavior), and general biology. The student should demonstrate a level of knowledge of basic biology ranging from an introductory level in fields most removed from the student's focus area to a more substantial and advanced level in fields closer to the student's focus area.

Qualifying Examination

The qualifying examination, also known as the proposal defense, is completed no later than the third year of the Ph.D. program. The goal of this two-part examination is to establish the student's proposed dissertation project. Students submit a dissertation research proposal to their qualifying exam committee and defend it in an oral examination. The proposal should be submitted no less than 10 business days before the oral defense. The proposal defense must be completed by the spring quarter of the third year and be followed by a departmental seminar on the student's research proposal. Students advance to candidacy after having completed all required coursework, the comprehensive examination, and the qualifying examination.

[Optional Catchall]

Dissertation

Dissertation

Within EEB, a dissertation usually contains three or four chapters that comprise original research, each of which is substantial enough to be published in a scientific journal, plus a short introduction and a conclusion/synthesis. The conclusion synthesizes the results of the dissertation as a whole, reflects on how novel insights come from the whole body of work, and may point the reader toward future research directions.

At least one chapter of the dissertation must be submitted to a refereed journal for publication as a final program requirement before receipt of the Ph.D.

Dissertation Defense

The dissertation is defended in a three-hour closed oral examination and then presented in a departmental seminar.

Academic Progress

Normative time to degree is six years, though it is possible to complete the program in less time. Academic progress is formally reviewed in the spring quarter of each academic year in the form of an annual report. Once a student has advanced to candidacy, they are expected to hold an annual committee meeting which is documented in the annual report. The last committee meeting occurs within one year of the final defense and is the penultimate committee meeting.

Applying for Graduation

Information for applying for graduation may be found on the EEB Graduate Program website. Deadlines should always be confirmed with the Graduate Program coordinator.

[Optional Catchall]

ECOLOGY AND EVOLUTIONARY BIOLOGY DESIGNATED EMPHASIS

Introduction

Students in related graduate programs at UC Santa Cruz may elect to complete the Ecology and Evolutionary Biology Designated Emphasis plan. You must obtain approval from

your home department and be in good standing to apply for this program. An EEB faculty member will serve as your DE faculty advisor meaning that they will serve on your qualifying exam committee, your dissertation reading committee, and review your coursework plan, which requires 20 credits of EEB graduate coursework.

Requirements

To receive a designated emphasis in ecology and evolutionary biology (EEB), graduate students must complete the following requirements in addition to the degree requirements for the doctorate in their home department:

Committee Composition and Departmental Approvals

1. Identify a designated faculty advisor from among the faculty of the EEB department, who commits to serve on the qualifying examination committee and on the Ph.D. dissertation reading committee.

2. Once a designated faculty advisor has been identified, file intent to complete the designated emphasis in EEB with the EEB department graduate program coordinator.

Course Requirements

Students are required to complete at least 20 credits of EEB coursework. Courses taken to fulfill program requirements within the home department will not count toward the designated emphasis program's required coursework.

Take the following EEB core courses (required for all EEB graduate students):

BIOE 200A	Scientific Skills	5
BIOE 200B	Advanced Organismal Biology	5
BIOE 200C	Evolutionary Ecology	5

Enroll in the following course and attend all EEB Department seminars for one quarter:

BIOE 294	Ecology, Evolutionary Biology Seminar	

Enroll in the following course corresponding to their EEB faculty advisor and attend their laboratory group seminars for one quarter:

BIOE 281	Graduate Seminar	

Take at least two other EEB graduate courses for a minimum total of 20 credits.

BIOE 200D	Foundations in Ecology & Evolutionary Biology	5
BIOE 203	Introductory Seminar in Ecology and Evolutionary Biology	3
BIOE 215	Advanced Seminar in Ecology and Evolutionary Biology	3
BIOE 208	Marine Ecology	5
BIOE 245	Plant Ecology	5
BIOE 245L	Field Methods in Plant Ecology Laboratory	5
BIOE 247	Community Ecology	5
BIOE 239	Mathematical Modeling and Data Science in Ecology and Evolution	5
BIOE 238	Modeling Evolution and Ecology	5
BIOE 258L	Experimental Marine Ecology	5
BIOE 262	Facilitating Change in Coastal Science Policy	5
BIOE 271	Disciplinary Communication for Biologists	5
BIOE 272	Population Genetics	5
BIOE 286	Experimental Design and Data Analysis	5
BIOE 286L	Experimental Design and Data Analysis Lab	2

Writing, Research and/or Teaching Requirements

Academic Progress

Before applying to graduate, the student must request verification of completion of the designated emphasis program from both their home department and the EEB Graduate Program coordinator. The decision to award a student the designated emphasis will be made by the department chair, the faculty graduate director, or an appropriately constituted faculty committee drawn from the degree-granting program, according to departmental procedure.

[Optional Catchall]

Materials Science & Engineering

212 Interdisciplinary Sciences Building
(831) 459-1217
https://materials.ucsc.edu/

The Materials Science & Engineering (MSE) Graduate Program at UC Santa Cruz brings together experts in materials synthesis, materials characterization, and theoretical modeling of materials to form research teams that can respond to research opportunities that require a comprehensive approach.

MSE aims to accelerate the acquisition of fundamental knowledge and workforce training required to develop new materials used in sustainable technologies. These technologies include energy efficient electronics, efficient light harvesting energy sources, and energy storage devices among others. Materials science and engineering not only provides insights into some of the fundamental properties of complex systems in nature, but also significantly impacts the lives of people by providing avenues for the development of electronic, optical, magnetoelectronic, bioelectronic, and other state-of-the-art devices with new properties.

Graduate Programs:

Materials Science and Engineering M.S. (p. 391)

Materials Science and Engineering Ph.D. (p. 392)

MATERIALS SCIENCE AND ENGINEERING M.S.

Introduction

The Materials Science and Engineering (MSE) program welcomes students interested in a Master of Science (M.S.) degree. M.S. students develop laboratory, computational, and analytical theory skills which are of value in many fields, including semiconductor materials and device processing, computer simulation and visualization, cryogenics, x-ray scattering, electronic, magnetic, and photonic measurements, and bioelectronics among others. Each M.S. student is assigned a faculty adviser who helps to design a coursework plan suited to the student's interests. The MSE program is interdisciplinary by nature and program faculty are formal members of academic departments in the Physical Biological Sciences (PBSci) Division and the Baskin School of Engineering (BSOE). A list of MSE faculty may be found here.

MSE graduate students and faculty use several UC Santa Cruz research facilities, including laboratory facilities located on campus in the BSOE, the Department of Chemistry and Biochemistry, and the interdisciplinary Westside Research Park research building. Proximity to the Stanford Synchrotron Radiation Laboratory, the Stanford Nanofabrication Facility, and Lawrence Berkeley National Laboratory provides additional local research opportunities. UC Santa Cruz faculty and graduate students also participate in research programs at Los Alamos National Laboratory, National High Magnetic Field Laboratory, and Oak Ridge National Laboratory. Collaborations with industrial partners, such as IBM, Advanced Materials, and other companies are also available for some projects.

Application materials and brochures describing the MSE M.S. program in more detail may be obtained by visiting the MSE program website or by contacting the Division of Graduate Studies.

Students pursuing the Ph.D. degree can apply for a master's degree upon successful completion of the requirements for a master's degree.

Requirements

Course Requirements

M.S. Plan I: Thesis Students

M.S. Plan I students must complete 45 credits of graduate or upper-division undergraduate course work, of which at least 30 credits must be graduate level credits. Students must complete at least one course from three of the five areas of Materials Science and Engineering: (1) Quantum and Thermodynamic Foundations of Materials, (2) Condensed Matter and Structure, (3) Materials Characterization Techniques, (4) Functional Materials , and (5) Materials Synthesis and Processing. Students must also take MSE 200, Introduction to Materials Science and Engineering, at least once and MSE 280, Colloquium in Materials Science and Engineering, at least five times.

Students must enroll in MSE 200 the first time it is offered during their residency. At least one enrollment in MSE 280 must be taken for a letter grade. A letter grade in this course entails giving one of the colloquia**.** The course of study needs to be approved each quarter by the research adviser (who will supervise the research project) and the MSE graduate adviser.

The thesis research project, along with the Area 3, 4, and 5 courses, will provide significant practical professional development for students because the techniques used are widely used in industry. The expected time to degree is six quarters (two years).

The M.S. Plan I degree is open to students enrolled in the Ph.D. program.

M.S. Plan I: Thesis Requirement

Students enrolled in M.S. Plan I will be awarded a master's degree upon completing the above requirements and submitting an approved thesis. Each M.S. student is assigned a faculty adviser who helps design a research plan suited to the student's interests. The thesis may be in any of the research fields in the program, thereby developing laboratory, computational, and/or analytical theory skills that are of value in many areas of materials science and engineering.

M.S. Plan II: Comprehensive Exam Students

M.S. Plan II students must complete 45 credits of graduate or upper-division undergraduate course work, of which at least 30 credits must be graduate level credits. Students must complete at least one course from three of the five areas of Materials Science and Engineering: (1) Quantum and Thermodynamic Foundations of Materials, (2) Condensed Matter and Structure, (3) Materials Characterization Techniques, (4) Functional Materials , and (5) Materials Synthesis and Processing. Students must also take MSE 200, Introduction to Materials Science and Engineering, at least once, and MSE 280, Colloquium in Materials Science and Engineering, at least five times.

Students must enroll in MSE 200 the first time it is offered during their residency. At least one enrollment in MSE 280 must be taken for a letter grade. Students can take Directed Studies a maximum of six times. The course of study needs to be approved each quarter by the MSE graduate adviser. Students will take a written comprehensive examination to complete the degree. The examination emphasizes the fundamental knowledge of the study area rather than the specifics covered in individual courses.

The degree will be awarded when all these requirements are met. Expected time to degree is six quarters (two years).

The M.S. Plan II degree is only open to students enrolling in the terminal M.S. degree and is not open to students that have enrolled in the Ph.D. program. M.S. Plan II students who would like to transfer to the doctoral program will have to have satisfied all the coursework requirements for the master's program, passed the oral qualifier exam, and obtained the MSE Graduate Committee's approval.

MSE Fundamentals Courses

MSE 200	Introduction to Materials Science and Engineering	2
MSE 280	Colloquium in Materials Science and Engineering	2

Areas of Study Courses

Area 1 Courses: Quantum and Thermodynamic Foundations of Materials

CHEM 262	Statistical Mechanics	5
CHEM 263	Quantum Mechanics	5
PHYS 215	Introduction to Non-Relativistic Quantum Mechanics	5
PHYS 219	Statistical Physics	5
PHYS 262	Phase Transformations in Materials	5

Area 2 Courses: Condensed Matter and Structure

CHEM 268	Solid State and Materials Chemistry	5
ECE 102	Properties of Materials	5
ECE 102L	Properties of Materials Laboratory	2
ECE 227	Fundamentals of Semiconductor Physics	5
PHYS 156	Applications of Quantum Materials	5
PHYS 157	Frontier of Quantum Materials	5
PHYS 231	Introduction to Condensed Matter Physics	5
PHYS 232	Condensed Matter Physics	5

Area 3 Courses: Materials Characterization Techniques

CHEM 256D	X-ray Crystallography	5
CHEM 261	Foundations of Spectroscopy	5
CHEM 264	Computational Materials	5
ECE 203	Nanocharacterization of Materials	5
PHYS 291B	X-rays and Magnetism	2

Area 4 Courses: Functional Materials

ECE 201	Introduction to Nanotechnology	5
ECE 204	Bioelectronics	5
ECE 205	Fundamentals of Nanoelectronics	5
ECE 223	Advanced Solid-State Devices	5
ECE 230	Optical Fiber Communication	5
ECE 232	Integrated Biophotonics	5
PHYS 234	Soft Condensed Matter Physics	5
PHYS 240	Polymer Physics	5
PHYS 261	Fundamentals of Mesoscopic Systems	5

Area 5 Courses: Materials Synthesis and Processing

ECE 207	Nanomaterials and Nanometer-Scale Devices	5
ECE 225	Semiconductor Processing and Bandgap Engineering	5
ECE 228	Engineering of Thin Film Deposition	5

Applying for Graduation

Students must apply for graduation to receive their M.S. degree. The form can be found on the graduate division forms page and should be submitted to the Graduate Division.

MATERIALS SCIENCE AND ENGINEERING PH.D.

Introduction

The Materials Science and Engineering (MSE) program welcomes students interested in a Ph.D. degree. Doctoral candidates perform experimental, theoretical, and computational research in any of the areas covered by the program, including quantum materials (two-dimensional and topological materials, among others), energy materials (batteries and photovoltaics), quantum sensors, photonics, magnetic materials (including spintronics), bioelectronics, and neuromorphic electronic materials. They develop laboratory, computational, and analytical theory skills which are of value in many fields, including semiconductor materials and device processing, computer simulation and visualization, cryogenics, x-ray scattering, electronic, magnetic, and photonic measurements, and bioelectronics among others.

Each Ph.D. student is assigned a faculty adviser who helps to design a coursework plan suited to the student's interests. The MSE program is interdisciplinary by nature and program faculty are formal members of academic departments in the Physical Biological Sciences (PBSci) Division and the Baskin School of Engineering (BSOE). A list of MSE faculty may be found here.

MSE graduate students and faculty use several UC Santa Cruz research facilities, including laboratory facilities located on campus in the BSOE, the Department of Chemistry and Biochemistry, and the interdisciplinary Westside Research Park research building. Proximity to the Stanford Synchrotron Radiation Laboratory, the Stanford Nanofabrication Facility, and Lawrence Berkeley National Laboratory provides

additional local research opportunities. UC Santa Cruz faculty and graduate students also participate in research programs at Los Alamos National Laboratory, the National High Magnetic Field Laboratory , and Oak Ridge National Laboratory. Collaborations with industrial partners, such as IBM, Advanced Materials, and other companies may also be available for some projects.

The UC Santa Cruz MSE program is committed to providing an excellent education to a diverse population of graduate students and we encourage candidates from all backgrounds to apply. We employ a holistic process to assess candidates' knowledge and passion for materials science and engineering, as well as the perseverance and tenacity required to complete the doctoral program. Of particular importance is the alignment between the research interests of the candidate and those of the program's affiliated faculty. While taking into consideration a candidate's undergraduate grade point average (GPA), letters of recommendation, student statements, and general Graduate Record Examinations (GRE) scores, we do not disqualify applicants based on any single factor. The program recognizes the documented limitations of the GRE as an equitable predictor of success in graduate studies and research.

Students pursuing the Ph.D. degree can apply for a master's degree upon successful completion of the requirements for a master's degree.

Application materials and brochures describing the MSE Ph.D. program in more detail may be obtained by visiting the MSE program website or by contacting the Division of Graduate Studies.

Advancement to Candidacy

The following sections define the requirements to advance to candidacy for the Ph.D. degree.

Course Requirements

Prospective Ph.D. students must complete a minimum of 45 credits of graduate or upper-division undergraduate coursework, of which at least 30 credits must be graduate level credits, covering all five areas of study in (1) Materials Science and Engineering: Quantum and Thermodynamic Foundations of Materials, (2) Condensed Matter and Structure, (3) Materials Characterization Techniques, (4) Functional Materials , and (5) Materials Synthesis and Processing. Students must earn at least a B- in these courses to remain in good standing in the program. Students must also take one course in area (6) Professional Development.

Students are required to take either PHYS 215 or CHEM 263, and PHYS 219 or CHEM 262 from area (1). Taking PHYS 262 is strongly encouraged.

Students must enroll in MSE 200 the first time it is offered during their residency.

Students must enroll in MSE 280 during all quarters of residency and must obtain a letter grade in the course once during each academic year of residency except for the first one. A letter grade in this course entails giving one of the colloquia. Students must also take two quarters of MSE 290 during their first year; the two different rotations may be done with the same or a different group. The course of study needs to be approved each quarter by the research adviser (when determined) and the MSE graduate adviser. Students may take additional courses to prepare for and conduct their Ph.D. research as needed.

One or more of these first-year courses can be waived if students have taken equivalent graduate-level courses at their undergraduate institution. However, this requires that the course covers the material in the first-year courses syllabi and that the students obtained a satisfactory grade (a B or higher, or the equivalent).

MSE Fundamentals Courses

MSE 200	Introduction to Materials Science and Engineering	2
MSE 280	Colloquium in Materials Science and Engineering	2
MSE 290	Research Rotation	5

Areas of Study Courses

Area 1 Courses: Quantum and Thermodynamic Foundations of Materials

CHEM 262	Statistical Mechanics	5
CHEM 263	Quantum Mechanics	5
PHYS 215	Introduction to Non-Relativistic Quantum Mechanics	5
PHYS 219	Statistical Physics	5
PHYS 262	Phase Transformations in Materials	5

Area 2 Courses: Condensed Matter and Structure

CHEM 268	Solid State and Materials Chemistry	5
ECE 102	Properties of Materials	5
ECE 102L	Properties of Materials Laboratory	2
ECE 227	Fundamentals of Semiconductor Physics	5
PHYS 156	Applications of Quantum Materials	5
PHYS 157	Frontier of Quantum Materials	5
PHYS 231	Introduction to Condensed Matter Physics	5
PHYS 232	Condensed Matter Physics	5

Area 3 Courses: Materials Characterization Techniques

CHEM 256D	X-ray Crystallography	5
CHEM 261	Foundations of Spectroscopy	5
CHEM 264	Computational Materials	5

ECE 203	Nanocharacterization of Materials	5
PHYS 291B	X-rays and Magnetism	2

Area 4 Courses: Functional Materials

ECE 201	Introduction to Nanotechnology	5
ECE 204	Bioelectronics	5
ECE 205	Fundamentals of Nanoelectronics	5
ECE 223	Advanced Solid-State Devices	5
ECE 230	Optical Fiber Communication	5
ECE 232	Integrated Biophotonics	5
PHYS 234	Soft Condensed Matter Physics	5
PHYS 240	Polymer Physics	5
PHYS 261	Fundamentals of Mesoscopic Systems	5

Area 5 Courses: Materials Synthesis and Processing

ECE 207	Nanomaterials and Nanometer-Scale Devices	5
ECE 225	Semiconductor Processing and Bandgap Engineering	5
ECE 228	Engineering of Thin Film Deposition	5

Area 6 Courses: Professional Development

BME 201	Scientific Writing	3
CHEM 230	Grant Writing in Biomedical Research	5

Qualifying Examination

After identifying an appropriate research project with their faculty advisor, students form an Oral Qualifying Examination Committee.

The Oral Qualifying Examination focuses on the dissertation problem. It includes considerable depth in the student's area of specialization, as required for a successful completion of the dissertation. The examination begins with the student's presentation of the dissertation topic and is followed with questions and suggestions by the doctoral committee. During the exam, the candidate will have to display competency in the fundamental knowledge required to complete the project.

Dissertation

A doctoral dissertation will be an original and substantial contribution to knowledge in the student's major field. The dissertation must demonstrate the student's ability to carry out a program of independent advanced research and to report the results in accordance with standards observed in recognized scientific journals. When the doctoral committee determines that a suitable draft of the dissertation has been presented, a dissertation examination and defense for the student is scheduled.

Dissertation Defense

The public dissertation defense is required for the Ph.D. degree and will consist of a public seminar followed by questions from the committee. Students should work with their committee to confirm a defense date and time. The MSE Program staff can assist with providing a room for the defense and with publicizing the event. Students should have a final or nearly final draft of their dissertation and provide it to their committee prior to the defense. It is suggested that the draft be provided at least one month prior to the defense, but this is at the committee's discretion. The graduate advisor and/or the Graduate Committee can provide guidance as to the procedures for selection of committee membership, the format of the examination, and required reporting.

Academic Progress

Annual evaluation ordinarily is the joint responsibility of the graduate coordinator and the faculty advisor and/or the chair of the student's doctoral committee. An evaluation should include a brief review of the student's work to date, with particular attention to the period since the last report, describing the student's progress toward the degree, pointing out any areas in which improvement is recommended or required, and establishing academic objectives for the following period.

The results of annual reviews are committed to writing and signed by the supervisor. Before a doctoral student has advanced to candidacy, the second signer may be the graduate coordinator; after advancement, a second dissertation committee member must also sign. The annual evaluations are distributed to the student and kept in the student's file. They form the basis for decisions about continued financial support, academic probation and/or dismissal, extensions of financial aid beyond the expected graduation time, and other matters.

The expected graduation time to degree for the program is five years.

Applying for Graduation

Students should apply for the Ph.D. at the beginning of the term in which they will complete all degree requirements. The application form can be found on the graduate division forms page and should be submitted to the Graduate Division.

Mathematics

4111 McHenry
(831) 459-2400
https://www.math.ucsc.edu

PROGRAMS OFFERED

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Mathematics Education B.A. (p. 406)

Mathematics B.S. (p. 401)

Mathematics Theory and Computation B.S. (p. 411)

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OTHER PROGRAMS OF INTEREST

Economics and Mathematics Combined B.A. (p. 702)

UNDERGRADUATE PROGRAM

Mathematics is both a fundamental discipline and an essential tool for students of biology, chemistry, computer engineering, computer science, Earth sciences, economics, electrical engineering, information systems management, physics, and psychology. Researchers in all these areas are constantly developing new ways of applying mathematics to their fields. A strong mathematics background is vital to the advanced study of many disciplines, including the physical and biological sciences, engineering, and the social sciences.

The UC Santa Cruz mathematics program offers a wide variety of undergraduate courses:

- Students interested in studying mathematics are strongly encouraged to take algebra, geometry, and trigonometry before entering the university. Students needing mathematics courses for their intended major are strongly encouraged to consider their options, and take the necessary steps for assessment and placement as early as possible. Progress in some majors could be delayed if the calculus series is not begun upon arrival at UCSC. Students concerned about their ability to place into courses above MATH 3 should consider taking MATH 2 or its equivalent prior to entering UCSC.
- Lower-division courses with numbers in the range MATH 11A through MATH 24 (calculus, mathematical modeling, linear algebra, vector calculus, and differential equations) prepare students for further study in mathematics, the physical and biological sciences, engineering, or quantitative areas of the social sciences. Science and engineering majors take some or all of these courses as part of their undergraduate studies. More specifics about this can be found at our website.
- Upper-division courses, with numbers in the range MATH 100-MATH 199, are intended for majors in mathematics and closely related disciplines. Some of these courses provide students with a solid foundation in key areas of mathematics such as algebra, analysis, geometry, and number theory, whereas others introduce students to more specialized areas of mathematics. Calculus, linear algebra, vector calculus, and proof and problem solving are prerequisite to most of these advanced courses.

All students should review the catalog's requirements for their major or intended major, and possibly consult with the department sponsoring their major (or expected major) before deciding which math courses to take. More information on which courses are intended for the various types of students may be found here at the Mathematics Department website.

Enrollment Requirements

Students who plan to take a mathematics course at UC Santa Cruz must first demonstrate sufficient preparation by one of the following :

- completing mathematics placement (see below)
- the College Entrance Examination Board's Advanced Placement (AP) calculus examination
- the International Baccalaureate (IB) Mathematics Examination
- passing the appropriate prerequisite course.

Through placement, some students may be required to start their UCSC mathematics classes with MATH 2 (followed by MATH 3) or MATH 3 before progressing to one of the calculus series. Students who have passed MATH 2 may enroll in MATH 3. Students who have passed MATH 3 may enroll in course MATH 11A or MATH 16A or MATH 19A. Students who have passed a precalculus course at a college or university may enroll in course MATH 11A or MATH 16A or MATH 19A, but they must first verify the course's eligibility (on Assist.org) and completion (with the mathematics adviser).

UC Santa Cruz Mathematics Placement

Mathematics placement assesses student readiness for their first UC Santa Cruz mathematics class. Students whose areas of study require precalculus or calculus courses are strongly advised to complete placement, as well as any required courses, early in their academic careers. Students intending to take one or more mathematics courses at UCSC should begin placement as early as possible to fully benefit from the process.

Students completing placement by assessment through ALEKS PPL should familiarize themselves with the instructions and guidelines, course eligibility cut-offs, and score posting schedule.

Advanced Placement (AP) Calculus Examinations

Students placing by their scores on the College Board's Advanced Placement Calculus Exam should refer to this table for AP course equivalencies.

International Baccalaureate (IB)

Examination in Mathematics

Students placing by their scores on the International Baccalaureate Exam should refer to this table for IB course equivalencies.

GRADUATE PROGRAM

The Mathematics Department offers the Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) degrees. Students admitted to the Ph.D. program may receive a master's degree en route to the Ph.D.; students admitted to the M.A. program may apply to the department to transfer to the Ph.D. program upon passing the required preliminary examinations at the Ph.D. level.

In order to be prepared for our graduate programs, it is recommended to have a B.A. or B.S. in mathematics. Having taken more than the bare minimum of required upper-division classes in the mathematics major will be most helpful.

The Mathematics Department at UC Santa Cruz is small but dynamic, with an ongoing commitment to both research and teaching. The department has leading programs in several actively developing areas of mathematics, and our work interacts strongly with science, technology, and other fields.

Current areas of research in Algebra: Number Theory Topology, and Vertex Operators include:

- Vertex operator algebras, conformal field theory, modular forms, Hopf algebras, category theory, infinite-dimensional Lie algebras, mathematical physics.
- Representations of Lie and p-adic groups, applications to number theory, Bessel functions, Rankin-Selberg integrals, Gelfand-Graev models.
- Finite groups, their representations and representation rings. Conjectures of Alperin, Broué and Dade. Mackey functors, biset functors, Burnside rings, fusion systems, blocks of group algebras. ring theory, module theory, category theory, homological algebra.
- Algebraic topology, cobordism cohomology theories, elliptic genera and modular forms, string topology of loop spaces, topological quantum field theories.
- Triangulated categories, tensor triangular geometry, stable homotopy theory, and higher category theory.
- Galois and incidence geometry.
- Arithmetic algebraic geometry of moduli spaces and locally symmetric varieties.

Current areas of research in Analysis, Geometry and Dynamics include:

- Symplectic and contact geometry and topology, Floer homology, periodic orbits and dynamics of Hamiltonian systems and Reeb flows.
- Dynamical systems, celestial mechanics, geometric mechanics, bifurcation theory, control theory.
- Geometric integration schemes, numerical methods on manifolds.
- Differential geometry, nonlinear analysis, Ginzburg-Landau problem.
- General relativity, Einstein's equations, positive mass conjecture, Teichmuller theory.
- Geometric Analysis: geometric flows, harmonic maps, minimal surfaces, surfaces of constant mean curvature, min-max theory.
- Functional analysis, spectral theory, and Banach algebras; Toeplitz and Hankel operators, matrices, and determinants; Wiener-Hopf factorization and Riemann-Hilbert problems; applications to random matrix theory and statistical physics.
- Inverse problems in PDEs and integral geometry, X-ray/Radon transforms, non-abelian X-ray transforms, with applications to imaging sciences.
- Spectral Zeta Functions and applications in Quantum Field Theory and Number Theory.

Further information about the research pursued by our faculty can be explored via the links above. Also, see individual faculty websites for more information.

Admission to the Graduate Program

Submit your application through the Graduate Division. The deadline is usually during the first half of January. Admission is decided by a faculty committee, and is based on a combination of factors including: GRE scores (in particular the GRE Math Subject Score), letters of recommendation, GPA, and classes taken.

Financial Support

The Mathematics Department is strongly committed to the financial support of graduate students who are making good progress toward either the master's or the Ph.D. degree. For the purpose of financial support, a student’s progress is measured against the degree requirements and timetables.

A teaching assistantship (TA) is the most common form of financial support for graduate students in good academic standing. TA appointments are usually made at 50 percent time (an assigned workload of approximately 220 hours for the quarter). Teaching assistants are under the supervision of the faculty member responsible for the course.

All students are strongly urged to complete a Free Application for Financial Student Aid (FAFSA) in order to determine their eligibility for need-based awards. This is done each year by the start of fall quarter. No need-based fellowship can be awarded to a student who does not have a current FAFSA on file.

Students are encouraged to apply for support from the Financial Aid Office as well as from the Mathematics Department. Students facing special financial hardship are urged to make this known to the department in a timely manner. The Mathematics Department will do everything in its power to ensure that all students in good standing are granted sufficient financial aid to continue their study of mathematics.

Relationship of Master's and Doctoral Programs

Students in the master's and doctoral program take the same classes in the core sequences and the same preliminary examinations. Ph.D. and master's students have the same passing requirements in the core classes. However, the preliminary examination requirements for Ph.D. and master's students are different, and are outlined within the requirements section of each program.

MATHEMATICS B.A.

Information and Policies

Introduction

The mathematics bachelor of arts (B.A.) program provides an excellent liberal arts background from which to pursue a variety of career opportunities. UC Santa Cruz graduates with a B.A. in mathematics hold teaching posts at all levels, as well as positions in law, government, civil service, insurance, software development, business, banking, actuarial science, forensics, and other professions where skills in logic, numerical analysis, and computing are required. In particular, students are trained in the art of problem-solving--- an essential skill in all professions.

This major emphasizes the importance of a well-rounded, in-depth mathematical education, and includes advanced coursework in algebra, analysis, and geometry. Students often pursue a career with a focus on research and theory. The major requires nine courses, one of which must be a senior thesis or senior seminar. A minor in pure mathematics is also offered.

Academic Advising for the Program

The undergraduate advisor may be contacted via email at mathadvising@ucsc.edu. The advisor provides information about requirements, prerequisites, policies and procedures, learning support, scholarships, and special opportunities for undergraduate research. In addition, the advisor assists with the drafting of academic plans, as well as certifying degrees and minors. Students are urged to stay informed and involved with their major, as well as to seek advice should problems arise.

The Mathematics Department website is a critical resource for students. Here you will find a link to the undergraduate program; the materials at that link constitute the undergraduate handbook. Students should visit this first to seek answers to their questions, because it hosts a wealth of information. Each student in the major is encouraged to regularly review the materials posted to stay current with requirements, course curriculum, and departmental policy. Transfer students should consult the Transfer Information and Policy section.

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities and attitudes that students are expected to develop over the course of their studies. The program learning outcomes clearly communicate the faculty's expectations to students, provide a framework for faculty evaluation of the curriculum based on empirical data, and help improve and measure the impact of implemented changes.

Mathematics Undergraduate Student Learning Objectives

The mathematics program promotes mathematical skills and knowledge for their intrinsic beauty, effectiveness in developing proficiency in analytical reasoning, and utility in modeling and solving real world problems. To responsibly live within and participate in the transformation of a rapidly changing, complex, and interdependent society, toward a sustainable and socially just society, students must develop and unceasingly exercise their analytical abilities. Students who have learned to logically question assertions, recognize patterns, and can distinguish the essential from the irrelevant aspects of problems can think deeply and precisely. Students equipped with these skills will be in a position to help solve the "big" problems of our time such as climate change.

Students majoring in mathematics attain proficiency in:

Critical thinking. The ability to identify, reflect upon, evaluate, integrate, and apply different types of information and knowledge to form independent judgments including analytical and logical thinking and the habit of drawing conclusions based on quantitative information.

Problem solving. The ability to assess and interpret complex situations, choose among several potentially appropriate mathematical methods of solution, persist in the face of difficulty, and present full and cogent solutions that include appropriate justification for their reasoning.

Effective communication. The ability to communicate and interact effectively with different audiences, collaborate intellectually and creatively in diverse contexts, and appreciate ambiguity and nuance, while emphasizing the importance of clarity and precision in communication and reasoning.

Students acquire and enhance these abilities in mathematical contexts, but the acquired habits of rigorous thought and creative problem solving are invaluable in all aspects of life. These skills are acquired through experience in the context of studying specific mathematical topics and exploring problems chosen to challenge students' abilities, spurring them on to acquire new techniques and to abandon familiar but restrictive habits of thought. The overarching objectives can be realized in terms of more focused, appraisable objectives specific to mathematics described on the Mathematics Department website.

Curriculum Matrix

All of the key objectives are addressed to some extent in all courses. For example, the ability to formulate precise mathematical statements and to reason logically are essential skills that are progressively developed throughout the curriculum. However, some skills are more heavily emphasized and utilized in some courses than in others. Some courses are specifically intended to help students move to a new level of proficiency with a particular portfolio of skills, while others are accessible only to students who have already reached a given level; the latter courses make heavy use of particular skills, and thus enhance and reinforce the student's mastery of them, but the skills themselves are not the primary focus of such courses. Some connections between the key objectives, main subject-specific areas, and courses are indicated in the tables of lower- and upper-division mathematics courses at the Mathematics Department's website.

Getting Started in the Major: Frosh

This major is highly course intensive; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

It should be emphasized that the nature of mathematics changes dramatically between lower-division and upper-division courses. Students often find that the material becomes far more abstract and theoretical. In addition, the role of computation in assignments diminishes and a greater weight is placed on deductive reasoning and the integral role of mathematical proofs. The Mathematics Department recommends that students interested in a mathematics major enroll in MATH 100 as early as prerequisites allow in order to decide whether they are interested in upper-division mathematics courses.

Transfer Information and Policy

Transfer Admissions Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall.

Students planning to transfer to UC Santa Cruz from a California community college should reference the assist website to determine which courses are equivalent to these required courses.

Prospective students are encouraged to prioritize recommended major preparation, and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 21	Linear Algebra	5
MATH 23A	Vector Calculus	5

Getting Started in the Major: Transfer Students

While enrolled in or after finishing the final required qualification courses, a student should follow the directions to apply to declare the major on the Mathematics Department Major Declaration webpage.

To obtain equivalency for MATH 23A, transfer students may have taken a course that could also be equivalent to MATH 23B, and in rare circumstances it is possible that this equivalency has not yet been formally recognized and is, therefore, not listed in assist.org. Students who have equivalency for MATH 23A but not MATH 23B should contact the undergraduate advisor to determine if this applies to their situation.

Major Qualification Policy and Declaration Process

While enrolled in or after finishing the final required qualification courses a student should follow the directions to apply on the Mathematics Department Major Declaration webpage.

Major Qualification

Admission to the mathematics major is contingent on students successfully passing the following introductory courses or their equivalents (see below). Some courses may be satisfied via exam credit. **Transfer Students:** in addition to satisfying the Transfer Admission Screening Requirements listed above, you must complete MATH 100 during your first quarter in order to declare the major.

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

MATH 21 is preferred

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 100	Introduction to Proof and Problem Solving	5

Appeal Process

If a student completes major qualification courses but does not meet the major qualification criteria, and appeals, the

department may accept or reject the appeal or place conditions on the student that will be resolved within at most one more enrolled quarter. To submit an appeal see the department website for Appealing the Major. The Mathematics Department will reply to appeals within 15 days of submission.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Letter Grade Policy

There are no restrictions on grading options for Mathematics Department courses. Please see the UCSC-wide policies on grading options.

Course Substitution Policy

The Mathematics Department's undergraduate vice chair approves requests for course substitutions. See the department website for details on requesting an exception to policy or course substitution.

Education Abroad Program (EAP)

Studying abroad is encouraged and most practical in fall quarter. It is possible to take classes abroad that will satisfy math major requirements. Intention of using an abroad course as a math requirement must be approved prior to taking the course. Students may submit a syllabus for the course abroad with an exception to policy request through the Mathematics Department homepage.

Double Majors and Major/Minor Combinations Policy

Honors

Honors in the Mathematics Department are awarded to graduating students whose academic performance in the major demonstrates excellence at a GPA of 3.5 or above. Highest honors are determined by a cumulative review of student performance in mathematics courses. They are awarded to students who excel in challenging courses and in their capstone projects.

Requirements and Planners

This major is intended for students who desire a comprehensive understanding of mathematics. Some courses may be satisfied via exam credit.

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

MATH 21 is preferred.

Plus one of the following options:

	Either these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or these courses	
AM 30	Multivariate Calculus for Engineers	5
AM 100	Mathematical Methods for Engineers	5

MATH 23A and MATH 23B are preferred.

Plus one of the following courses:

MATH 24	Ordinary Differential Equations	5
AM 20	Ordinary Differential Equations for Engineers	5

MATH 24 is preferred.

Upper-Division Courses

The following course:

MATH 100	Introduction to Proof and Problem Solving	5

Plus one of the following courses:

MATH 103A	Complex Analysis	5
MATH 105A	Real Analysis	5

Plus one of the following courses:

MATH 110	Introduction to Number Theory	5
MATH 111A	Algebra	5
MATH 111T	Algebra	5
MATH 117	Advanced Linear Algebra	5

Plus one of the following courses:

MATH 121A	Differential Geometry	5
MATH 124	Introduction to Topology	5
MATH 125	Applied Topology	5
MATH 128A	Classical Geometry: Euclidean and Non-Euclidean	5
MATH 129	Algebraic Geometry	5

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Electives

The remaining three courses are chosen from MATH courses numbered 101-190 or the approved list from other departments. Courses must be 5 credits or more, and only two of the three courses can be from the approved list of courses from other departments. Lecture and lab combinations count as a single course. For courses with a required concurrently enrolled lab, only successful completion of the lecture is required for the major. Successful completion of the lab may count toward total degree credits.

Approved Elective Courses from Other Departments:

AM 107	Introduction to Fluid Dynamics	5
AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5
BME 118	Mathematics of the Mind	5
STAT 108	Linear Regression	5
STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in mathematics is satisfied by

MATH 100	Introduction to Proof and Problem Solving	5

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Comprehensive Requirement

The comprehensive exit requirement in mathematics is satisfied by one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Mathematics B.A.: Sample Freshmen Academic Plan Starting in MATH 19A or MATH 20A

	Fall	Winter	Spring
1st (frosh)	MATH 19A or MATH 20A	MATH 19B or MATH 20B	MATH 23A
2nd (soph)	MATH 21 MATH 23B	MATH 100	MATH 103A
3rd (junior)	MATH 24	MATH 110	MATH 128A
4th (senior)	Elective	Elective	MATH 194 or MATH 195 Elective

This course plan satisfies the MF general education requirement. Students must satisfy all other general education requirements.

Mathematics B.A.: Sample Freshmen Academic Plan Starting in MATH 3

	Fall	Winter	Spring
1st (frosh)	MATH 3	MATH 19A	MATH 19B
2nd (soph)	MATH 21 MATH 23A	MATH 23B MATH 100	MATH 103A
3rd (junior)	MATH 24	MATH 110	MATH 128A

4th (senior)	Elective	Elective	MATH 194 or MATH 195 Elective

This course plan satisfies the MF general education requirement. Students must satisfy all other general education requirements.

Mathematics B.A.: Sample Freshmen Academic Plan Starting in MATH 2

	Fall	Winter	Spring
1st (frosh)	MATH 2	MATH 3	MATH 19A
2nd (soph)	MATH 19B	MATH 21	MATH 23B
		MATH 23A	MATH 100
3rd (junior)	MATH 24	MATH 103A	MATH 128A
	MATH 110		
4th (senior)	Elective	Elective	MATH 194 or MATH 195
			Elective

This course plan satisfies the MF general education requirement. Students must satisfy all other general education requirements.

Mathematics B.A.: Sample Transfer Academic Plan

For students who have completed MATH 19A, MATH 19B, MATH 21, and MATH 23A equivalents.

	Fall	Winter	Spring
1st (junior)	MATH 23B	MATH 110	MATH 103A
	MATH 100		MATH 128A
2nd (senior)	MATH 24	Elective	MATH 194 or MATH 195
		Elective	Elective

MATHEMATICS B.S.

Information and Policies

Introduction

The Mathematics Bachelor of Science degree (B.S.) is designed for students who value the theoretical study of mathematics-- not only for application, but also for its own sake. Theoretical mathematicians focus on the big how and why questions of mathematics, and attempt to find new formulae and methods while utilizing insights from a tradition of thousands of years. The Mathematics B.S. is recommended for those students who seek an education that involves not only foundational computational skills but also rigorous explanations of how mathematics works. A well-rounded education in mathematics requires an introduction to proof class, and a balance of advanced coursework in algebra, analysis, and geometry. Majors who seek graduate study at top institutions often go beyond the required courses to enroll in graduate courses as well.

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities and attitudes that students are expected to develop over the course of their studies. The program learning outcomes clearly communicate the faculty's expectations to students, provide a framework for faculty evaluation of the curriculum based on empirical data, and help improve and measure the impact of implemented changes.

Mathematics Undergraduate Student Learning Objectives

The mathematics program promotes mathematical skills and knowledge for their intrinsic beauty, effectiveness in developing proficiency in analytical reasoning, and utility in modeling and solving real-world problems. To responsibly live within and participate in the transformation of a rapidly changing, complex, and interdependent society, toward a sustainable and socially just society, students must develop and unceasingly exercise their analytical abilities. Students who have learned to logically question assertions, recognize patterns, and can distinguish the essential from the irrelevant aspects of problems can think deeply and precisely. Students equipped with these skills will be in a position to help solve the "big" problems of our time such as climate change.

Students majoring in mathematics attain proficiency in:

Critical thinking. The ability to identify, reflect upon, evaluate, integrate, and apply different types of information and knowledge to form independent judgments including analytical and logical thinking and the habit of drawing conclusions based on quantitative information.

Problem solving. The ability to assess and interpret complex situations, choose among several potentially appropriate mathematical methods of solution, persist in the face of

difficulty, and present full and cogent solutions that include appropriate justification for their reasoning.

Effective communication. The ability to communicate and interact effectively with different audiences, collaborate intellectually and creatively in diverse contexts, and appreciate ambiguity and nuance, while emphasizing the importance of clarity and precision in communication and reasoning.

Students acquire and enhance these abilities in mathematical contexts, but the acquired habits of rigorous thought and creative problem solving are invaluable in all aspects of life. These skills are acquired through experience in the context of studying specific mathematical topics and exploring problems chosen to challenge students' abilities, spurring them on to acquire new techniques and to abandon familiar but restrictive habits of thought. The overarching objectives can be realized in terms of more focused, appraisable objectives specific to mathematics described on the Mathematics Department website.

Curriculum Matrix

All of the key objectives are addressed to some extent in all courses. For example, the ability to formulate precise mathematical statements and to reason logically are essential skills that are progressively developed throughout the curriculum. However, some skills are more heavily emphasized and utilized in some courses than in others. Some courses are specifically intended to help students move to a new level of proficiency with a particular portfolio of skills, while others are accessible only to students who have already reached a given level; the latter courses make heavy use of particular skills, and thus enhance and reinforce the student's mastery of them, but the skills themselves are not the primary focus of such courses. Some connections between the key objectives, main subject-specific areas, and courses are indicated in the tables of lower- and upper-division mathematics courses at the Mathematics Department's website.

Academic Advising for the Program

The undergraduate adviser may be contacted via email at mathadvising@ucsc.edu. The adviser provides information about requirements, prerequisites, policies and procedures, learning support, scholarships, and special opportunities for undergraduate research. In addition, the adviser assists with the drafting of study plans, as well as certifying degrees and minors. Students are urged to stay informed and involved with their major, as well as to seek advice should problems arise.

The Mathematics Department website is a critical resource for students. Here you will find a link to the undergraduate program; the materials at that link constitute the undergraduate handbook. Students should visit this first to seek answers to their questions, because it hosts a wealth of information. Each student in the major is encouraged to regularly review the materials posted to stay current with requirements, course curriculum, and departmental policy. Transfer students should consult the Transfer Information and Policy section.

Getting Started in the Major: Frosh

This major is highly course intensive; students who intend to pursue this major must begin taking classes for the major in their first quarter at the University of California, Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

It should be emphasized that the nature of mathematics changes dramatically between lower-division and upper-division courses. Students often find that the material becomes far more abstract and theoretical. In addition, the role of computation in assignments diminishes and a greater weight is placed on deductive reasoning and the integral role of mathematical proofs. The Mathematics Department recommends that students interested in a mathematics major enroll in MATH 100 as early as prerequisites allow in order to decide whether they are interested in upper-division mathematics courses.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall.

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 21	Linear Algebra	5
MATH 23A	Vector Calculus	5

Students planning to transfer to UC Santa Cruz from a California community college should reference the assist website to determine which courses are equivalent to these required courses.

Recommended Course for Transfer Students

In addition, the following course is recommended prior to transfer to ensure timely graduation.

MATH 24	Ordinary Differential Equations	5

Getting Started in the Major: Transfer Students

While enrolled in or after finishing the final required qualification courses, a student should follow the directions to apply to declare the major on the Mathematics Department Major Declaration webpage.

To obtain equivalency for MATH 23A, transfer students may have taken a course that could also be equivalent to MATH 23B, and in rare circumstances it is possible that this equivalency has not yet been formally recognized and is, therefore, not listed in assist.org. Students who have

equivalency for MATH 23A but not MATH 23B should contact the undergraduate advisor to determine if this applies to their situation.

Major Qualification Policy and Declaration Process

While enrolled in or after finishing the final required qualification courses a student should follow the directions to apply on the Mathematics Department Major Declaration webpage.

Major Qualification

Admission to the Mathematics B.S. major is contingent on students successfully passing the following introductory courses or their equivalents: (see below). Some courses may be satisfied via exam credit. **Transfer Students:** in addition to satisfying the Transfer Admission Screening Requirements listed above, you must complete MATH 100 during your first quarter in order to declare the major.

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

MATH 21 is preferred

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 100	Introduction to Proof and Problem Solving	5

Appeal Process

If a student completes major qualification courses but does not meet the major qualification criteria, and appeals, the department may accept or reject the appeal or place conditions on the student that will be resolved within at most one more enrolled quarter. To submit an appeal see the department website for Appealing the Major. The Mathematics Department will reply to appeals within 15 days of submission.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Letter Grade Policy

There are no restrictions on grading options for Mathematics Department courses. Please see UC Santa Cruz policies on grading options.

Course Substitution Policy

The Mathematics Department undergraduate vice chair approves requests for course substitutions. See the department website for details on requesting an exception to policy or course substitution.

Double Majors and Major/Minor Combinations Policy

Honors

Honors in the Mathematics Department are awarded to graduating students whose academic performance in the major demonstrates excellence at a GPA of 3.5 or above. Highest Honors are determined by a cumulative review of student performance in mathematics courses. They are awarded to students who excel in challenging courses and in their capstone projects.

Education Abroad Program (EAP)

Studying abroad is encouraged and most practical in fall quarter. It is possible to take classes abroad that will satisfy math major requirements. Intention of using an abroad course as a math requirement must be approved prior to taking the course. Students may submit a syllabus for the course abroad with an exception to policy request through the Mathematics Department homepage.

Requirements and Planners

The Mathematics B.S. major is intended for students who desire a comprehensive understanding of mathematics, including those considering graduate studies in the physical sciences. Some courses may be satisfied via exam credit.

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

MATH 21 is preferred

Plus one of the following options:

	Either these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or these courses	
AM 30	Multivariate Calculus for Engineers	5
AM 100	Mathematical Methods for Engineers	5

MATH 23A and MATH 23B are preferred.

Plus one of the following courses:

MATH 24	Ordinary Differential Equations	5
AM 20	Ordinary Differential Equations for Engineers	5

Math 24 is preferred.

Upper-Division Courses

All of the following courses:

MATH 100	Introduction to Proof and Problem Solving	5
MATH 103A	Complex Analysis	5
MATH 105A	Real Analysis	5
MATH 117	Advanced Linear Algebra	5

Plus one of the following courses:

MATH 111A	Algebra	5
MATH 111T	Algebra	5

Plus one of the following courses:

MATH 121A	Differential Geometry	5
MATH 124	Introduction to Topology	5
MATH 125	Applied Topology	5
MATH 128A	Classical Geometry: Euclidean and Non-Euclidean	5
MATH 129	Algebraic Geometry	5

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Electives

The remaining three courses are chosen from MATH courses numbered 101-190 or the approved list from other departments. Courses must be 5 credits or more, and only two of the three courses can be from the approved list of courses from other departments. Lecture and lab combinations count as a single course. For courses with a required concurrently enrolled lab, only successful completion of the lecture is required for the major. Successful completion of the lab may count toward total degree credits.

Approved Elective Courses from Other Departments:

AM 107	Introduction to Fluid Dynamics	5
AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5
BME 118	Mathematics of the Mind	5
STAT 108	Linear Regression	5
STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in the mathematics B.S. is satisfied by

MATH 100	Introduction to Proof and Problem Solving	5

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Comprehensive Requirement

The comprehensive exit requirement in mathematics is satisfied by one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Mathematics B.S.: Sample Freshmen Academic Plan Starting in MATH 19A

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)

				(optional)
1st (frosh)	MATH 19A or MATH 20A College 1	MATH 19B or MATH 20B WRIT 1/WRIT 1E (if needed)	MATH 21 MATH 23A	
2nd (soph)	MATH 23B WRIT 2*	MATH 24 MATH 100	MATH 103A	
3rd (jr)	Elective	MATH 105A MATH 121A	Elective	
4th (sr)	MATH 117	MATH 111A	MATH 194 or MATH 195 Elective	

* WRIT 2 should be taken in or before spring quarter of the second year.

This sample course plan satisfies the MF general education requirement. Students must satisfy all other general education requirements.

Mathematics B.S.: Sample Freshmen Academic Plan Starting in MATH 3

	Fall	**Winter**	**Spring**	**Summer**
Entering				College 1A Summer Edge
1st (frosh)	MATH 3 WRIT 2*	MATH 19A WRIT 1/WRIT 1E (if needed)	MATH 19B	
2nd (soph)	MATH 21 MATH 23A	MATH 23B MATH 100	MATH 103A	
3rd (jr)	Math 24 Math 124	Math 105A Elective	Elective	
4th (sr)	MATH 117 Elective	MATH 111A	MATH 194 or MATH 195	

* WRIT 2 should be taken in or before spring quarter of the second year.

This sample course plan satisfies the MF general education requirement. Students must satisfy all other general education requirements.

Mathematics B.S.: Sample Freshmen Academic Plan Starting in MATH 2

	Fall	**Winter**	**Spring**	**Summer**
Entering				College 1A

				Summer Edge (optional)
1st (frosh)	MATH 2	MATH 3	MATH 19A	
	WRIT 2*	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	MATH 19B	MATH 21	MATH 23B	
		MATH 23A	Math 100	
3rd (jr)	MATH 24	MATH 103A	Elective	
	Elective		MATH 128A	
4th (sr)	MATH 105A	MATH 111A	MATH 194 or MATH 195	
	Elective		Math 117	

* WRIT 2 should be taken in or before spring quarter of the second year.

This sample course plan satisfies the MF general education requirement. Students must satisfy all other general education requirements.

Mathematics B.S.: Sample Transfer Academic Plan

For students who have completed MATH 19A, MATH 19B, MATH 21, and MATH 23A equivalents.

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
1st (jr)	MATH 23B	MATH 103A	MATH 128A	
	MATH 100	Elective	Elective	
2nd (sr)	MATH 24	MATH 105A	MATH 194 or MATH 195	
	MATH 111A	Elective	MATH 117	

MATHEMATICS EDUCATION B.A.

Information and Policies

Introduction

The Mathematics Education Bachelor's of Arts (B.A.) is specially designed for prepare students for a career in K-12 mathematics education. It shares a rigorous approach to advanced mathematics, but requires coursework that is particularly relevant to the K-12 classroom: number theory, classical geometry, and the history of mathematics. In addition, the math education major requires experience in supervised teaching. Many math education majors also participate in CalTeach, to enhance their experience and directly connect with local schools.

In California, students seeking a single-subject credential for secondary teaching in mathematics are required to take the CSET (formerly The National Teachers Examination), a series of examinations that must be passed in order to enter a teaching-credential program. Students who are interested in teaching in high schools can obtain a waiver of the CSET Examinations by completing the mathematics education major, plus three additional specified courses. The Mathematics Department undergraduate advisor, the Mathematics Department's website, and the Education Department advising office have more information about the additional required course.

Academic Advising for the Program

The undergraduate advisor may be contacted via email at mathadvising@ucsc.edu. The advisor provides information

about requirements, prerequisites, policies and procedures, learning support, scholarships, and special opportunities for undergraduate research. In addition, the advisor assists with the drafting of study plans, as well as certifying degrees and minors. Students are urged to stay informed and involved with their major, as well as to seek advice should problems arise.

The Mathematics Department website is a critical resource for students. Here you will find a link to the undergraduate program; the materials at that link constitute the undergraduate handbook. Students should visit this first to seek answers to their questions, because it hosts a wealth of information. Each student in the major is encouraged to regularly review the materials posted to stay current with requirements, course curriculum, and departmental policy. Transfer students should consult the Transfer Information and Policy section.

Program Learning Outcomes

Mathematics Undergraduate Student Learning Objectives

The mathematics program promotes mathematical skills and knowledge for their intrinsic beauty, effectiveness in developing proficiency in analytical reasoning, and utility in modeling and solving real-world problems. To responsibly live within and participate in the transformation of a rapidly changing, complex, and interdependent society, toward a sustainable and socially just society, students must develop and unceasingly exercise their analytical abilities. Students who have learned to logically question assertions, recognize patterns, and can distinguish the essential from the irrelevant aspects of problems can think deeply and precisely. Students equipped with these skills will be in a position to help solve the "big" problems of our time such as climate change.

Students majoring in mathematics attain proficiency in:

Critical thinking. The ability to identify, reflect upon, evaluate, integrate, and apply different types of information and knowledge to form independent judgments including analytical and logical thinking and the habit of drawing conclusions based on quantitative information.

Problem solving. The ability to assess and interpret complex situations, choose among several potentially appropriate mathematical methods of solution, persist in the face of difficulty, and present full and cogent solutions that include appropriate justification for their reasoning.

Effective communication. The ability to communicate and interact effectively with different audiences, collaborate intellectually and creatively in diverse contexts, and appreciate ambiguity and nuance, while emphasizing the importance of clarity and precision in communication and reasoning.

Students acquire and enhance these abilities in mathematical contexts, but the acquired habits of rigorous thought and creative problem solving are invaluable in all aspects of life. These skills are acquired through experience in the context of studying specific mathematical topics and exploring problems chosen to challenge students' abilities, spurring them on to acquire new techniques and to abandon familiar but restrictive habits of thought. The overarching objectives can be realized in terms of more focused, appraisable objectives specific to mathematics described on the Mathematics Department website.

Curriculum Matrix

All of the key objectives are addressed to some extent in all courses. For example, the ability to formulate precise mathematical statements and to reason logically are essential skills that are progressively developed throughout the curriculum. However, some skills are more heavily emphasized and utilized in some courses than in others. Some courses are specifically intended to help students move to a new level of proficiency with a particular portfolio of skills, while others are accessible only to students who have already reached a given level; the latter courses make heavy use of particular skills, and thus enhance and reinforce the student's mastery of them, but the skills themselves are not the primary focus of such courses. Some connections between the key objectives, main subject-specific areas, and courses are indicated in the tables of lower- and upper-division mathematics courses at the Mathematics Department's website.

Getting Started in the Major: Frosh

This major is highly course intensive; students who intend to pursue this major must begin taking classes for the major in their first quarter at the University of California, Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

It should be emphasized that the nature of mathematics changes dramatically between lower-division and upper-division courses. Students often find that the material becomes far more abstract and theoretical. In addition, the role of computation in assignments diminishes and a greater weight is placed on deductive reasoning and the integral role of mathematical proofs. The Mathematics Department recommends that students interested in a mathematics major enroll in MATH 100 as early as prerequisites allow in order to decide whether they are interested in upper-division mathematics courses.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall.

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 21	Linear Algebra	5
MATH 23A	Vector Calculus	5

Recommended Course for Transfer Students

In addition, the following course is recommended prior to transfer to help ensure timely graduation and allow for an additional upper-division elective course or other enrichment course to be taken in its stead. However, its omission will not impede admission or a clear pathway to 2-year graduation.

STAT 5	Statistics	5

Getting Started in the Major: Transfer Students

While enrolled in or after finishing the final required qualification courses, a student should follow the directions to apply to declare the major on the Mathematics Department Major Declaration webpage.

To obtain equivalency for MATH 23A, transfer students may have taken a course that could also be equivalent to MATH 23B, and in rare circumstances it is possible that this equivalency has not yet been formally recognized and is, therefore, not listed in assist.org. Students who have equivalency for MATH 23A but not MATH 23B should contact the undergraduate advisor to determine if this applies to their situation.

Major Qualification Policy and Declaration Process

Major Qualification

Admission to the mathematics education major is contingent on students successfully passing the following introductory courses or their equivalents (see below). Some courses may be satisfied via exam credit. **Transfer Students: I**n addition to satisfying the Transfer Admission Screening Requirements listed above, you must complete MATH 100 during your first quarter in order to declare the major.

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

MATH 21 is preferred

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 100	Introduction to Proof and Problem Solving	5

Appeal Process

If a student completes major qualification courses but does not meet the major qualification criteria, and appeals, the department may accept or reject the appeal or place conditions on the student that will be resolved within at most one more enrolled quarter. To submit an appeal see the department website for Appealing the Major. The Mathematics Department will reply to appeals within 15 days of submission.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Letter Grade Policy

There are no restrictions on grading options for Mathematics Department courses. Please see UC Santa Cruz policies on grading options.

Course Substitution Policy

The Mathematics Department's undergraduate vice chair approves requests for course substitutions. See the department website for details on requesting an exception to policy or course substitution.

Double Major and Major/Minor Combinations Policy

Honors

Honors in the Mathematics Department are awarded to graduating students whose academic performance in the major demonstrates excellence at a GPA of 3.5 or above. Highest Honors are determined by a cumulative review of student performance in mathematics courses. They are awarded to students who excel in challenging courses and in their capstone projects.

Education Abroad Program (EAP)

Studying abroad is encouraged and most practical in fall quarter. It is possible to take classes abroad that will satisfy math major requirements. Intention of using an abroad course as a math requirement must be approved prior to taking the course. Students may submit a syllabus for the course abroad with an exception to policy request through the Mathematics Department homepage.

Requirements and Planners

The Mathematics Education B.A. is intended to introduce students to the mathematics necessary for a career teaching kindergarten through high school (K-12) mathematics. Some courses may be satisfied via exam credit.

Course Requirements

Lower-Division Courses

One of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

MATH 21 is preferred.

Plus one of the following options:

	Either these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or these courses	
AM 30	Multivariate Calculus for Engineers	5
AM 100	Mathematical Methods for Engineers	5

MATH 23A and MATH 23B are preferred.

Plus one of the following courses:

EDUC 50A	CAL Teach 1: Science and Mathematics	2
EDUC 50B	CAL Teach 1: Mathematics	2

Plus the following course:

STAT 5	Statistics	5

Upper-Division Courses

All of the following courses:

MATH 100	Introduction to Proof and Problem Solving	5
MATH 110	Introduction to Number Theory	5
MATH 128A	Classical Geometry: Euclidean and Non-Euclidean	5
MATH 181	History of Mathematics	5
STAT 131	Introduction to Probability Theory	5

Plus one of the following courses:

MATH 103A	Complex Analysis	5
MATH 105A	Real Analysis	5

Plus one of the following courses:

MATH 111A	Algebra	5
MATH 111T	Algebra	5

Plus one the following courses:

EDUC 100A	Cal Teach 2: Science and Mathematics	2
EDUC 100B	Cal Teach 2: Mathematics	2

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in the Mathematics Education B.A. is satisfied by:

MATH 100	Introduction to Proof and Problem Solving	5

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Comprehensive Requirement

The comprehensive exit requirement in mathematics is satisfied by one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Mathematics Education B.A.: Sample Freshmen Academic Plan Starting in MATH 19A or MATH 20A

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 19A or	MATH 19B or	STAT 5	

	MATH 20A	MATH 20B	
	College 1	WRIT 1/WRIT 1E (if needed)	MATH 23A
2nd (soph)	MATH 21	MATH 100	MATH 128A
	MATH 23B		
	WRIT 2*		
3rd (jr)	MATH 110	MATH 181	MATH 111T
	EDUC 50B	EDUC 100B	
4th (sr)	STAT 131	MATH 103A or MATH 105A	MATH 194

* WRIT 2 should be taken in or before spring quarter of the second year.

The MF, PR, SR and TA general education requirements are satisfied through this sample plan.

Mathematics Education B.A.: Sample Freshmen Academic Plan Starting in MATH 3

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge
				(optional)
1st (frosh)	MATH 3	MATH 19A	STAT 5	
		WRIT 1/WRIT 1E (if needed)	MATH 19B	
2nd (soph)	MATH 21	MATH 23B	MATH 128A	
	MATH 23A	MATH 100		
	WRIT 2*			
3rd (jr)	MATH 110	MATH 181	MATH 111T	
	EDUC 50B	EDUC 100B		
4th (sr)	STAT 131	MATH 103A or MATH 105A	MATH 194	

* WRIT 2 should be taken in or before spring quarter of the second year.

The MF, PR, SR and TA general education requirements are satisfied through this sample plan.

Mathematics Education B.A.: Sample Freshmen Academic Plan Starting in MATH 2

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge
				(optional)
1st (frosh)	MATH 2	MATH 3	MATH 19A	
		WRIT 1/WRIT 1E (if needed	STAT 5	

		)	
2nd (soph)	MAT H 19B	MATH 21	MAT H 23B
	WRIT 2*	MATH 23A	MAT H 100
3rd (jr)	MAT H 110	MATH 181	MAT H 111T
	EDUC 50B	EDUC 100B	MAT H 128A
4th (sr)	STAT 131	MATH 103A or MATH 105A	MAT H 194

* WRIT 2 should be taken in or before spring quarter of the second year.

The MF, PR, SR and TA general education requirements are satisfied through this sample plan.

Mathematics Education B.A.: Sample Transfer Academic Plan

For students who have completed MATH 19A, MATH 19B, MATH 21 and MATH 23A equivalents.

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
1st (jr)	MAT H 23B	MATH 103A or MATH 105A	MAT H 128A	
	MAT H 100	MATH 181	STAT 5	
2nd (sr)	MAT H 110	STAT 131	MAT H 194	
	EDUC 50B	EDUC 100B	MAT H 111T	

MATHEMATICS THEORY AND COMPUTATION B.S.

Information and Policies

Introduction

The Mathematics Theory and Computation B.S. provides an excellent scientific background from which to pursue a variety of career opportunities. UC Santa Cruz graduates with degrees in mathematics hold teaching posts at all levels, as well as positions in law, government, civil service, insurance, software development, business, banking, actuarial science, forensics, and other professions where skills in logic, numerical analysis, and computing are required. In particular, students of mathematics are trained in the art of problem-solving, an essential skill in all professions.

Academic Advising for the Program

The undergraduate adviser may be contacted via email at mathadvising@ucsc.edu. The adviser provides information about requirements, prerequisites, policies and procedures, learning support, scholarships, and special opportunities for undergraduate research. In addition, the adviser assists with the drafting of study plans, as well as certifying degrees and minors. Students are urged to stay informed and involved with their major, as well as to seek advice should problems arise.

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Program Learning Outcomes

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Mathematics Undergraduate Student Learning Objectives

The mathematics program promotes mathematical skills and knowledge for their intrinsic beauty, effectiveness in developing proficiency in analytical reasoning, and utility in

modeling and solving real-world problems. To responsibly live within and participate in the transformation of a rapidly changing, complex, and interdependent society, toward a sustainable and socially just society, students must develop and unceasingly exercise their analytical abilities. Students who have learned to logically question assertions, recognize patterns, and can distinguish the essential from the irrelevant aspects of problems can think deeply and precisely. Students equipped with these skills will be in a position to help solve the "big" problems of our time such as climate change.

Students majoring in mathematics attain proficiency in:

Critical thinking. The ability to identify, reflect upon, evaluate, integrate, and apply different types of information and knowledge to form independent judgments including analytical and logical thinking and the habit of drawing conclusions based on quantitative information.

Problem solving. The ability to assess and interpret complex situations, choose among several potentially appropriate mathematical methods of solution, persist in the face of difficulty, and present full and cogent solutions that include appropriate justification for their reasoning.

Effective communication. The ability to communicate and interact effectively with different audiences, collaborate intellectually and creatively in diverse contexts, and appreciate ambiguity and nuance, while emphasizing the importance of clarity and precision in communication and reasoning.

Students acquire and enhance these abilities in mathematical contexts, but the acquired habits of rigorous thought and creative problem solving are invaluable in all aspects of life. These skills are acquired through experience in the context of studying specific mathematical topics and exploring problems chosen to challenge students' abilities, spurring them on to acquire new techniques and to abandon familiar but restrictive habits of thought. The overarching objectives can be realized in terms of more focused, appraisable objectives specific to mathematics described on the Mathematics Department website.

Getting Started in the Major: Frosh

This major is highly course intensive; students who intend to pursue this major must begin taking classes for the major in their first quarter at the University of California, Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

It should be emphasized that the nature of mathematics changes dramatically between lower-division and upper-division courses. Students often find that the material becomes far more abstract and theoretical. In addition, the role of computation in assignments diminishes and a greater weight is placed on deductive reasoning and the integral role of mathematical proofs. The Mathematics Department recommends that students interested in a mathematics major enroll in MATH 100 as early as prerequisites allow in order to decide whether they are interested in upper-division mathematics courses.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall.

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 21	Linear Algebra	5
MATH 23A	Vector Calculus	5

Recommended Course for Transfer Students

In addition, the following course is recommended prior to transfer to ensure timely graduation.

MATH 24	Ordinary Differential Equations	5

Getting Started at UCSC as a Transfer Student

While enrolled in or after finishing the final required qualification courses, a student should follow the directions to apply to declare the major on the Mathematics Department Major Declaration webpage.

To obtain equivalency for MATH 23A, transfer students may have taken a course that could also be equivalent to MATH 23B, and in rare circumstances it is possible that this equivalency has not yet been formally recognized and is, therefore, not listed in assist.org. Students who have equivalency for MATH 23A but not MATH 23B should contact the undergraduate advisor to determine if this applies to their situation.

Major Qualification Policy and Declaration Process

While enrolled in or after finishing the final required qualification courses a student should follow the directions to apply on the Mathematics Department Major Declaration webpage.

Major Qualification

Admission to the Mathematics Theory and Computation B.S. major is contingent on students successfully passing the following introductory courses or their equivalents. Some courses may be satisfied via exam credit. **Transfer Students: I**n addition to satisfying the Transfer Admission Screening Requirements listed above, you must complete MATH 100 during your first quarter in order to declare the major.

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

MATH 21 is preferred

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 100	Introduction to Proof and Problem Solving	5

Appeal Process

If a student completes major qualification courses but does not meet the major qualification criteria, and appeals, the department may accept or reject the appeal or place conditions on the student that will be resolved within at most one more enrolled quarter. To submit an appeal see the department website for Appealing the Major. The Mathematics Department will reply to appeals within 15 days of submission.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Letter Grade Policy

There are no restrictions on grading options for Mathematics Department courses. Please see UC Santa Cruz policies on grading options.

Course Substitution Policy

The Mathematics Department undergraduate vice chair approves requests for course substitutions. See the department website for details on requesting an exception to policy or course substitution.

Double Majors and Major/Minor Combinations Policy

Students who are declared in the Computer Science B.S. and wish to double major in Mathematics Theory and Computation B.S. may petition to use computer science and engineering courses toward the upper-division coding requirement and the three required upper-division electives for the mathematics theory and computation B.S. major.

Education Abroad Program (EAP)

Studying abroad is encouraged and most practical in fall quarter. It is possible to take classes abroad that will satisfy math major requirements. Intention of using an abroad course as a math requirement must be approved prior to taking the course. Students may submit a syllabus for the course abroad with an exception to policy request through the Mathematics Department homepage.

Honors

Honors in the Mathematics Department are awarded to graduating students whose academic performance in the major demonstrates excellence at a GPA of 3.5 or above. Highest Honors are determined by a cumulative review of student performance in mathematics courses. They are awarded to students who excel in challenging courses and in their capstone projects.

Requirements and Planners

Course Requirements

The Mathematics Theory and Computation B.S. is intended to prepare students for technical careers in industry or government while providing a solid mathematical background. Some courses may be satisfied via exam credit.

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

MATH 21 is preferred.

Plus one of the following options:

	Either these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or these courses	

AM 30	Multivariate Calculus for Engineers	5
AM 100	Mathematical Methods for Engineers	5

MATH 23A and MATH 23B are preferred.

Plus one of the following courses:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Math 24 is preferred.

Upper-Division Courses

The following course:

MATH 100	Introduction to Proof and Problem Solving	5

Coding Requirement

Plus one of the following courses or equivalent:

MATH 152	Programming for Mathematics	5
ASTR 119	Introduction to Scientific Computing	5
EART 112	Geophysical Data Science	5
EART 119A	Introduction to Scientific Programming	5
PHYS 115	Computational Physics	5

MATH152 is preferred. ASTR 119, EART 112, EART 119A and PHYS 115 are intended for double major students.

Students who have taken a lower-division coding course can request a substitution for the coding requirement.

Analysis Theory Requirement

Plus one of the following courses:

MATH 103A	Complex Analysis	5
MATH 105A	Real Analysis	5

Algebra Theory Requirement

Plus one of the following courses:

MATH 110	Introduction to Number Theory	5
MATH 111A	Algebra	5
MATH 111T	Algebra	5
MATH 117	Advanced Linear Algebra	5

Analysis Computation Requirement

Plus one of the following courses:

MATH 145	Introductory Chaos Theory	5
MATH 148	Numerical Analysis	5
AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5

Algebra Computation Requirement

Plus one of the following courses:

MATH 115	Graph Theory	5
MATH 116	Combinatorics	5
MATH 134	Cryptography	5
MATH 140	Industrial Mathematics	5
MATH 160	Mathematical Logic I	5
MATH 162	Introduction to Computably Enumerable Functions and Sets and their Degrees	5

Electives

Three elective courses are required. If a student takes more than one course from the Analysis or Algebra Computation requirement lists, the extra course(s) can be counted toward the elective requirements. Other elective options are listed below. Courses from departments other than Mathematics, Statistics or Applied Math will have significant prerequisites and are intended for double major students.

Students who are declared in the Computer Science B.S. and wish to double major in the Mathematics Theory and Computation B.S. may petition to use CSE courses toward the upper-division coding requirement and the three required upper-division electives for the Mathematics Theory and Computation B.S. major.

MATH 106	Systems of Ordinary Differential Equations	5
MATH 107	Partial Differential Equations	5
MATH 118	Advanced Number Theory	5
MATH 120	Coding Theory	5
MATH 124	Introduction to Topology	5
MATH 125	Applied Topology	5
STAT 108	Linear Regression	5
STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5
AM 107	Introduction to Fluid Dynamics	5
AM 115	Stochastic Modeling in Biology	5
AM 129	Foundations of Scientific Computing for Scientists and Engineers	5
AM 148	GPU Programming for Scientific Computations	5
ASTR 111	Order-of-Magnitude Astrophysics	5
BME 118	Mathematics of the Mind	5
EART 124	Modeling Earth's Climate	5
EART 125	Statistics and Data Analysis in the Geosciences	5
EART 162	Planetary Interiors	5
EART 172	Geophysical Fluid Dynamics	5

ECE 103	Signals and Systems	5
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 135	Electromagnetic Fields and Waves	5
ECE 141	Feedback Control Systems	5
ECE 151	Communications Systems	5
ECE 153	Digital Signal Processing	5
ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 113	Introduction to Econometrics	5
ECON 114	Advanced Quantitative Methods	6
ECON 124	Machine Learning for Economists	5
ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 139A	Quantum Mechanics I	5
PHYS 139B	Quantum Mechanics II	5
PHYS 171	General Relativity, Black Holes, and Cosmology	5

Comprehensive Requirement

The comprehensive exit requirement in mathematics is satisfied by one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in the mathematics B.S. is satisfied by:

MATH 100	Introduction to Proof and Problem Solving	5

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Planners

Mathematics Theory and Computation B.S Freshmen Students Starting at MATH 19A or MATH 20A

	Fall	Winter	Spring
1st Year (frosh)	MATH 19A or MATH 20A	MATH 19B or MATH 20B	MATH 23A
	Core/Writing	Core/Writing	Core/Writing
	GE/ME	GE/ME	GE/ME
2nd Year (soph)	MATH 21	MATH 24	Elective 1
	MATH 23B	MATH 100	
	GE/ME		
3rd Year (junior)	Elective 2	MATH 103A or MATH 105A	MATH 145/MATH 145L or MATH 148/MATH 148L
		MATH 152	
4th Year (senior)	MATH 110 or MATH 111A or MATH 117	MATH 115 or MATH 116 or MATH 134 or MATH 140 or MATH 160	MATH 194 or MATH 195
			Elective 3

MF GE requirement fulfilled through this plan.

Mathematics Theory and Computation B.S Freshmen Students Starting at MATH 3

	Fall	Winter	Spring
1st Year (frosh)	MATH3	MATH 3	MATH 19A
	Core/Writing	Core/Writing	Core/Writing
	GE/ME	GE/ME	GE/ME
2nd Year (soph)	MATH 23A	MATH 21	MATH 100
	GE/ME	MATH 23B	
3rd Year (junior)	MATH 24	MATH 103A or MATH 105A	MATH 145/MATH 145L or MATH 148/MATH 148L
	Elective 1	MATH 152	

4th Year (senior)	MATH 110 or MATH 111A or MATH 117	MATH 115 or MATH 116 or MATH 134 or MATH 140 or MATH 160	MATH 194 or MATH 195
	Elective 2		Elective 3

MF GE requirement fulfilled through this plan.

Mathematics Theory and Computation B.S Freshmen Students Starting at MATH 2

	Fall	Winter	Spring
1st Year (frosh)	MATH 2	MATH 3	MATH 19A
	Core/Writing	Core/Writing	Core/Writing
	GE/ME	GE/ME	GE/ME
2nd Year (soph)	MATH 19B	MATH 21	MATH23B
	GE/ME	MATH 23A	MATH 100
3rd Year (junior)	MATH 24	MATH 103A or MATH 105A	MATH 145/L or MATH 148/L
	Elective 1	MATH 152	Elective 2
4th Year (senior)	MATH 110 or MATH 111A or MATH 117	MATH 115 or MATH 116 or MATH 134 or MATH 140 or MATH 160	MATH 194 or MATH 195
			Elective 3

MF GE requirement fulfilled through this plan

Mathematics Theory and Computation B.S Transfer Students with no lower-division needs

	Fall	Winter	Spring
1st Year (junior)	MATH 100	MATH 103A or MATH 105A	MATH 145/MATH 145L or MATH 148/MATH 148L
		MATH 152	Elective 1
2nd Year (senior)	MATH 110 or MATH 111A or MATH 117	MATH 115 or MATH 116 or MATH 134 or MATH 140 or MATH 160	MATH 194 or MATH 195
	Elective 2		Elective 3

Mathematics Theory and Computation B.S Transfer Students who need Math 23B and 24

	Fall	Winter	Spring
1st Year (junior)	MATH 23B	MATH 24	MATH 145/MATH 145L or MATH 148/MATH 148L
	MATH 100	MATH 152	Elective 1
2nd Year (senior)	MATH 110 or MATH 111A or MATH 117	MATH 115 or MATH 116 or MATH 134 or MATH 140 or MATH 160	MATH 194 or MATH 195
	Elective 2	MATH 103A or MATH 105A	Elective 3

MATHEMATICS MINOR

Course Requirements

The minor is intended for students who are interested in mathematics and want a strong mathematical foundation for studying in areas that rely heavily on analytical skills. Students are required to complete at least 10 courses as follows. Courses may be taken for a letter grade or Pass/No Pass. Some courses may be satisfied via exam credit.

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

Math 21 is preferred.

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Upper-Division Courses

Take the following course:

MATH 100	Introduction to Proof and Problem Solving	5

Plus four upper-division electives:

The remaining four courses are chosen from MATH, AM, or STAT courses numbered 101-190. Courses must be 5 credits or more, and only one of the four courses can be from AM or STAT. Lecture and lab combinations count as a single course. For courses with a required concurrently enrolled lab, only successful completion of the lecture is required for the major. Successful completion of the lab may count toward total degree credits.

Courses from other departments must be reviewed and approved by the undergraduate vice chair. Under exceptional circumstances, MATH 100 may be substituted by another upper-division mathematics course. The undergraduate vice chair will review requests on an individual basis.

No senior seminar or thesis is required.

MATHEMATICS CONTIGUOUS BACHELORS/MASTERS PATHWAY

The 4+1 pathway into the mathematics master's program is an option that allows undergraduates at UC Santa Cruz to:

- Take two required graduate courses during their undergraduate degree in preparation to finish the master's degree in just one additional year.
- Apply to the mathematics master's program through a streamlined application process.

Undergraduate students currently enrolled in the mathematics B.S. have the opportunity, any time after the start of their junior year until Dec. 1 of their senior year, to apply to be admitted to the 4+1 contiguous pathway leading to the mathematics master's degree. Qualified undergraduates from other undergraduate majors may also apply to the pathway and their applications will be considered on a case-by-case basis.

The requirements for admission into the 4+1 pathway are:

1. a GPA in the major of 3.5 or more;
2. to have taken MATH 105B or MATH 111B; and
3. to have taken, to be currently enrolled, or have the plan to enroll by fall of the senior year in one of the required graduate courses.

Interested students should set up a meeting with the mathematics undergraduate advisor to discuss their curriculum plan and complete the application forms. The deadline for application to the pathway is Dec.1 of their senior year, although students are encouraged to apply earlier.

Students in the pathway who apply through the streamlined application process to the master's program are not guaranteed admission. The Mathematics Department expects to admit students who have passed two of the required graduate courses and have maintained a GPA in the major of 3.5 or more. Once accepted into the master's program, students from the pathway will follow the same requirements as any other students in the two-year track with expected graduation in the fifth year.

MATHEMATICS M.A.

Introduction

The objectives of the mathematics M.A. program give students advanced fundamental knowledge in the areas of algebra, analysis, and geometry in order to prepare them for admission in top Ph.D. programs, for work in industry, or for a teaching career at community colleges. Students will

possess the ability to solve problems and communicate solutions and concepts clearly and in rigorous mathematical language.

Master's students are expected to complete their degree within two years. Students admitted to the M.A. program may apply to the Mathematics Department to transfer to the Ph.D. program upon passing the required preliminary examinations at the Ph.D. level.

Requirements

Course Requirements

The following course:

MATH 288A	Pedagogy of Mathematics	2

Students are required to complete four of the following courses from the three core sequences:

MATH 200	Algebra I	5
MATH 201	Algebra II	5
MATH 202	Algebra III	5
MATH 204	Analysis I	5
MATH 205	Analysis II	5
MATH 206	Analysis III	5
MATH 208	Manifolds I	5
MATH 209	Manifolds II	5
MATH 210	Manifolds III	5

Students are also required to complete five additional courses in mathematics

Courses in a related subject may be substituted by approval from the graduate vice chair. Sample courses include:

MATH 203	Algebra IV	5
MATH 207	Complex Analysis	5
MATH 211	Algebraic Topology	5
MATH 212	Differential Geometry	5
MATH 213A	Partial Differential Equations I	5
MATH 213B	Partial Differential Equations II	5
MATH 214	Theory of Finite Groups	5
MATH 215	Operator Theory	5
MATH 216	Advanced Analysis	5
MATH 217	Advanced Elliptic Partial Differential Equations	5
MATH 218	Advanced Parabolic and Hyperbolic Partial Differential Equations	5
MATH 219	Nonlinear Functional Analysis	5
MATH 220A	Representation Theory I	5
MATH 220B	Representation Theory II	5
MATH 222A	Algebraic Number Theory	5
MATH 222B	Algebraic Number Theory	5
MATH 223A	Algebraic Geometry I	5
MATH 223B	Algebraic Geometry II	5
MATH 225A	Lie Algebras	5
MATH 225B	Infinite Dimensional Lie Algebras	5
MATH 226A	Infinite Dimensional Lie Algebras and Quantum Field Theory I	5
MATH 226B	Infinite Dimensional Lie Algebras and Quantum Field Theory II	5
MATH 227	Lie Groups	5
MATH 228	Lie Incidence Geometries	5
MATH 229	Kac-Moody Algebras	5
MATH 232	Morse Theory	5
MATH 233	Random Matrix Theory	5
MATH 234	Riemann Surfaces	5
MATH 235	Dynamical Systems Theory	5
MATH 238	Elliptic Functions and Modular Forms	5
MATH 239	Homological Algebra	5
MATH 240A	Representations of Finite Groups I	5
MATH 240B	Representations of Finite Groups II	5
MATH 246	Representations of Algebras	5
MATH 248	Symplectic Geometry	5
MATH 249A	Mechanics I	5
MATH 249B	Mechanics II	5
MATH 249C	Mechanics III	5
MATH 252	Fluid Mechanics	5
MATH 254	Geometric Analysis	5
MATH 256	Algebraic Curves	5
MATH 260	Combinatorics	5
MATH 280	Topics in Analysis	5
MATH 281	Topics in Algebra	5
MATH 282	Topics in Geometry	5
MATH 283	Topics in Combinatorial Theory	5
MATH 284	Topics in Dynamics	5
MATH 285	Topics in Partial Differential Equations	5
MATH 286	Topics in Number Theory	5
MATH 287	Topics in Topology	5

Other Requirements

Additional requirements for the M.A. degree are dependent on the student’s chosen track: the thesis track (Plan I) or the comprehensive examination track (Plan II).

Thesis Track (Plan I)

Students are required to complete a master’s thesis. A master’s thesis does not have to consist of original research results. At the minimum, it should show mastery of a specific subject area that goes beyond the knowledge taught in the core sequences in algebra, analysis, or geometry. This track is recommended for students that want to transfer into a top Ph.D. program.

The student, in consultation with their faculty advisor, is responsible for selecting a master’s thesis reading committee. The majority of the membership of a thesis reading committee

shall be members of the Santa Cruz Division of the Academic Senate. The Graduate Division must approve the committee.

The Nominations for Master's Thesis Reading Committee Form must be completed and submitted by the end of the second week of the quarter in which the degree will be granted. The form can be found on the Graduate Division website or can be provided by the Mathematics Department. The form should be turned in to the graduate adviser and program coordinator for review and submission to the Graduate Division.

More information about thesis submission can be found at the Graduate Division website.

Comprehensive Examination Track (Plan II)

Students are required to obtain a second-level pass on one of three written preliminary examinations: algebra, analysis, or geometry. A second-level pass signifies that the student has a very good understanding of the basic concepts, but not necessarily enough to conduct independent research.

Timeline to Degree

A master's student should complete the thesis track or comprehensive examination track by the end of spring quarter of their second year. A student who may be experiencing academic difficulty will first develop an academic support plan with the department before being recommended for academic notice or disqualified from the program in alignment with the following timeline:

- If one of the degree tracks is not met after the spring preliminary exam offering of a student's second year, an academic support plan will be developed with the graduate vice chair. Students pursuing the preliminary exam track should retake the exam the following fall, and students pursuing the thesis track should complete their thesis over the summer.
- If one of the degree tracks is not met after the fall preliminary exam offering of a student's third year, the student will be recommended for academic notice, and their academic support plan reassessed to follow through the spring of the third year, at the end of which the student should retake the spring preliminary exam or complete their thesis in spring.
- If one of the degree tracks is not met after the spring preliminary exam offering of the student's third year, the student may be disqualified from the program or can appeal to the department to continue on the masters route.

[Optional Catchall]

Applying for Graduation

M.A. students must complete the Application for the Master's Degree form by the appropriate quarter's deadline listed in the current academic calendar.

The application can be found on the Graduate Division website or can be provided by the Mathematics Department. The application should be turned in to the graduate adviser and program coordinator for review and submission to the Graduate Division.

MATHEMATICS PH.D.

Introduction

The objectives of the mathematics Ph.D. program are to prepare students for a career in academia, industry, or teaching. At the end of their studies, students will possess the ability to solve problems and communicate solutions in rigorous mathematical language, to communicate mathematical concepts effectively, and to conduct independent research.

Entering graduate students are advised initially by an assigned faculty mentor. Within the first two years, and typically after passing the preliminary examinations, the student selects a Ph.D. advisor in the area of the student's research interest.

Each graduate student is expected to consult with their advisor to formulate a plan of study and research. The student's advisor ultimately will be the student's thesis advisor.

Ph.D. students are expected to obtain their Ph.D. degree within six years. Students admitted to the Ph.D. program may receive a master's degree en route to the Ph.D.

Advancement to Candidacy

Course Requirements

A three-course sequence in each of the three fields of algebra, analysis, and geometry-topology (manifolds) will be offered each year. Preliminary examinations will be given for each core sequence at the beginning and end of each academic year.

First-level passage of a preliminary examination satisfies the core sequence requirement for that field. Ph.D. students are required to complete the full core sequence in the field associated with the preliminary examination in which they do not achieve a first-level pass. The core sequences are as follows:

MATH 200	Algebra I	5
MATH 201	Algebra II	5
MATH 202	Algebra III	5
MATH 204	Analysis I	5
MATH 205	Analysis II	5
MATH 206	Analysis III	5
MATH 208	Manifolds I	5
MATH 209	Manifolds II	5
MATH 210	Manifolds III	5

The following course:

MATH 288A	Pedagogy of Mathematics	2

Students are also required to complete six additional courses in mathematics.

No more than three courses may be independent study or thesis research courses. Sample courses include:

MATH 203	Algebra IV	5
MATH 207	Complex Analysis	5
MATH 211	Algebraic Topology	5
MATH 212	Differential Geometry	5
MATH 213A	Partial Differential Equations I	5
MATH 213B	Partial Differential Equations II	5
MATH 214	Theory of Finite Groups	5
MATH 215	Operator Theory	5
MATH 216	Advanced Analysis	5
MATH 217	Advanced Elliptic Partial Differential Equations	5
MATH 218	Advanced Parabolic and Hyperbolic Partial Differential Equations	5
MATH 219	Nonlinear Functional Analysis	5
MATH 220A	Representation Theory I	5
MATH 220B	Representation Theory II	5
MATH 222A	Algebraic Number Theory	5
MATH 222B	Algebraic Number Theory	5
MATH 223A	Algebraic Geometry I	5
MATH 223B	Algebraic Geometry II	5
MATH 225A	Lie Algebras	5
MATH 225B	Infinite Dimensional Lie Algebras	5
MATH 226A	Infinite Dimensional Lie Algebras and Quantum Field Theory I	5
MATH 226B	Infinite Dimensional Lie Algebras and Quantum Field Theory II	5
MATH 227	Lie Groups	5
MATH 228	Lie Incidence Geometries	5
MATH 229	Kac-Moody Algebras	5
MATH 232	Morse Theory	5
MATH 233	Random Matrix Theory	5
MATH 234	Riemann Surfaces	5
MATH 235	Dynamical Systems Theory	5
MATH 238	Elliptic Functions and Modular Forms	5
MATH 239	Homological Algebra	5
MATH 240A	Representations of Finite Groups I	5
MATH 240B	Representations of Finite Groups II	5
MATH 246	Representations of Algebras	5
MATH 248	Symplectic Geometry	5
MATH 249A	Mechanics I	5
MATH 249B	Mechanics II	5
MATH 249C	Mechanics III	5
MATH 252	Fluid Mechanics	5
MATH 254	Geometric Analysis	5
MATH 256	Algebraic Curves	5
MATH 260	Combinatorics	5
MATH 280	Topics in Analysis	5
MATH 281	Topics in Algebra	5
MATH 282	Topics in Geometry	5
MATH 283	Topics in Combinatorial Theory	5
MATH 284	Topics in Dynamics	5
MATH 285	Topics in Partial Differential Equations	5
MATH 286	Topics in Number Theory	5
MATH 287	Topics in Topology	5

Foreign Language Requirements

Beginning with the cohort entering fall 2022, there is no longer a foreign language requirement for the Ph.D. in Mathematics. Although there is no longer a foreign language requirement, some students may need to read papers in unfamiliar languages to carry out their research. When this is the case, students are strongly encouraged to reach out to faculty for guidance.

Teaching Requirement

Ph.D. students must complete a minimum of three quarters as a teaching assistant (TA). All TAs are required to participate in the department's teaching assistant training program.

TA appointments are usually made at 50 percent time (an assigned workload of approximately 220 hours per quarter). TAs are under the supervision of the faculty member responsible for the course. TAs are covered by a collective bargaining agreement between the University of California and the United Auto Workers (UAW).

Instructors and their TA(s) will meet at the beginning of the quarter to complete the Notification of TA Duties form in order to identify the agreed upon tasks. The performance of these tasks will form the basis of the end-of-quarter performance evaluation and will use the following criteria: quality of work; accuracy and attention to detail; interaction with students, peers, and instructor; knowledge of subject; and dependability. The specific allocation of TA duties is subject to change, depending on enrollments and the number of teaching assistantships in the department allocation. The general duties vary, depending on the course assigned and level of the course.

Pre-Qualifying Requirements

Preliminary Examinations

Preliminary examinations are given for each core sequence in the fields of algebra, analysis, and geometry-topology at the beginning and end of each academic year. The exams will be

designed and graded by recent instructors of each core sequence.

A first-level pass signifies that the student has the knowledge to start research with a thesis advisor in this particular area. A second-level pass signifies that the student has an understanding of the basic concepts, but not necessarily enough to conduct research.

Ph.D. students must obtain a first-level pass on at least one of the three written preliminary examinations and a second-level pass on at least one other. Students must complete the full three-course sequence in the field associated with the preliminary examination in which they did not achieve a first-level pass. Students may take the preliminary examinations as often as they wish.

Ph.D. students must complete the preliminary examinations and core sequence requirements by the end of spring quarter of their second year to maintain satisfactory progress. A student who may be experiencing academic difficulty will first develop an academic support plan with the department before being recommended for academic notice or disqualified from the program in alignment with the following timeline:

- If the preliminary exam requirements are not met after the spring preliminary exam offering of a student's second year, an academic support plan will be developed with the graduate vice chair and the preliminary exams in fall of the third year must be taken.
- If the requirements are not met after the fall preliminary exam offering of a student's third year, the student will be recommended for academic notice, and their academic support plan reassessed to follow through the spring of the third year.
- If the requirements are not met after the spring preliminary exam offering of the student's third year, the student may be disqualified from the program, and may transfer to a terminal master's program or appeal to the department to continue on the Ph.D. route.

Topics for the preliminary examinations include:

- Algebra
    - Linear algebra
    - Group theory
    - Ring and module theory
    - Field theory
    - Galois theory
- Analysis
    - Basic analysis
    - General topology
    - Metric spaces
    - Measure and integration
    - Complex analysis
    - Functional analysis
- Geometry-topology (manifolds)
    - Manifold and tangent bundle
    - Differential forms and integration on manifolds
    - Fundamental group and covering space
    - (Co)homology
    - Differential geometry

Qualifying Examination

Oral Qualifying Examination

By the beginning of the third year, a student should have a faculty advisor whose research aligns with their research interests. Students will work with their faculty advisor to develop a research plan which is proposed during their qualifying exam.

All graduate students in the Ph.D. program are required to take an oral examination, called the oral qualifying examination, for advancement to candidacy for the Ph.D. degree. Students will demonstrate that they have a sufficient understanding of their Ph.D. thesis problem by presenting their research plan.

Qualifying Examination Committee Composition

The examining committee consists of the student’s faculty advisor, at least two other faculty members from the Mathematics Department, and at least one outside tenured faculty member from either another discipline at UCSC or another academic institution (involved in research and graduate education of the same or different discipline). The student, in consultation with the student’s faculty advisor, selects the committee. The chair of the committee must be someone other than the student’s faculty advisor.

The Graduate Division must approve the committee. The Committee Nomination of Ph.D. Qualifying Examination Form must be completed and submitted at least one month prior to the requested exam date. The form can be found on the Graduate Division website or can be provided by the Mathematics Department. The form should be turned in to the graduate advisor and program coordinator for review and submission to the Graduate Division.

The committee decides on the topics for the examination, which should be broad enough to encompass a substantial body of knowledge in the area of the student's interest. The written list of topics to be included in the examination, along with a short bibliography, is prepared by the student. A copy is given to each committee member and a copy is put into the student's permanent records.

Following the Qualifying Examination

The Report on Qualifying Examination Form must be filled out by the qualifying examination committee immediately following the examination. The form can be found on the Graduate Division website, or can be provided by the Mathematics Department. The form should be turned in to the graduate advisor and program coordinator for review and submission to the Graduate Division. The student may request to see a copy of the report.

The oral exam must be completed by the spring quarter of a student's third year to maintain satisfactory progress. An oral qualifying exam may be taken at most twice. When retaking the exam, the membership of the examining committee typically remains the same.

A student who may be experiencing academic difficulty will first develop an academic support plan with the department before being recommended for academic notice or disqualified from the program in alignment with the following timeline:

- If the oral exam is not taken by the end of spring quarter of the third year, or upon an exam that is taken and failed, a student will develop an academic support plan with the graduate vice chair and their faculty advisor to follow through the fall of the fourth year.
- If the oral exam is not completed before the end of fall of the fourth year, the student will be recommended for academic notice, and their academic support plan reassessed to follow through the spring of the fourth year.
- If the oral exam is not completed by the end of spring of the fourth year, or upon a second exam that is taken and failed, a student may be disqualified from the program and may transfer to a terminal master's program or appeal to the department to continue on the Ph.D. route.

Post-Qualifying Requirements

Dissertation Reading Committee Composition

A Ph.D. student, in consultation with their faculty advisor, is responsible for selecting a dissertation reading committee. The committee consists of the student's advisor and at least two other members of the mathematics faculty. In special circumstances, a committee member may be chosen from another department and/or from another institution. The student's advisor is the chair of the committee.

The Graduate Division must approve the committee. The Nominations for Dissertation Reading Committee Form must be completed and submitted prior to advancement to candidacy. The form can be found on the Graduate Division website or can be provided by the Mathematics Department. The form should be turned in to the graduate advisor and program coordinator for review and submission to the Graduate Division.

A new form must be submitted for approval if changes to the dissertation reading committee must be made.

Advancement to Candidacy

Students must complete the following in order to advance to candidacy:

1. Complete the preliminary examinations and core sequences in accordance with the requirements outlined above;
2. Pass the qualifying examination;
3. Have a dissertation reading committee approved by the Mathematics Department and the Graduate Division;
4. Have no incomplete grades (I) on their record.

An advancement to candidacy fee will be billed to the student's account. The student will be officially advanced the following term after all of these requirements are met.

[Optional Catchall]

Dissertation

Dissertation

Each graduate student in the Ph.D. program is required to write a Ph.D. dissertation or thesis on a research topic in mathematics. The Ph.D. dissertation should contain original research results that are publishable in a peer-reviewed journal. All members of the student's dissertation committee must read and approve the dissertation.

More information about dissertation submission can be found at the Graduate Division website.

Dissertation Defense

After the dissertation has been approved, the student has an option of making a public oral presentation of the mathematical results contained in the dissertation—the "thesis defense." A recommendation by the dissertation committee will be made to the Mathematics Department and to the Graduate Council on the granting of the Ph.D. degree.

Academic Progress

Ph.D. students are expected to adhere to the below degree timetable:

1. Preliminary examinations and course sequence requirements

Completed by the end of the student's second year

2. Oral qualifying examination (and advancement to candidacy)

Completed no later than student's fourth year

3. Dissertation defense

Completed no later than the end of the sixth year

Annual meetings with the graduate vice chair and the graduate advisor and program coordinator are conducted with each student on a one-on-one basis. These meetings serve to notify the student of their current progress within the program and outline expectations for the continuation of normative progress toward the Ph.D. degree.

If the dissertation is not completed by the end of the sixth year, the student can either transfer to a terminal master's program or appeal to the department to extend their Ph.D. program.

Applying for Graduation

Ph.D. students must complete the Application for the Doctor of Philosophy degree form by the appropriate quarter's deadline listed in the current Academic and Administrative Calendar.

The form can be found on the Graduate Division website or can be provided by the Mathematics Department. The form should be turned in to the graduate advisor and program coordinator for review and submission to the Graduate Division.

[Optional Catchall]

Microbiology and Environmental Toxicology

430 Physical Sciences Building
Telephone (831) 459-4719
https://www.metx.ucsc.edu

PROGRAMS OFFERED

Microbiology B.S. (p. 423)

Microbiology and Environmental Toxicology Contiguous Bachelor's/Master's Pathway (p. 429)

Microbiology and Environmental Toxicology M.S. (p. 430)

Microbiology and Environmental Toxicology Ph.D. (p. 431)

Microbiology and Environmental Toxicology Designated Emphasis (p. 433)

OTHER PROGRAMS OF INTEREST

Microbiology and Environmental Toxicology Track within the Program in Biomedical Sciences and Engineering (PBSE)

The Graduate Program in Biomedical Sciences and Engineering (PBSE) reflects the interdisciplinary and collaborative nature of biomedical research at University of California, Santa Cruz. PBSE predoctoral fellows have the opportunity to study biology at the molecular, cellular, and systems levels, and can take advantage of advanced laboratory facilities, computational tools, and a highly collaborative research environment. First-year students select research rotations from more than 60 faculty members, who come primarily from the Departments of Microbiology and Environmental Toxicology (METX), Molecular, Cell, and Developmental Biology, Biomolecular Engineering, and Chemistry and Biochemistry. Students interested in this program apply directly to the METX track in the PBSE program.

UNDERGRADUATE PROGRAM

The METX Department offers a bachelor's degree in Microbiology (p. 423). The B.S. major in microbiology is designed for students interested in careers in biomedical, environmental, and basic science fields in both industry and academia. Students must take introductory biology and chemistry, microbiology lecture and lab, biochemistry, computational tools, and additional courses directly relevant to microbiology. As a unique feature of this program, students also take a microbiology course focusing on evaluating relevant scientific articles.

Some undergraduate students work in conjunction with METX faculty on independent research projects. These projects can allow students access to extensive laboratory facilities, experience and mentorship. Students can leverage this experience toward their individual goals as academics and researchers.

GRADUATE PROGRAM

Graduate training in the Department of Microbiology and Environmental Toxicology prepares students to solve important problems in the field of environmental health and microbiology by providing stimulating coursework, extensive scientific presentation training, and for the research-oriented Ph.D. and M.S. degrees, in-depth research that culminates in a Ph.D dissertation or M.S. thesis. This program educates students to understand the interplay between microbes, chemical toxins, and health. Graduate training prepares students to work effectively in a complex world, and become leaders in their field. Career paths include: academia, teaching, industry, and government to name a few.

MICROBIOLOGY B.S.

Information and Policies

Introduction

The B.S. major in microbiology is designed for students interested in careers in biomedical, environmental, and basic science fields in both industry and academia. Students are required to take introductory biology and chemistry, microbiology lecture and lab, biochemistry, computational tools, and additional courses directly relevant to microbiology. As a unique feature of this program, students also take a microbiology course with a focus on evaluating relevant scientific articles.

Academic Advising for the Program

Students are encouraged to seek out advising and assistance in planning their academic career to ensure completion of their major in a timely manner. For advising assistance, please contact the microbiology major advisor at microadvising@ucsc.edu.

All students interested in the Microbiology B.S. degree should read this catalog to learn more details about the major.

Program Learning Outcomes

Students who successfully complete the microbiology major will be able to:

1. Demonstrate conceptual understanding of the following areas: biology of microbial cells: cell structure, function, and metabolic pathways; microbial ecology: microbial communities and the impact of microbes on humans and the environment; microbial evolution: genomics and genetics, including mobile genetic elements.
2. Apply the basic principles of chemistry and quantitative reasoning to solve problems in microbiology.
3. Generate hypotheses, design experiments, and evaluate data.
4. Display proficiency in microbiology laboratory skills.
5. Use effective oral and written language skills to communicate scientific data and ideas, including with other disciplines.
6. Analyze, interpret, and evaluate a range of scientific literature in microbiology.
7. Display proficiency in fundamental bioinformatic skills needed to investigate gene function and understand the general methods utilized in the field of microbial genomics.

Getting Started in the Major: Frosh

Students pursuing the microbiology major begin with General Chemistry. Both the CHEM 3A/CHEM 3B/CHEM 3C series (with associated labs CHEM 3BL/CHEM 3CL) and the advanced CHEM 4A/CHEM 4B series (with associated labs CHEM 4AL/CHEM 4BL) fully satisfy the general chemistry prerequisites of any major declaration or required/elective classes for programs in the Physical and Biological Sciences (PBSci) Division. Students should also begin in Math 11A , Math 16A, or MATH 19A as soon as they can upon completion of the Mathematics Placement assessment.

Students are required to complete a Mathematics Placement assessment in ALEKS PPL to enroll in their first math course at UC Santa Cruz. Microbiology majors are expected and encouraged to work in the learning modules in ALEKS PPL to be able to enroll in MATH 16A; in order to enroll in MATH 16A, you need to have an ALEKS PPL result of 70 or above, which translates to a math placement score of 300 in your student record at UC Santa Cruz.

If you've successfully completed a transferable college-level pre-calculus or calculus course, or have a sufficiently high Advanced Placement (AP) or International Baccalaureate (IB) Calculus test score, you can satisfy your Math Placement requirement simply by submitting your grade or score to UCSC. See the General Catalog for AP and IBH score equivalencies.

Transfer Information and Policy

General information about transferring to UC Santa Cruz can be found on the Transfer Preparation Advising website. Students planning to transfer to UC Santa Cruz from a California community college should reference assist.org to determine which courses are equivalent to required and recommended pre-transfer courses.

Transfer Admission Screening Policy

METX encourages applications from transfer students in the biological sciences. The department has a major qualification policy that limits program access to students who have successfully completed a subset of foundational coursework.

For more information on qualifying for the major as a transfer applicant, see the Getting Started as a Transfer Student webpage.

The following courses or their equivalents are required prior to transfer/entry to UCSC. Completion of these courses with a grade of C or higher satisfies the qualification for this major.

The following courses

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

And these courses

CHEM 8A	Organic Chemistry	5

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOL 20L	Experimental Biology Laboratory	2

BIOL 20L is waived for students who have completed BIOL 20A and BIOE 20B from California community colleges.

Plus

One of the following calculus or equivalent courses

MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Prior to transfer

In addition, the following courses are recommended prior to transfer to ensure timely graduation. Students who only complete the minimum required transfer coursework for the major will likely need more than two years to complete the microbiology B.S.

Prospective students are encouraged to prioritize required and recommended major preparation and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

One of the following courses

MATH 11B	Calculus with Applications	5
	OR	
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following options

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus the following courses

CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2

Recommended Courses for Transfer Students

Getting Started in the Major: Transfer Students

Transfer students must already be qualified at time of entry to UCSC to be accepted into the microbiology major. Any student who fails to meet these requirements may file an appeal for admission to the major, but admission is not guaranteed.

Transfer students should complete the required courses in microbiology (METX 100) and biochemistry (BIOL 100) by the end of their first year at UC Santa Cruz as they are prerequisites for other required courses.

Transfer students are strongly encouraged to meet with the microbiology major advisor in their first quarter. For assistance with advising, please contact microadvising@ucsc.edu.

Transfer students entering at the junior level who have satisfied the screening requirements can declare their major any time after coming to UCSC but are required to be declared in a major by the declaration deadline in their second term at UCSC. Any student who fails to meet these requirements may file an appeal for admission to the major, but admission is not guaranteed.

Transfer students who are proposed in a different major (other than microbiology) and have advanced standing when they come to UCSC require permission from the department to change into the major. Admission to the major is not guaranteed.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete the following qualification courses, or their equivalents, each with a grade of C or better.

Courses from the following

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus these courses

CHEM 8A	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Plus one of the following

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

How to Declare a Major

Students may declare a major as early as they would like if they have decided which major to pursue and have satisfied prerequisites or qualification requirements for the major. Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Per the UC Santa Cruz major declaration policy, students who enter UCSC as frosh are required to be formally declared in a major by the campus deadline in their sixth quarter and before enrolling in their third year (or equivalent). Upper-division junior transfer students are required to be declared in a major by the deadline in their second term at UCSC.

Students should petition to declare a microbiology major once they have completed all qualification courses and met the GPA requirements and have an official, signed, department-approved academic plan on file.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh, second quarter for junior transfer students), will either be approved, denied, or provided with conditions (e.g., completion of final qualification courses with certain grades), but will not be declared until all requirements have been met and satisfactory grades have been posted.

Each major/minor advising office has a process for declaring. For assistance with declaring the microbiology major, please contact microbiology major advisor at microadvising@ucsc.edu.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting an appeal form to the microbiology advisor at microadvising@ucsc.edu. The department will reply to appeals within 15 days of a completed appeal submission to the managing department faculty. To appeal for the Microbiology B.S., complete the Microbiology Major Appeal Form via DocuSign.

Note: The information you share in your appeal or with your advisors will be kept confidential and shared only with campus officials as required to serve you in an advising capacity or process your appeal. However, in limited circumstances, including those related to potential harm to yourself or others, sexual assault, and abuse, we may be required by law to report incidents you disclose to other need-to-know offices on campus such as the Title IX Office and/or University of California Police Department. If you are in need of support for any issues, please see the list of confidential and/or support resources.

Letter Grade Policy

All courses that are taken to satisfy any major requirement must be taken for a letter grade. Additionally, letter grades of C or higher must be attained to meet major and minor requirements for graduation.

Course Substitution Policy

At least half of the upper-division courses required for the major must be taken at UC Santa Cruz, not as transfer credits from another institution. Students are advised to contact the microbiology advisor before enrolling in any upper-division courses at other institutions to verify articulation. In particular, students must receive permission from the department to satisfy the BIOL 100 or METX 100 requirements with courses taken at other institutions.

Double Majors and Major/Minor Combinations Policy

Students interested in pursuing multiple majors within the biological sciences may **NOT** declare any combination of the following majors: microbiology B.S.; global and community health B.A. or B.S.; biology B.S.; biology B.A.; molecular, cell, and developmental biology B.S.; neuroscience B.S.; biochemistry and molecular biology B.S.; ecology and evolutionary biology B.S; marine biology B.S.; plant sciences B.S.

Pursuing a double major that includes the microbiology major is a highly individual decision and should be based on a student's educational and career goals. Because the microbiology major itself is rigorous, it should be noted that completing a double major involving microbiology is difficult (though possible).

To declare a double major program, a student must obtain an academic plan showing that they are able to complete both degrees within the maximum number of quarters of enrollment available at UC Santa Cruz. Therefore, the steps for a student to pursue microbiology as a second major are as follows:

1. Student must have an up-to-date and accurate major academic plan for their initial major.
2. Student must make an appointment with the microbiology major advisor and send the link to their initial major academic plan to microadvising@ucsc.edu.
3. The microbiology major advisor will review your major academic plan and will add the microbiology major courses the initial major academic plan, as necessary and if it is viable to do so per double unit counting, enrollment limitations, and time-to-degree guidelines.
4. The microbiology major advisor will discuss the double major plan with the student during their scheduled appointment. If the plan is viable, it will be approved and signed by both the student and the second major advisor.

5. Once the student has an approved and viable double major plan and qualifies for the major, the student must petition to declare chemistry as a second major using the Petition for Major/Minor form in MyUCSC.

Study Abroad

The UC Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. The METX Department encourages interested students to participate. Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

Students interested in studying abroad need to get an early start on their basic science requirements, including chemistry, mathematics, and introductory biology. Students interested in studying abroad should visit the UCEAP office as soon as possible to begin planning. They should also seek advice about their UCEAP plan for major courses at UC Santa Cruz from Chemistry Advising and/or a faculty advisor and receive their approval.

Honors Policy

Honors in the majors are awarded to graduating students whose academic performance in major-required coursework demonstrates excellence at a grade point average (GPA) of 3.5 or above. Highest honors are awarded to those students whose performance in major-required coursework demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

Medical and Professional School Admission

Medical and professional school admissions requirements vary; students should verify that their coursework will satisfy the admissions requirements of the programs to which they plan to apply.

Students are strongly encouraged to review the Pre-Health section of the Career Success website to review preparation recommendations, prerequisite and other information about professional health education programs (medical school, dental school, etc.), and more important information to assist in preparation for a career in health sciences.

Students are urged to contact Career Success for assistance with the application process.

Requirements and Planners

Course Requirements

Complete the following courses or their equivalents. Some courses may be satisfied via exam credit.

Lower-Division Courses

One of the following

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

And these courses

CHEM 8A	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8B	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Note: Students may take STAT 5 in place of STAT 7/STAT 7L, although STAT 7/STAT 7L is strongly encouraged.

Plus one of the following options

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Upper-Division Courses

The following courses

BIOL 100	Biochemistry	5
BIOL 101L	Molecular Biology Laboratory	2
METX 100	Introduction to Microbiology	5
METX 100L	Microbiology Laboratory	5
METX 140	Molecular Biology and Microbial Genetics	5
METX 150	Applied and Environmental Microbiology	5
BME 110	Computational Biology Tools	5

Electives

Students must complete two electives totaling 9 credits from the following options:

METX 115	Environmental Health Science	5
METX 133	Medical Microbiology	5
METX 135	Functional Anatomy	5
METX 135L	Functional Anatomy Lab	3
METX 141	Advanced Bacteriology Laboratory	5
BME 105	Genetics in the Genomics Era	5
BME 122H	Extreme Environmental Virology	5
BME 128	Protein Engineering	5
BME 132	Evolutionary Genomics	5
BME 160	Research Programming in the Life Sciences	6
BME 163	Applied Visualization and Analysis of Scientific Data	5
BIOE 149	Disease Ecology	5
CHEM 171	Chemical Biology	5
OCEA 130	Biological Oceanography	5
ENVS 163	Plant Disease Ecology	5

Note: Lecture/lab combinations count as one course.

Disciplinary Communication DC Requirement

The DC requirement for the microbiology B.S. is satisfied by completing the following course:

METX 100L	Microbiology Laboratory	5

Comprehensive Requirement

The comprehensive requirement is satisfied by completing the following course:

METX 100L	Microbiology Laboratory	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.
This is a sample academic plan for those pursuing a microbiology B.S. major. If needed, this plan can be arranged differently. Please meet with the microbiology advisor to review your individualized official academic plan.

Students who are required to complete MATH 2 and/or MATH 3 before beginning the major-required MATH series are invited (and highly encouraged) to work with their academic advisor, early and often, to find their best pathway through the degree requirements of their chosen program.

Sample Four-Year Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	CHEM 3A MATH 16A College 1	CHEM 3B CHEM 3BL MATH 16B WRIT 1	CHEM 3C CHEM 3CL BIOL 20A	
2nd (soph)	BIOE 20B CHEM 8A CHEM 8L WRIT 2	BIOL 20L CHEM 8B METX 100	BIOE 20C PHYS 6A PHYS 6L	
3rd (junior)	STAT 7 STAT 7L METX 100L	BME 110 BIOL 100	PHYS 6B BIOL 101L METX 140	
4th(senior)	METX 150	Upper-division elective	Upper-division elective	

Sample Transfer Two-Year Planner

Note: The sample planner below is configured for transfer student entering UC Santa Cruz with all the required and recommended transfer coursework. Failure to complete both the required and highly recommended courses before transfer may require additional time to degree.

Please meet with the microbiology major advisor to review your specific official academic plan (microadvising@ucsc.edu).

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	MET X 100 MET X 100L	BIOL 100 PHYS 6B	BIOL 101L METX 140 BME 110	
4th (senior)	MET X 150	Upper-division elective	Upper-division elective	

MICROBIOLOGY AND ENVIRONMENTAL TOXICOLOGY CONTIGUOUS

BACHELORS/MASTERS PATHWAY

METX offers a fifth-year Plan I (thesis) M.S. degree pathway, earned contiguously with an appropriate Bachelor of Science (B.S.) degree at the UC Santa Cruz. The fifth-year M.S. pathway provides highly motivated undergraduate majors the opportunity to earn separate B.S. and M.S. degrees in five years. The pathway provides the additional level of preparation and experience that students need to pursue careers in industry, government, or to increase their competitiveness for top Ph.D. programs.

To be accepted into the pathway, students will need to prepare an application packet and academic plan in consultation with their M.S. Plan I faculty adviser, and undergraduate adviser, providing evidence of solid academic performance in general and in their undergraduate major. The application should be submitted to the METX department by Aug 1 (prior to the beginning of their senior year), and should include:

- A one-page personal statement describing:
  - a) the student's motivation and academic preparation for entering the path
  - b) the student's goals for the fifth-year path, including the area of concentration
  - c) the name of a faculty member willing to serve as their thesis advisor
  - d) future professional goals.
- Copy of unofficial transcripts establishing the GPA requirements in the undergraduate major and overall. Applicants should possess a GPA in courses of their undergraduate major (biology, chemistry, etc.) of 3.2 or above, and an overall GPA of 3.0 or above.
- A letter of recommendation from a sponsoring METX faculty member attesting to the student's aptitude for a M.S. degree in METX.
- A coursework plan that will enable them to complete both the requirements for the B.S. in their undergraduate department and M.S. in METX in five years, demonstrating sufficient coursework capacity to complete at least two METX graduate courses in their final undergraduate year.

If accepted into the fifth-year B.S./M.S. pathway, students will apply to the M.S. program during their senior undergraduate year. The criteria and deadlines for admission to the METX M.S. program will be the same as for all METX M.S. program applicants.

MICROBIOLOGY AND ENVIRONMENTAL TOXICOLOGY M.S.

Introduction

The Microbiology and Environmental Toxicology Department offers a Master of Science (M.S.) degree in Microbiology and Environmental Toxicology (METX). The METX M.S. degree can be attained through Plan I (thesis) or Plan II (capstone).

Plan I: A master's research thesis, viewed as acceptable by the student's thesis reading committee, is required of each candidate. The completed thesis must be filed with the Graduate Division by the end of instruction in the term in which the candidate expects the degree to be awarded. Students will also complete a minimum of 40 credits of instruction.

Plan II: Students complete a capstone requirement, which is an individual written project. A comprehensive project in the major subject, as approved by the METX graduate advising committee, is required of each candidate. Students will also complete a minimum of 40 credits of instruction.

The METX M.S. degree combines core courses and electives to provide interdisciplinary training in microbiology, toxicology, and environmental health sciences. Graduates from the program are exceptionally prepared to take research or management positions in organizations concerned with microbial and environmental health-related sciences. Graduates may also pursue fields in education or enter doctoral programs in biological and environmental health sciences or related fields.

Students pursuing Plan I typically graduate in two years; Plan II typically concludes in one year.

Requirements

Plan I (thesis) M.S. Degree

Prospective students who are interested in research careers, or gaining research experience prior to entering a doctoral program, should consider the Plan I (thesis) M.S. degree.

Course Requirements

To receive a METX Plan I (thesis) M.S. degree, students must successfully complete the courses listed below. Additional coursework may be recommended or required by the student's faculty advisor or the graduate advising committee.

One required core course

METX 200	Interdisciplinary Approaches in Environmental Toxicology	5

Two courses from the following list:

METX 201	Sources and Fates of Pollutants	5
METX 202	Cell and Molecular Toxicology	5
METX 206A	Advanced Microbiology	5
METX 210	Molecular and Cellular Basis of Bacterial Pathogenesis	5
METX 238	Pathogenesis: Molecular Mechanisms of Disease	5
METX 250	Environmental Microbiology	5

Any additional courses as recommended by your Graduate Advising Committee

Each quarter, Plan I students must also enroll in the following courses:

The METX Department Seminar

METX 292	Introductory Graduate Seminar	

Research Units (select from below as appropriate)

Each quarter, students will consult with their faculty advisor and/or the METX Graduate Advising Committee to determine which research course to enroll in. Students only take one of these each quarter.

METX 299A	Thesis Research	5
METX 299B	Thesis Research	10
METX 299C	Thesis Research	15
METX 299Z	Thesis Research	2

Topical Seminar (lab meeting) associated with their primary investigator (select from below as appropriate

METX 281A	Seminar in Global Health	2
METX 281C	Topics in Environmental Microbiology	2
METX 281J	Mechanisms of Virulence and Resistance to Infectious Disease	2
METX 281M	Topics in Molecular Toxicology	2
METX 281O	Topics in Bacterial Pathogenesis	2
METX 281P	Origins and Applications of Human Gut Microbial Symbiosis	2
METX 281R	Topics in Genome-Environment Interactions	2
METX 281S	Cellular and Organismal Responses to Toxicants	2
METX 281V	Topics in Bacterial Pathogenesis and Innate Immunity	2
METX 281Y	Biofilms: Processes and Regulation	2

Other Requirements

Literature Review

Students are required to write a literature review summarizing the current state of the field of the proposed dissertation research. The review should be written with feedback from the student's faculty advisor and is due to the student's advisor and the program graduate advisor by the first day of fall quarter of the second year.

Department Seminars

Plan I students are required to give a 15- 20-minute departmental seminar in the first academic year and a 50-minute departmental seminar on thesis work during the spring of the second year.

Master's Comprehensive Examination

The master's comprehensive exam is a presentation and defense of the student's master's research proposal, including relevant background knowledge. This examination is taken in the fall quarter of the second year and is given by the student's Thesis Reading Committee (aka the thesis committee).

Thesis

Students are required to submit their thesis for fulfillment of the degree requirements. The thesis should be submitted to the student's thesis committee one month before the due date.

Plan II (capstone) M.S. Degree

The Plan II (capstone) M.S. degree may be of interest to students interested in interdisciplinary graduate training in microbiology and environmental health-related fields, but with career goals other than research, such as government service, non-profit NGOs, and private sector biotech and environmental health companies.

Coursework Requirements

Three required courses:

METX 200	Interdisciplinary Approaches in Environmental Toxicology	5
METX 245A	Scientific Communication in Microbiology and Environmental Toxicology A	5
METX 245B	Scientific Communication in Microbiology and Environmental Toxicology B	5

Two courses from the following list:

METX 201	Sources and Fates of Pollutants	5
METX 202	Cell and Molecular Toxicology	5
METX 206A	Advanced Microbiology	5
METX 210	Molecular and Cellular Basis of Bacterial Pathogenesis	5
METX 238	Pathogenesis: Molecular Mechanisms of Disease	5
METX 250	Environmental Microbiology	5

At least three additional courses

Plan II students must take at least three additional graduate-level METX courses or approved graduate-level courses from another department. Students should consult with the Graduate Advising Committee regarding the selection of these additional electives.

Department Seminar

Students are expected to enroll in and attend the METX department seminar every quarter.

METX 292	Introductory Graduate Seminar

Other Requirements

Capstone Writing Project:

Plan II M.S. students must complete a capstone writing project to be completed under the guidance/mentorship of a faculty member in the department. As an example, capstone projects may include a scientific research proposal or a substantial review article.

MICROBIOLOGY AND ENVIRONMENTAL TOXICOLOGY PH.D.

Introduction

The Department of Microbiology and Environmental Toxicology (METX) focuses on the human and environmental health impacts of chemicals and pathogens. A unifying disciplinary theme of research in METX is that both environmental chemicals and pathogens represent physiological effects that, in many cases, elicit specific molecular and inflammatory responses that increase the risk of adverse health outcomes in exposed individuals. The METX Ph.D. program provides in-depth training in the human and environmental health impacts of chemicals and pathogens. We accomplish this goal through comprehensive coursework, extensive scientific communication training, and in-depth research culminating in a Ph.D. dissertation. Our training prepares students to become leaders in various fields, following career paths in academia, teaching, industry, and government.

Students typically graduate with a Ph.D. in four to six years.

Advancement to Candidacy

The student advances to candidacy after completing all coursework, completing the literature review (due beginning of fall quarter, second year), passing the Ph.D. qualifying examination (spring quarter, second year), and presenting a 50-minute departmental seminar (spring quarter, third year).

Course Requirements

Three required courses

METX 200	Interdisciplinary Approaches in Environmental Toxicology	5
METX 200B	Graduate Research Project Development	5
BIOL 289	Practice of Science	5

Students must take all three.

One science writing course

METX 245A	Scientific Communication in Microbiology and Environmental Toxicology A	5
METX 205	Scientific Grant Writing	5

Students may select either course from this list.

One field specific core course

METX 202	Cell and Molecular Toxicology	5
METX 206A	Advanced Microbiology	5

Students may select either course from this list.

At least one graduate-level elective

Students may select any graduate-level METX course from this list, or an approved course from another department.

METX 201	Sources and Fates of Pollutants	5
METX 210	Molecular and Cellular Basis of Bacterial Pathogenesis	5
METX 238	Pathogenesis: Molecular Mechanisms of Disease	5
METX 250	Environmental Microbiology	5

Students may elect to take both METX 202 and METX 206A to satisfy this requirement (i.e., one class counts as “field-specific," and the other counts as the “elective”). Students should contact the Graduate Advisory Committee (GAC) for approval on classes not listed here. The course must be a graduate level, 5-credit course.

Any additional courses recommended by their graduate advising committee.

Students will consult with their advising committee to determine if additional coursework is necessary for their success in the program.

Each quarter, all students (before and after advancement) must enroll in the following courses

The following classes may be taken as Satisfactory/Unsatisfactory (S/US) grading unless otherwise instructed by your graduate advisor.

METX Department Seminar

METX 292	Introductory Graduate Seminar	

Research Units

Each quarter, students will consult with their advising committee or faculty advisor to determine which research course to enroll in.

METX 297A	Independent Study	5
METX 297B	Independent Study	10
METX 297C	Independent Study	15
METX 299A	Thesis Research	5
METX 299B	Thesis Research	10
METX 299C	Thesis Research	15
METX 299Z	Thesis Research	2

Topical seminar associated with their thesis lab

Note: First-year students in the PBSE rotation program do not enroll in one of these until they have joined a permanent thesis lab.

METX 281A	Seminar in Global Health	2
METX 281C	Topics in Environmental Microbiology	2
METX 281J	Mechanisms of Virulence and Resistance to Infectious Disease	2
METX 281M	Topics in Molecular Toxicology	2
METX 281O	Topics in Bacterial Pathogenesis	2
METX 281P	Origins and Applications of Human Gut Microbial Symbiosis	2
METX 281R	Topics in Genome-Environment Interactions	2
METX 281S	Cellular and Organismal Responses to Toxicants	2
METX 281V	Topics in Bacterial Pathogenesis and Innate Immunity	2
METX 281Y	Biofilms: Processes and Regulation	2

Foreign Language Requirements

Thesis Laboratory

Students may be admitted to the METX Ph.D. program as a “direct admit” or via the Ph.D. Program in Biomedical Sciences and Engineering (PBSE). Direct admits have an agreed upon thesis mentor at the time of admission and begin working in that lab immediately upon matriculation.

Students admitted via the PBSE graduate program are required to complete three rotations prior to identifying a thesis mentor/lab. At the end of each rotation, students must present on their rotation project either with a short talk or poster presentation. Rotations occur during fall and winter quarters. At the end of the third rotation, students identify an advisor to sponsor their thesis research, and typically begin in their thesis lab at the beginning of spring quarter. Students who are unable to secure a thesis laboratory after three rotations must contact the METX GAC to seek assistance in scheduling a possible fourth rotation, though this option is not guaranteed.

Regardless of rotation status, all students must secure an advisor to sponsor their thesis research by the end of their first academic year in order to remain in good standing.

Literature Review

Students are required to write a literature review summarizing the current state of the field of the proposed dissertation research. The review should be written with feedback from the student's faculty advisor and is due to the student's advisor and the program graduate advisor by the first day of fall quarter of the second year.

Qualifying Examination

Students will complete a Ph.D. qualifying examination (QE) comprised of both oral and written components. The QE must be completed by May 15 of the student's second year.

Department Seminar

Students must present a public seminar to the department each academic year. Most years, this seminar is a short talk (typically ~15 - 20 minutes). In the third year (prior to advancing to candidacy), students are required to give a full 50-minute seminar.

For first-year students in the PBSE rotation program, the required rotation talks satisfy this requirement. All other students, including first-year students not completing PBSE rotations (direct-admission to a lab) should give a talk during the regular METX departmental seminar series.

Teaching Requirement

Ph.D. students are required to work as a teaching assistant (TA) for at least one quarter. Fulfilling this requirement may happen pre or post candidacy.

Dissertation

Dissertation Reading Committee

All students must meet with an advisory committee at least once per year. Students meet with the METX Graduate Advisory Committee until they form their Dissertation Reading Committee (aka thesis committee) in Year 3.

Dissertation Reading Committee (DRC)

After advancing to candidacy, students must meet at least annually with their DRC in order to remain in good standing. Annual meetings must occur before the end of winter quarter each year. Students may be required to meet with their DRC more frequently to get additional feedback on their thesis research, or if dictated by their DRC or the Graduate Advisory Committee. The DRC remains standing until the student has completed all requirements for the doctoral degree.

Dissertation Submission and Defense

The student must submit their doctoral dissertation to their Dissertation Reading Committee (aka thesis committee) for tentative approval at least one month before presenting a formal, public doctoral research seminar and defending their thesis. Ph.D. students are expected to have at least one primary research article submitted prior to graduation.

Academic Progress

[Optional Catchall]

MICROBIOLOGY AND ENVIRONMENTAL TOXICOLOGY DESIGNATED EMPHASIS

Introduction

Plan 1 master's degree (M.A./M.S.) (research master's degree) and doctoral students from departments at UC Santa Cruz may complete a Designated Emphasis (DE) in Microbiology and Environmental Toxicology (METX) by completing two graduate courses in METX (from an approved list) and one quarter of METX 292, the weekly departmental seminar. In addition, students may have a Microbiology and Environmental Toxicology faculty member on their qualifying examination committee, and must have a Microbiology and Environmental Toxicology faculty member on their thesis reading committee, complete a significant scholarly written component on a microbiology and/or environmental health/toxicology related topic, and complete the requirements for a master's degree or Ph.D. in their own department.

Requirements

Doctoral and research (Plan 1) master's students completing the following requirements, in addition to the degree requirements of their home department, will receive the Designated Emphasis in Microbiology and Environmental Toxicology:

Committee Composition and Departmental Approvals

The student must have a designated graduate advisor from the faculty of the Department of Microbiology and Environmental Toxicology, who must serve on the Ph.D. dissertation/master's thesis reading committee.

Course Requirements

At least two METX courses from the following list for a minimum of 10 credits:

METX 200	Interdisciplinary Approaches in Environmental Toxicology	5
METX 201	Sources and Fates of Pollutants	5
METX 202	Cell and Molecular Toxicology	5
METX 206A	Advanced Microbiology	5
METX 210	Molecular and Cellular Basis of Bacterial Pathogenesis	5
METX 238	Pathogenesis: Molecular Mechanisms of Disease	5
METX 250	Environmental Microbiology	5

Students will enroll in at least one quarter of:

METX 292	Introductory Graduate Seminar

Writing, Research, and/or Teaching Requirements

Additional Requirements and Application Information

In addition, students must:

1. Attend METX department seminars (enroll in METX 292, 0 credits) for at least one quarter. Optionally, the student can schedule a presentation on their research for the departmental seminar series.

2. Include a significant scholarly written component (e.g., a dissertation chapter or a paper to be submitted for publication) on an appropriate topic in microbiology, environmental toxicology, and/or environmental health. The content, length, and topic requires approval by the METX faculty committee member.

Application Process:

Students who wish to pursue the Designated Emphasis in METX will submit an application form to the METX Department; email your request to metx-gradadvising@ucsc.edu. The application will include:

- Identification of a METX faculty advisor and their signature of approval, along with signature from the student's primary faculty advisor
- List of the courses that the student will take and when
- Copies of unofficial transcripts

Students should submit their application to the METX Department at: metx-gradadvising@ucsc.edu.

Completion of the DE in METX:

Upon completion of the DE in METX, students will submit a completion form. The form is to be submitted to the METX graduate program coordinator: metx-gradadvising@ucsc.edu.

Molecular, Cell, and Developmental Biology

Molecular, Cell and Developmental Biology Department
225 Sinsheimer Laboratories
(831) 459-4986
https://mcd.ucsc.edu/

PROGRAMS OFFERED

Biology B.S. (p. 435)

Molecular, Cell and Developmental Biology B.S. (p. 450)

Neuroscience B.S. (p. 456)

Biology Minor (p. 461)

Molecular, Cell and Developmental Biology M.S. (p. 461)

Molecular, Cell and Developmental Biology Ph.D. (p. 462)

OTHER PROGRAMS OF INTEREST

Biochemistry and Molecular Biology B.S. (p. 300)

Global and Community Health B.A. (p. 787)

Global and Community Health B.S. (p. 441)

Science Education B.S. (p. 490)

This is an extraordinary time to be involved in biomedical research. New technologies are rapidly changing our understanding of the molecular and cellular basis of life, with dramatic implications for how we treat human disease. Members of the Department of Molecular, Cell and Developmental Biology, along with affiliated faculty in the departments of Biomolecular Engineering, Chemistry and Biochemistry, Microbiology and Environmental Toxicology, and Physics, are participating in an extraordinary revolution in biomedical science. A broad spectrum of cutting-edge research tools are being employed to tackle problems in key areas that include: the structural and functional role of RNA in regulation of gene expression; chromatin biology and epigenetic control of genes; the cell biology of the cytoskeleton and the cell cycle; decisions controlling embryogenesis and organ development; and developmental neurobiology. The insights generated by this basic research enable new strategies for treatments of aging disorders, birth defects, neurological diseases, cancer, and other human ailments. The department offers a spectrum of courses that reflect the exciting new developments and directions in these fields and trains students to participate in these exciting fields.

UNDERGRADUATE PROGRAM

Advanced undergraduates, with the guidance of faculty mentors, have access to extensive departmental laboratory facilities for independent research. Many students take advantage of the numerous opportunities with local physicians, health-care providers, and biotech companies to gain experience in a real-world setting. This array of opportunities for directed independent study enables biological science majors to enhance their upper-division programs to reflect and strengthen their own interests and goals.

GRADUATE PROGRAM

The program in Molecular, Cell and Developmental (MCD) Biology (BIOL courses) leads to either the doctor of philosophy (Ph.D.) or the master of science (M.S.) and is designed to prepare students for careers in research, teaching, and biotechnology. Current research in MCD Biology focuses on such topics as the structure and function of RNA, gene expression, chromatin structure, epigenetics, cell signaling, cell division, development, nerve cell function, and stem cell biology.

BIOLOGY B.S.

Information and Policies

Introduction

Biology has entered into an exciting new era in which phenomena that once seemed insoluble mysteries—such as embryonic development, the functions of the brain, and the dynamics of ecosystems—are now yielding their secrets as the technology to study them becomes more and more sophisticated. From molecular biology, with its potential to revolutionize medicine and agriculture, to ecology, with its lessons for the sustainable management of the environment, biologists are fully engaged in meeting the challenges of the future, helping to improve the quality of human life, and to preserve habitats and biodiversity. Thus, it is no surprise that biology is at the heart of many of today's most pressing intellectual and social concerns. The Biology B.S. degree program gives students a rigorous education in modern biology, while allowing a student the opportunity to select from a wide array of upper-division elective courses offered by the departments of Molecular, Cell and Developmental Biology and Ecology and Evolutionary Biology. With proper advance planning, a student with virtually any degree can prepare a competitive application for medical school or health care professional school. Check the Health Careers webpage for more information on how you can academically prepare for a career in health care. Additional information is available at the UCSC Career Center.

Program Learning Outcomes

Students who successfully complete the Biology major will be able to:

- Demonstrate knowledge of how biochemistry, genetics, and molecular biology are used to elucidate both the function of cells and their organization into tissues.
- Recognize that biology has a basis in chemistry, physics, and mathematics.
- Describe how scientific method is used to explain natural phenomena.
- Use effective oral and written language skills to communicate scientific data and ideas.
- Understand safe laboratory practices and perform basic molecular biology techniques.
- Generate hypotheses, evaluate data, and design experiments to investigate a scientific problem.
- Present broad knowledge in biochemistry, genetics, evolutionary biology, cell biology, developmental biology, physiology, and ecology.

Academic Advising for the Program

Students should take full advantage of academic advising and should keep in frequent contact with the advisors to stay informed about late announcements of courses, changes in scheduling, and opportunities for special study. Transfer students should also consult the Transfer Information and Policy Section. For additional advice and information:

MCD Advising
389 Thimann Labs
mcdadvising@ucsc.edu

Getting Started in the Major: Frosh

Prerequisites

Due to the demanding nature of the major, students must begin their science coursework as early as possible. MATH 11A or MATH 16A or MATH 19A; CHEM 3A, CHEM 3B, CHEM 3C, and CHEM 8A; and BIOL 20A, BIOE 20B, and BIOL 20L must be completed before the major declaration deadline for students to qualify for admission to MCD biology-sponsored majors. For an overview of prerequisites and getting started in the major, please visit our biology B.S. site.

An online mathematics placement examination is required to enroll in a math course. Biological science majors are expected to take this examination and are encouraged to work in the learning modules until they place into calculus. For more information see the mathematics placement website.

Transfer Information and Policy

Transfer Admission Screening Policy

MCD Biology encourages applications from transfer students in the biological sciences. The department has a major qualification policy that limits access to the program to students who have successfully completed a subset of foundational coursework. Transfer students are held to similar criteria when being assessed for admission to UCSC as an MCD-sponsored major. See qualifying for the major as a transfer applicant for more information.

To be considered for admission as a biology B.S. major, transfer students must complete the following courses or their equivalents prior to transfer, by the end of the spring term for students planning to enter in the fall.

To be considered for admission as a proposed biology B.S. major during the winter term, transfer students must also complete a course equivalent to CHEM 8B prior to transfer.

One of these groups

	Either these courses	
CHEM 3A	General Chemistry	5

CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus all of these courses

CHEM 8A	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Plus, one of the following calculus courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

BIOL 20L is not required for students who have completed BIOL 20A and BIOE 20B at California community colleges.

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

One of the following courses

MATH 11B	Calculus with Applications	5
MATH 16B	Mathematics for Life Sciences	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following options

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus both of the following courses

CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2

Getting Started in the Major: Transfer Students

Transfer students who have met the major qualification requirements are encouraged to declare the major during their first quarter at UC Santa Cruz. Transfer students should complete the required courses in genetics (BIOL 105), biochemistry (BIOL 100), and molecular biology (BIOL 101 and BIOL 101L) by the end of their first year at UCSC since they are prerequisites for the majority of other required courses.

Major Qualification Policy and Declaration Process

Major Qualification

The Department of Molecular, Cell and Developmental Biology has a qualification policy that applies to the biology B.S., molecular, cell and developmental biology B.S., and neuroscience B.S. majors.

To qualify for any of these majors, students must pass (with a grade of C or better) the following courses or their equivalents:

One of the following courses

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus one of these groups

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, and CHEM 1C or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as Chemistry 1A, 1B and 1C, with associated laboratories Chemistry 1M and 1N. As of academic year 2023-24, this series was replaced with two distinct series: Chemistry 3A, 3B and 3C, with labs Chemistry 3BL and 3CL; or Chemistry 4A and 4B with labs Chemistry 4AL and BL. Descriptions of these two series are provided here.

And all of these courses

CHEM 8A	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Appeal Process

Students who are not eligible to declare the major may submit an appeal to the Molecular, Cell and Developmental Biology faculty adviser. The department will notify the student and

their college of the decision within 15 days of the quarterly appeal deadline. See our appeal process for more information.

How to Declare a Major

Students should submit a petition to declare by completing the online declaration petition as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

A student's petition will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Letter Grade Policy

All courses that are taken to satisfy any major requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

At least half of the upper-division courses required for the major must be taken at UC Santa Cruz, not as transfer credits from another institution. If a student plans to transfer to UCSC from another institution, the student is advised to contact MCD Advising at UCSC before enrolling in upper-division courses at the student's institution or any institution other than UCSC. This advising will help students understand the limitation of transferring upper-division courses from other institutions to UCSC. For more information on transferring courses to UCSC, please consult the undergraduate website.

Once matriculated, a student must receive permission from the department to satisfy the BIOL 20A, BIOL 100, BIOL 105, BIOL 101 or BIOL 110 requirements with courses taken at other institutions. Students who wish to receive credit toward the major for these or other courses taken either at UCSC or at another institution should contact MCD Advising.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in:

1. Biology B.S. and any other major/minor offered by the departments of Chemistry and Biochemistry, Ecology and Evolutionary Biology, Microbiology and Environmental Toxicology or MCD Biology, including the Global and Community Health B.S. major.

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. The MCD Biology Department encourages interested students to participate. Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

Students interested in study abroad need to get an early start on their basic science requirements, including chemistry, mathematics, and introductory biology and must declare their major prior to applying to go abroad. Students interested in studying abroad should visit the EAP office as soon as possible to begin planning. They should also seek advice about their EAP plan for major courses at UC Santa Cruz from MCD Advising and receive their approval.

Honors

Honors in the majors are awarded to graduating students whose academic performance demonstrates excellence at a grade point average (GPA) of 3.5 or above. Highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

Medical and Professional School Admission

Medical and professional school admissions requirements vary; students should verify that their coursework will satisfy the admissions requirements of the programs to which they plan to apply.

[Optional Catchall]

Requirements and Planners

Course Requirements

Lower-Division Courses

All of the following courses

BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

Plus one of these groups

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2

CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as Chemistry 1A, 1B and 1C, with associated laboratories Chemistry 1M and 1N. As of academic year 2023-24, this series was replaced with two distinct series: Chemistry 3A, 3B and 3C, with labs Chemistry 3BL and 3CL; or Chemistry 4A and 4B with labs Chemistry 4AL and BL. Descriptions of these two series are provided here.

Plus all of these courses

CHEM 8A	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8B	Organic Chemistry	5

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Students may transition between the MATH 11 and MATH 19 series per the Calculus Series Transition Policy.

Plus one of the following options:

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus all of the following courses:

PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
	AND	
	One of these courses	
PHYS 6L	Introductory Physics I Laboratory	1
	OR	
PHYS 6M	Introductory Physics II Laboratory	1
	OR	
PHYS 6N	Introductory Physics III Laboratory	1

Upper-Division Courses

All of the following courses:

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5
BIOL 105	Genetics	5
BIOE 107	Ecology	5
BIOE 109	Evolution	5

Laboratory requirement:

Students must complete two upper-division courses that include regular laboratory or fieldwork:

Choose one of the following courses:

BIOL 101L	Molecular Biology Laboratory	2
BIOL 102L	Toxic RNA Lab II	5
BIOL 107L	Synthetic Gene Regulation Lab II	5
BIOL 122K	Phage Biology Lab I	5
CHEM 160K	Biochemistry Research Laboratory	5
CHEM 161K	Chemical Biology Research Laboratory	5

Plus one additional laboratory or field course

Students choose one upper-division BIOE or BIOL course identified with an "L" (i.e. BIOL 103L, BIOE 128L, etc) or BIOL 104B, CHEM 160L or CHEM 161L.

If the additional laboratory course is BIOL 103L, BIOL 104B, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 122L, BIOL 186L, CHEM 160L or CHEM 161L, it will also satisfy the disciplinary communication requirement.

Electives

Three additional upper-division electives

Students must complete three additional upper-division electives (5-7 credits each) chosen from the list below. Some of the following courses fulfill the disciplinary communication (DC) requirement.

Note: Lecture/lab combinations count as one course. Students must pass both the lecture and associated lab if the lab follows the lecture in the list below.

BIOL 110	Cell Biology	5
BIOL 111A	Immunology I	5
BIOL 111B	Immunology II	5
BIOL 112	Principles of Virology	5

BIOL 114	Cancer Cell Biology	5
BIOL 115	Eukaryotic Molecular Biology	5
BIOL 118	Principles of Human Genetics	5
BIOL 120	Developmental Biology	5
BIOL 125	Introduction to Neuroscience	5
BIOL 130	Human Physiology	5
BIOE 108	Marine Ecology	5
BIOE 112	Ornithology	5
BIOE 112L	Ornithology Field Studies	2
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124	Mammalogy	5
BIOE 124L	Mammalogy Laboratory	2
BIOE 125	Ecosystems of California	5
BIOE 126	Biology of Large Marine Vertebrates	5
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 129	Biology of Marine Mammals	5
BIOE 131	Animal Physiology	5
BIOE 133	Exercise Physiology	5
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134	Comparative Vertebrate Anatomy	5
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135	Plant Physiology	5
BIOE 135L	Plant Physiology Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 139	Mathematical Modeling and Data Science in Ecology and Evolution	5
BIOE 140	Behavioral Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 142L	Animal Behavior in the Wild (A Virtual Field Course)	5
BIOE 145	Plant Ecology	5
BIOE 147	Community Ecology	5
BIOE 149	Disease Ecology	5
BIOE 155	Freshwater Ecology	5
BIOE 157A	Evolution Field Class in Southern Africa	5
BIOE 157B	Ichthyology Field Class in Southern Africa	7
BIOE 161	Kelp Forest Ecology	5
BIOE 163	Ecology of Reefs, Mangroves, and Seagrasses	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOE 165	Marine Conservation Biology	5
BIOE 172	Population Genetics	5
BIOE 173	Contemporary Genetics	5
BIOE 174	Evolutionary Medicine	5
BIOE 175	Conservation Genomics	5
METX 100	Introduction to Microbiology	5
METX 133	Medical Microbiology	5
METX 135	Functional Anatomy	5
METX 135L	Functional Anatomy Lab	3
METX 140	Molecular Biology and Microbial Genetics	5
METX 150	Applied and Environmental Microbiology	5

Disciplinary Communication (DC) Requirement

The DC requirement in the biology B.S. degree can be satisfied either by completing two BIOE courses or by completing one 5-credit BIOL lab.

For the BIOE option, choose two Ecology and Evolutionary Biology courses from this group:

Note: Lecture/lab combinations count as one course.

BIOE 108	Marine Ecology	5
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 153C	Disciplinary Communication for Biologists	5

BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 171	Disciplinary Communication for Biologists	5
BIOE 172	Population Genetics	5
BIOE 174	Evolutionary Medicine	5

For 2-credit BIOE lab courses listed above that are taken concurrently with 5-credit lectures, both courses must be passed to receive one half of the DC requirement. BIOE 117 and BIOE 137 require concurrent enrollment in 2-credit labs, BIOE 117L and BIOE 137L, but these are not part of the DC requirement.

For the BIOL option, choose one course from this group:

BIOL 103L	Toxic RNA Lab III	5
BIOL 104B	Human Genetic Variation Laboratory II	5
BIOL 105L	Eukaryotic Genetics Laboratory	5
BIOL 106L	Eukaryotic Genetic Engineering	5
BIOL 108L	Synthetic Gene Regulation Lab III	5
BIOL 109L	Yeast Molecular Genetics Laboratory	5
BIOL 115L	Eukaryotic Molecular Biology Laboratory	5
BIOL 120L	Development Laboratory	5
BIOL 121L	Environmental Phage Biology Laboratory	5
BIOL 122L	Phage Biology Lab II	5
BIOL 129L	Neurobiology Lab	5
BIOL 186L	Undergraduate Research in MCD Biology	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5
METX 100L	Microbiology Laboratory	5

Comprehensive Requirement

All majors have a comprehensive requirement. For the Biology B.S., this requirement is satisfied via the completion of the above laboratory or field course requirement.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Biology B.S. First-Year Student Four-Year Planner

Additional first-year student sample planners

	Fall	Winter	Spring	Summer
Entering				
1st (frosh)	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL	
	MATH 11A or MATH 19A	MATH 11B or MATH 19B	BIOL 20A	
2nd (soph)	BIOE 20B	BIOL 105	BIOL 100	
	BIOL 20L	CHEM 8B	STAT 5 or STAT 7/STAT 7L	
	CHEM 8A CHEM 8L			
3rd (junior)	BIOL 101 BIOL 101L		BIOE 107	
	BIOE 20C	PHYS 6A CHEM 6L	PHYS 6B	
4th (senior)	BIOE 109	Biology Elective #1 of 3	Biology Elective #3 of 3	
	PHYS 6C	Biology Electiv	DC Lab (unless satisfied	

		e #2 of 3	via 2 of the electives)	

* WRIT 2 should be taken in or before spring quarter of the second year.

The following general education requirements will be fulfilled by the major requirements listed in the above planner: MF, SI, and SR. In addition to the GE requirements satisfied by the above courses, a student will also need to complete courses satisfying the CC, ER, IM, TA, PE, and PR general education requirements.

Sample Biology B.S. Transfer Two-Year Planner

Additional transfer student sample planners

	Fall	**Winter**	**Spring**	**Summer**
Entering				
3rd (junior)	BIOL 105	BIOL 100	BIOL 101 BIOL 101L	
	BIOE 107	PHYS 6A PHYS 6L	PHYS 6B	
4th(senior)	PHYS 6C	BIOE 109	Biology Elective #2 of 3	
		Biology Elective #1 of 3	Biology Elective #3 of 3	
		STAT 5 or STAT 7/STAT 7L	DC Lab (unless satisfied via 2 of the electives)	

This planner assumes that a student has completed all UC Transfer Pathway courses:

- General biology with lab (full introductory sequence) BIOL 20A, BIOE 20B, BIOL 20L, BIOE 20C
- General chemistry with lab (one-year sequence) CHEM 3A, CHEM 3B CHEM 3BL, and CHEM 3C and CHEM 3CL
- Calculus for STEM majors (one-year sequence) MATH 11A and MATH 11B
- Organic chemistry (full sequence with lab) CHEM 8A CHEM 8L and CHEM 8B

GLOBAL AND COMMUNITY HEALTH B.S.

Information and Policies

Introduction

The goal of the Global and Community Health (GCH) B.S. major is to serve the needs of students who aspire to a wide range of careers in the science of medicine and direct patient care. Students in the GCH B.S. major will learn about the biological bases of health and disease and how biology interacts with social, political, economic, and environmental factors to create patterns of disease in communities and societies. GCH B.S. students choose between two concentrations in this major. The biomedical concentration prepares students whose primary focus is on the biology of disease. The public and community health concentration interweaves the biological and social determinants of health.

Students in both concentrations take a course in the foundations in global and community health along with introductory courses in biology, general chemistry, organic chemistry, calculus and statistics. In the upper division, all students take courses in biochemistry, epidemiology and environmental health. Students in the biomedical concentration also take advanced courses in genetics, molecular and cell biology, human physiology, and five quarters of Spanish, culminating in a course in medical Spanish. Students in the public and community health concentration take an introductory physiology course, an advanced course in community health, and elective courses in the biological and social contexts of health. Students in both concentrations also take courses in global and community health communication and complete a capstone course in which they participate in interdisciplinary teams to analyze a contemporary problem in global and community health.

Medical and professional school admissions requirements vary; students should verify that their coursework will satisfy the admissions requirements of the programs to which they plan to apply. Check our Health Careers webpage for more information on how you can academically prepare for a career in health care and/or public health. Additional information is available at the UCSC Career Center.

Academic Advising for the Program

Students should take full advantage of academic advising and should keep in frequent contact with the advisers to stay informed about late announcements of courses, changes in scheduling, and opportunities for special study. Transfer students should also consult the Transfer Information and Policy Section. For additional advice and information:

GCH B.S. Advising
Social Sciences 1, Suite #117
gchBSadvising@ucsc.edu

Program Learning Outcomes

Students who successfully complete the global and community health B.S. major will be able to:

- describe the biological and environmental contexts of health;
- describe the social, economic, and cultural contexts of global and community health;
- describe the institutional and policy contexts of global and community health;
- apply methods and skills for biological and population analyses to problems in global and community health; and,
- demonstrate an interdisciplinary understanding of global and community health in practice.

Getting Started in the Major: Frosh

Prerequisites

This major is highly course-intensive and/or sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz. Students should take Foundations for Global and Community Health (GCH 1) as soon as possible. Due to the demanding nature of the major, students must begin their science coursework as early as possible. MATH 11A, MATH 16A, or MATH 19A; CHEM 3A, CHEM 3B and CHEM 3C or CHEM 4A and CHEM 4B; CHEM 8A; and, BIOL 20A, BIOE 20B, and BIOL 20L must be completed before the sixth quarter in order for students to qualify for admission to the global and community health B.S. major. For an overview of prerequisites and getting started in the major, please visit our GCH B.S. advising site.

An online mathematics placement assessment in ALEKS PPL is required to enroll in a math course. Global and community health majors are expected and encouraged to work in the learning modules in ALEKS PPL to be able to enroll in MATH 11A, MATH 16A, or MATH 19A. For more information see the mathematics placement website.

Students intending to major in the global and community health B.S., biomedical concentration should take the Spanish placement assessment, offered by the Department of Languages and Applied Linguistics, to determine the level at which they should begin the Spanish sequence.

Transfer Information and Policy

Transfer and Admission Screening Policy

The global and community health program encourages applications from transfer students. The global and community health B.S. major has a major qualification policy that limits access to the program to students who have successfully completed a subset of foundational coursework. See qualifying for the major as a transfer applicant for more information.

To be considered for admission as a proposed global and community health B.S. major, transfer students must complete the following courses or their equivalents prior to transfer, by the end of the spring term for students planning to enter in the fall with grades of C or higher in each course.

BIOE 20B	Development and Physiology	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
CHEM 8A	Organic Chemistry	5

Plus, one of the following series of chemistry courses:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus, one of the following mathematics courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

BIOL 20L is not required for students who have completed BIOL 20A and BIOE 20B from California community colleges.

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

One of the following courses

MATH 11B	Calculus with Applications	5
MATH 16B	Mathematics for Life Sciences	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus the following courses

CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Please see our site on preparing to transfer as an GCH BS major for more complete information.

Prospective students are encouraged to prioritize required and recommended major preparation, and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

Students who are proposed in a different major and have advanced standing when they enter UCSC require permission from the department to change into the major. Admission to the major is not guaranteed.

If, prior to enrolling at UCSC, a student takes a course articulated to STAT 5, they may petition to have the STAT7/STAT 7L requirement waived. However, once matriculated at UCSC, GCH students should take STAT7/STAT 7L.

Getting Started in the Major: Transfer Students

Transfer students who have met the major qualification requirements are encouraged to declare the major during their first quarter at UC Santa Cruz. Transfer students should complete the required course, Foundations of Global and Community Health (GCH 1) as soon as possible. In addition, students in the biomedical concentration should complete biochemistry (BIOL 100), genetics (BIOL 105), and molecular biology (BIOL 101) by the end of their first year at UCSC since they are prerequisites for the majority of other required courses. Transfer students in the biomedical concentration should also take the Spanish placement assessment upon arrival. We encourage transfer students to complete the required Spanish courses (including SPAN 5M) before the fall of their second year.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify for the global and community health B.S. major, students must pass the following courses or their equivalents with a grade of C+ or better in each course. Some courses may be satisfied via exam credit.

All of the following courses:

BIOE 20B	Development and Physiology	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
CHEM 8A	Organic Chemistry	5

Plus one of the following series of chemistry courses:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus one of the following courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Appeal Process

Students who are not eligible to declare the major may submit an appeal to the global and community health B.S. faculty advisor. The department will notify the student and their college of the outcome of the appeal within 15 working days of the quarterly appeal deadline.

See our appeal process for more information.

How to Declare a Major

Students should submit a petition to declare by completing the online declaration petition as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

Each major/minor advising office has a process for declaring. To initiate the process to declare, please complete the online declaration petition located on the GCH website. For assistance, please contact GCH BS advising at gchBSadvising@ucsc.edu.

Letter Grade Policy

All courses that are taken to satisfy any major requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

At least half of the upper-division courses required for the major must be taken at UC Santa Cruz, not as transfer credits from another institution. If a student plans to transfer to UCSC from another institution, the student is advised to contact GCH B.S. Advising at UCSC before enrolling in upper-division courses at the student's institution or any institution other than UCSC. This advising will help students understand the limitation of transferring upper-division courses from other institutions to UCSC. For more information on transferring courses to UCSC, please consult the undergraduate website.

Once matriculated, a student must receive prior permission from the department to satisfy the BIOL 20A, BIOL 100, BIOL 105, BIOL 101, or BIOL 110 requirements with courses taken at other institutions. Students who wish to receive credit toward the major for these or other courses taken either at UCSC or at another institution should contact GCH B.S. advising.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in the Global and Community Health B.S. and either the Global and Community Health B.A. or any other major/minor offered by the departments of Chemistry and Biochemistry, Ecology and Evolutionary Biology, Microbiology and Environmental Toxicology or MCD Biology.

Should a student choose to double major, they must qualify for and complete the Disciplinary Communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. We encourage interested students to participate. Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

Students interested in study abroad need to get an early start on their basic science requirements, including chemistry, mathematics, and introductory biology and must declare their major prior to applying to go abroad. Students interested in studying abroad should visit the EAP office as soon as possible to begin planning. They should also seek advice about their EAP plan for major courses at UC Santa Cruz from GCH B.S. Advising and receive their approval.

Honors

Honors in the majors are awarded to graduating students whose academic performance demonstrates excellence at a grade point average (GPA) of 3.5 or above. Highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

Medical and Professional School Admission

Medical and professional school admissions requirements vary; students should verify that their coursework will satisfy the admissions requirements of the programs to which they plan to apply.

[Optional Catchall]

Biomedical Concentration

Course Requirements

Students complete the Biomedical Concentration by satisfying the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

All of the following courses:

BIOE 20B	Development and Physiology	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
CHEM 8A	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8B	Organic Chemistry	5
CHEM 8M	Organic Chemistry Laboratory	2
GCH 1	Foundations for Global and Community Health	5
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6L	Introductory Physics I Laboratory	1
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

BIOL 20L is not required for students who have completed BIOL 20A and BIOE 20B at California community colleges.

Note: CHEM 109 is also recommended for pre-med students.

Plus one of the following series of courses:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Students may transition between the MATH 11 and 19 series per the Calculus Series Transition Policy.

Language Requirement

SPAN 1-SPAN 4 or the equivalent and one quarter of Spanish for health-care workers (SPAN 5M).

SPAN 1	First-Year Spanish	5
SPAN 2	First-Year Spanish	5
SPAN 3	First-Year Spanish	5
SPAN 4	Second-Year Spanish	5
SPAN 5M	Medical Spanish	5

Upper-Division Courses

All of the following courses:

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5
BIOL 105	Genetics	5
BIOL 110	Cell Biology	5
BIOL 113	Principles of Epidemiology	5
BIOL 130	Human Physiology	5
BIOL 130L	Human Physiology Laboratory	2
GCH 190	Global and Community Health Task Force	5
GCH 195	Global and Community Health Communication	2
METX 115	Environmental Health Science	5

Internship Requirement:

Students must participate in a community health-care service activity approved by the health sciences internship coordinator. Credit may be earned over multiple quarters. This requirement satisfies the Comprehensive Requirement.

BIOL 189	Health Sciences Internship	3

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in global and community health B.S. degree is satisfied by completing the following courses:

GCH 190	Global and Community Health Task Force	5
GCH 195	Global and Community Health Communication	2

Comprehensive Requirement

All majors have a comprehensive requirement. For the global and community health B.S., this requirement can be satisfied by receiving a passing grade in the Health Sciences Internship, BIOL 189.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Global and Community health B.S., Biomedical Concentration, First-Year Student Four-Year Planner

Additional first-year student sample planners.

	Fall	Winter	Spring	Summer
Entering				College 1A

			Summer Edge (optional)
1st (frosh)	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL
	MATH 11A	MATH 11B	BIOL 20A
		WRIT 1/WRIT 1E (if needed)	
2nd (soph)	BIOE 20B	BIOL 20L	BIOL 100
	GCH 1	CHEM 8B CHEM 8M	STAT 7 STAT 7L
	CHEM 8A CHEM 8L		METX 115
	WRIT 2*		
3rd (junior)	BIOL 105	BIOL 101	BIOL 110
	SPAN 1	PHYS 6B	SPAN 3
	PHYS 6A PHYS 6L	SPAN 2	BIOL 113
4th (senior)	BIOL 130 BIOL 130L	GCH 195	BIOL 189
	SPAN 4	SPAN 5M	GCH 190
	PHYS 6C		

* WRIT 2 should be taken in or before spring quarter of the second year.

The following general education requirements will be fulfilled by the major requirements listed in the above planner: MF, SI, SR, CC and PR general education requirements. In addition to the GE requirements satisfied by the above courses, a student will also need to complete courses satisfying the ER, IM, TA and PE general education requirements.

Sample Global and Community Health B.S., Biomedical Concentration, Transfer Two-Year Planner

Additional transfer student sample planners.

	Fall	**Winter**	**Spring**	**Summer**
Entering				College 1A Summer Edge (optional)
3rd (junior)	BIOL 105	BIOL 100	BIOL 101	
	GCH 1	PHYS 6B	METX 115	
	PHYS 6A PHYS 6L	SPAN 1STAT 7 STAT 7L	SPAN 2PHYS 6C	
4th (senior)	BIOL 110	BIOL 130 BIOL 130L	SPAN 5M	
		SPAN 4	BIOL 189	
	SPAN 3	GCH 190	GCH 195BIOL 113	

This planner assumes that a student has completed all UC Transfer Pathway courses:

- General biology with lab: BIOL 20A, BIOE 20B, BIOL 20L.
- General chemistry with lab (one-year sequence) CHEM 3A, CHEM 3B CHEM 3BL and CHEM 3C CHEM 3CL.
- Calculus for STEM majors (one-year sequence) MATH 11A and MATH 11B.

- Organic chemistry (full sequence with lab) CHEM 8A CHEM 8L and CHEM 8B CHEM 8M.

Initial Spanish course placement is based on the Spanish placement exam. Students who lack prior experience with the Spanish language should consider taking Spanish courses prior to transferring to UCSC.

Public and Community Health Concentration

Course Requirements

Lower-Division Courses

Core Courses

BIOE 20B	Development and Physiology	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
CHEM 8A	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8B	Organic Chemistry	5
CHEM 8M	Organic Chemistry Laboratory	2
GCH 1	Foundations for Global and Community Health	5
METX 41	Physiology of Disease	5
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

BIOL 20L is not required for students who have completed BIOL 20A and BIOE 20B at California community colleges.

Note: CHEM 109 is also recommended for pre-med students.

Plus one of the following series of courses:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Lower-Division Breadth Requirement (Choose One)

ANTH 2	Introduction to Cultural Anthropology	5
BIOL 80A	Female Physiology and Gynecology	5
BIOL 80J	Biology of Emerging and Pandemic Diseases	5
BIOL 88	Studies in Medicine: Its Art, History, Science, and Philosophy	5
CLNI 30	(H)ACER Undergraduate Community Internship	2
CMMU 10	Introduction to Community Activism	5
CSE 80A	Universal Access: Disability, Technology, and Society	5
ENVS 25	Environmental Politics, Economics and Justice	5
ENVS 80F	Introduction to Agroecology and Sustainable Food Systems	5
FMST 10	Feminisms of/and the Global South	5
FMST 30	Feminism and Science	5
FMST 31	Disability Studies	5
FMST 41	Trans Gender Bodies	5
HIS 81	Science in the Colonial World	5
LALS 55	AIDS Across the Americas	5
LALS 57	Drugs, Addiction, and Recovery in the Americas	5
LIT 80K	Topics in Medical Humanities	5
POLI 17	U.S. and the World Economy	5
POLI 20	American Politics	5
POLI 61	Politics of Social Policy	5
PSYC 1	Introduction to Psychology	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
SPAN 3	First-Year Spanish	5
SPAN 4	Second-Year Spanish	5
SPAN 5M	Medical Spanish	5

Upper-Division Courses

All of the following courses:

BIOL 100	Biochemistry	5
BIOL 113	Principles of Epidemiology	5
GCH 190	Global and Community Health Task Force	5
GCH 195	Global and Community Health Communication	2
METX 115	Environmental Health Science	5

One of the following courses:

CMMU 165	Community Analysis for Global Health	5
METX 108	Introduction to Research Methods in Global and Community Health	5

Internship Requirement:

BIOL 189	Health Sciences Internship	3

STEM Elective (Choose One):

BIOE 118	Plants and Society: the Biology of Food, Shelter, and Medicine	5
BIOL 101	Molecular Biology	5
BIOL 105	Genetics	5
BIOL 117	Global Health and Neglected Diseases	5
CHEM 169	Chemistry and Biology of Drug Design and Discovery	5
CHEM 171	Chemical Biology	5
METX 100	Introduction to Microbiology	5
METX 102	Cell and Molecular Toxicology	5
METX 133	Medical Microbiology	5
METX 135	Functional Anatomy	5
METX 135L	Functional Anatomy Lab	3

Non-STEM Electives (Choose two):

ANTH 110E	Anthropology of Global Environmental Change	5
ANTH 110F	Evolution of Human Diet	5
ANTH 110M	Cultures of Mental Health	5
ANTH 110T	Motherhood in American Culture	5
ANTH 110Y	Feeding California	5
ANTH 111	Human Ecology	5
ANTH 112	Life Cycles	5
ANTH 129	Beyond Borders: Other Globalizations and Histories of Interconnection	5
ANTH 134	Medical Anthropology: An Introduction	5
ANTH 136	The Biology of Everyday Life	5
ANTH 144	Anthropology of Poverty and Welfare	5
ANTH 146	Anthropology and the Environment	5
ANTH 148	Gender and Global Development	5
ANTH 160	Reproductive and Population Politics	5
ANTH 161	The Anthropology of Food	5
ANTH 161S	Anthropology of Food, Abroad	6
ANTH 162	Anthropology of Displaced Persons	5
BIOL 188	A Life in Medicine	3
CMMU 156	Politics of Food and Health	5
CMMU 160	Public Health	5
CMMU 161	Gender Health and Justice	5
CMMU 162	Community Gardens and Social Change	5
CMMU 163	Health Care Inequalities	5
CMMU 164	Health Justice in Conflict	5
DANM 136	Mapmaking for Environmental Activism	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 125	Race, Sex, and Technology	5
GCH 123	Migration as a Social Determinant of Health	5
GCH 186	Global Health Politics	5
HIS 101D	World History of Science	5
HIS 101F	Global Environmental History	5
HIS 139C	Queer Pasts: A Radical Telling of LGBTQ History in the United States	5
HIS 151	Keywords in the History of Science and Medicine	5
HIS 151A	Medicine and the Body in the Colonial World	5
HIS 151B	Drugs in World History	5
HIS 177A	Slaves, Soldiers, and Scientists: History of the Tropics	5
LALS 175	Migration, Gender, and Health	5
LALS 194X	Extractivism and Socio-Environmental Conflicts in the Americas	5
LGST 108	Gender, Sexuality, and Law	5
LGST 137	International Environmental Law and Policy	5
LGST 173	Disability, Law, & Politics	5
POLI 102	Doing Political Research	5
POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5
POLI 121	Racism & Justice in America	5
POLI 160B	International Law	5
POLI 166	Politics of Migration	5
POLI 175	Human Rights	5
POLI 182	The Power to Punish	5
POLI 187	Decolonial Global Health: A View from the Middle East and Africa	5

POLI 189	Pandemics, Politics, and Global and Community Health	5
POLI 190S	Policies and Practices of Health Systems Strengthening	5
SOCY 121	Sociology of Health and Medicine	5
SOCY 121G	Genomics and Society	5
SOCY 127P	Sociology of Drugs, Botanicals and Pharmaceuticals	5
SOCY 128C	Social History of Democracy, Anarchism, and Indigenism	5
SOCY 128I	Race and Law	5
SOCY 128J	The World Jury on Trial	5
SOCY 128M	International Law and Global Justice	5
SOCY 132	Sociology of Science and Technology	5
SOCY 135	Healing Justice	5
SOCY 153	Sociology of Emotions	5
SOCY 159	Pregnancy and Birth	5
SOCY 161	Postpartum	5

Students may petition for substitution of elective courses.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in the global and community health B.S. degree is satisfied by completing the following courses:

GCH 190	Global and Community Health Task Force	5
GCH 195	Global and Community Health Communication	2

Comprehensive Requirement

All majors have a comprehensive requirement. For the global and community health B.S., this requirement can be satisfied by receiving a passing grade in the Health Sciences Internship, BIOL 189.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Global and Community Health B.S., Public and Community Health Concentration, First-Year Student, Four-Year Planner

Additional first-year student sample planners.

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL	
	MATH 11A	MATH 11B	BIOL 20A	
	College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	BIOE 20B	METX 41	CHEM 8B CHEM 8M	
	BIOL 20L	CHEM 8A CHEM 8L	Lower-Division Breadth	
	GCH 1			
	WRIT 2*			
3rd (junior)	NON-STEM Elective 1	CMMU 165/GCH 165	BIOL 113	
	BIOL 100	STEM Elective	METX 115	
	STAT 7 STAT 7L		GCH 195	
4th (senior)		Non-STEM Elective 2	BIOL 189	
	GCH 190			

* WRIT 2 should be taken in or before spring quarter of the second year.

The following general education requirements will be fulfilled by the major requirements listed in the above planner: MF, SI, SR, CC and PR general education requirements. In addition to the GE requirements satisfied by the above courses, a student will also need to complete courses satisfying the ER, IM, TA and PE general education requirements.

Sample Global and Community Health B.S., Public and Community Health Concentration, Transfer Two-Year Planner

Additional transfer student sample planners.

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	BIOL 100	METX 41	METX 115	
	GCH 1	STAT 7 STAT 7L	NON-STEM Elective 2	
		NON-STEM Elective 1	BIOL 113	
4th (senior)				
	STEM Elective	CMMU 165/GCH 165	BIOL 189	
	GCH 190	GCH 195		

This planner assumes that a student has completed all UC Transfer Pathway courses:

- General biology with lab: BIOL 20A, BIOE 20B, BIOL 20L
- General chemistry with lab (one-year sequence) CHEM 3A, CHEM 3B CHEM 3BL and CHEM 3C CHEM 3CL
- Calculus for STEM majors (one-year sequence) MATH 11A and MATH 11B
- Organic chemistry (full sequence with lab) CHEM 8A CHEM 8L and CHEM 8B CHEM 8M

MOLECULAR, CELL, AND DEVELOPMENTAL BIOLOGY B.S.

Information and Policies

Introduction

The molecular, cell and developmental (MCD) biology major is designed to prepare students for rigorous graduate programs in biomedical research, medical and other healthcare professional programs, for careers in the biotechnology industry. This major is more structured than the general biology major and requires that students pay careful attention to the prerequisites required for upper-division biology courses. With proper advance planning, a student with virtually any degree can prepare a competitive application for medical school or healthcare professional school. Check our Health Careers webpage for more information on how you can academically prepare for a career in healthcare. Additional information is available at the UC Santa Cruz Career Center.

Program Learning Outcomes

Students who successfully complete the MCD major will be able to:

- demonstrate knowledge of how biochemistry, genetics, and molecular biology are used to elucidate both the function of cells and their organization into tissues;
- recognize that biology has a basis in chemistry, physics, and mathematics;
- describe how scientific method is used to explain natural phenomena;
- use effective oral and written language skills to communicate scientific data and ideas;
- understand safe laboratory practices and perform basic molecular biology techniques;
- generate hypotheses, evaluate data, and design experiments to investigate a scientific problem; and
- present advanced knowledge in the specialized fields of molecular and cell biology.

Academic Advising for the Program

Students should take full advantage of academic advising and should keep in frequent contact with the advisers to stay informed about late announcements of courses, changes in scheduling, and opportunities for special study. Transfer students should also consult the Transfer Information and Policy Section. For additional advice and information:

MCD Advising
389 Thimann Labs
mcdadvising@ucsc.edu

Getting Started in the Major: Frosh

Prerequisites

Due to the demanding nature of the major, students must begin their science coursework as early as possible. MATH 11A or MATH 16A or MATH 19A; CHEM 3A, CHEM 3B, CHEM 3C, and CHEM 8A; and BIOL 20A, BIOE 20B, and BIOL 20L must be completed before the sixth quarter in order for students to qualify for admission to MCD biology-sponsored majors, including the biology B.S., human biology B.S., molecular, cell and developmental biology B.S., and neuroscience B.S. majors. For an overview of prerequisites and getting started in the major, please visit our MCD Biology B.S. website.

An online mathematics placement examination is required to enroll in a math course. Biological science majors are expected to take this examination and are encouraged to work in the learning modules until they place into calculus. For more information see the mathematics placement website.

Transfer Information and Policy

Transfer Admission Screening Policy

MCD Biology encourages applications from transfer students in the biological sciences. The department has a major qualification policy that limits access to the program to students who have successfully completed a subset of foundational coursework. Transfer students are held to similar criteria when being assessed for admission to UC Santa Cruz as an MCD-sponsored major. See qualifying for the major as a transfer applicant for more information.

To be considered for admission as a proposed molecular, cell and developmental biology B.S. major, transfer students must complete the following courses or their equivalents prior to transfer, by the end of the spring term for students planning to enter in the fall.

To be considered for admission as a proposed molecular, cell and developmental biology B.S. major during the winter term, transfer students must also complete a course equivalent to CHEM 8B prior to transfer.

One of these options

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus these courses

CHEM 8A	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Plus, one of the following calculus courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 11A	Calculus with Applications	5

BIOL 20L is not required for students who have completed BIOL 20A and BIOE 20B at California community colleges.

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

One of the following courses

MATH 11B	Calculus with Applications	5
MATH 16B	Mathematics for Life Sciences	5

Plus one of the following options

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus both of the following courses

CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2

Getting Started in the Major: Transfer Students

Transfer students who have met the major qualification requirements are encouraged to declare the major during their first quarter at UC Santa Cruz. Transfer students should complete the required courses in genetics (BIOL 105), biochemistry (BIOL 100), and molecular biology (BIOL 101 and BIOL 101L) by the end of their first year at UCSC since they are prerequisites for the majority of other required courses.

Major Qualification Policy and Declaration Process

Major Qualification

The Department of Molecular, Cell and Developmental Biology has a qualification policy that applies to the biology B.S., molecular, cell and developmental biology B.S., and neuroscience B.S. majors.

To qualify for any of these majors, students must pass (with a grade of C or better) the following courses or their equivalents:

One of the following courses

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following options

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, and CHEM 1C or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as Chemistry 1A, 1B and 1C, with associated laboratories Chemistry 1M and 1N. As of academic year 2023-24, this series was replaced with two distinct series: Chemistry 3A, 3B and 3C, with labs Chemistry 3BL and 3CL; or Chemistry 4A and 4B with labs Chemistry 4AL and BL. Descriptions of these two series are provided here.

Plus these courses

CHEM 8A	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Appeal Process

Students who are not eligible to declare the major may submit an appeal to the Molecular, Cell and Developmental Biology faculty adviser. The department will notify the student and their college of the outcome of the appeal within 15 working days of the quarterly appeal deadline. See our appeal process for more information.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

A student's petition to declare the major will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Letter Grade Policy

All courses that are taken to satisfy any major requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

At least half of the upper-division courses required for the major must be taken at UC Santa Cruz, not as transfer credits from another institution. If a student plans to transfer to UCSC from another institution, the student is advised to contact MCD Advising at UCSC before enrolling in upper-division courses at the student's institution or any institution other than UCSC. This advising will help students understand the limitation of transferring upper-division courses from other institutions to UCSC. For more information on transferring courses to UCSC, please consult the undergraduate website.

Once matriculated, a student must receive permission from the department to satisfy the BIOL 20A, BIOL 100, BIOL 105, BIOL 101 or BIOL 110 requirements with courses taken at other institutions. Students who wish to receive credit toward the major for these or other courses taken either at UCSC or at another institution should contact MCD Advising.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in MCD Biology B.S. and any other major/minor offered by the departments of Chemistry and Biochemistry, Ecology and Evolutionary Biology, Microbiology and Environmental Toxicology or MCD Biology, including the Global and Community Health B.S. major

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. The MCD Biology Department encourages interested students to participate. Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

Students interested in study abroad need to get an early start on their basic science requirements, including chemistry, mathematics, and introductory biology and must declare their major prior to applying to go abroad. Students interested in

studying abroad should visit the EAP office as soon as possible to begin planning. They should also seek advice about their EAP plan for major courses at UC Santa Cruz from MCD Advising and receive their approval.

Honors

Honors in the majors are awarded to graduating students whose academic performance demonstrates excellence at a grade point average (GPA) of 3.5 or above. Highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

Medical and Professional School Admission

Medical and professional school admissions requirements vary; students should verify that their coursework will satisfy the admissions requirements of the programs to which they plan to apply.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

All of the following courses:

BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, and CHEM 1N, or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as Chemistry 1A, 1B and 1C, with associated laboratories Chemistry 1M and 1N. As of academic year 2023-24, this series was replaced with two distinct series: Chemistry 3A, 3B and 3C, with labs Chemistry 3BL and 3CL; or Chemistry 4A and 4B with labs Chemistry 4AL and BL. Descriptions of these two series are provided here.

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Students may transition between the MATH 11 and MATH 19 series per the Calculus Series Transition Policy.

Plus one of the following options

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus all of the following courses:

PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
	AND	
	Either one of these courses	
PHYS 6L	Introductory Physics I Laboratory	1
	OR	
PHYS 6M	Introductory Physics II Laboratory	1
	OR	
PHYS 6N	Introductory Physics III Laboratory	1

Upper-Division Courses

All of the following courses:

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5
BIOL 105	Genetics	5
BIOL 110	Cell Biology	5
BIOL 120	Developmental Biology	5

Plus one of the following courses:

BIOL 104A	Human Genetic Variation Laboratory I	5
BIOL 104L	Introduction to Bioinformatics Lab	2
BME 110	Computational Biology Tools	5

Plus one of the following courses:

BIOL 101L	Molecular Biology Laboratory	2
BIOL 102L	Toxic RNA Lab II	5
BIOL 107L	Synthetic Gene Regulation Lab II	5
BIOL 122K	Phage Biology Lab I	5
CHEM 160K	Biochemistry Research Laboratory	5
CHEM 161K	Chemical Biology Research Laboratory	5

Electives

At least two elective courses from the following list, at least one of which must be a BIOL course.

BIOL 111A	Immunology I	5
BIOL 111B	Immunology II	5
BIOL 112	Principles of Virology	5
BIOL 114	Cancer Cell Biology	5
BIOL 115	Eukaryotic Molecular Biology	5
BIOL 117	Global Health and Neglected Diseases	5
BIOL 118	Principles of Human Genetics	5
BIOL 124	Optical Imaging for Biological Research	3
BIOL 125	Introduction to Neuroscience	5
BIOL 127	Mechanisms of Neurodegenerative Disease	5
BIOL 130	Human Physiology	5
BIOE 109	Evolution	5
BME 130	Genomes	5
BME 160	Research Programming in the Life Sciences	6
BME 178	Stem Cell Biology	5
PHYS 180	Biophysics	5

One of the following laboratory courses:

BIOL 100L	Biochemistry Laboratory	5
BIOL 105L	Eukaryotic Genetics Laboratory	5
BIOL 103L	Toxic RNA Lab III	5
BIOL 104B	Human Genetic Variation Laboratory II	5
BIOL 106L	Eukaryotic Genetic Engineering	5
BIOL 108L	Synthetic Gene Regulation Lab III	5
BIOL 109L	Yeast Molecular Genetics Laboratory	5
BIOL 115L	Eukaryotic Molecular Biology Laboratory	5
BIOL 120L	Development Laboratory	5
BIOL 121L	Environmental Phage Biology Laboratory	5
BIOL 122L	Phage Biology Lab II	5
BIOL 129L	Neurobiology Lab	5
BIOL 186L	Undergraduate Research in MCD Biology	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5

This course will satisfy the disciplinary communication (DC) and comprehensive requirement.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in molecular, cell, and developmental biology is satisfied by completing one of the following courses:

BIOL 100L	Biochemistry Laboratory	5
BIOL 103L	Toxic RNA Lab III	5
BIOL 104B	Human Genetic Variation Laboratory II	5
BIOL 105L	Eukaryotic Genetics Laboratory	5
BIOL 106L	Eukaryotic Genetic Engineering	5
BIOL 108L	Synthetic Gene Regulation Lab III	5
BIOL 109L	Yeast Molecular Genetics Laboratory	5
BIOL 115L	Eukaryotic Molecular Biology Laboratory	5
BIOL 120L	Development Laboratory	5
BIOL 121L	Environmental Phage Biology Laboratory	5
BIOL 122L	Phage Biology Lab II	5
BIOL 129L	Neurobiology Lab	5
BIOL 186L	Undergraduate Research in MCD Biology	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5

Comprehensive Requirement

All majors have a comprehensive requirement. For the MCD Biology B.S., this requirement can be satisfied by receiving a passing grade in an independent research laboratory:

Choose one of the following courses:

BIOL 100L	Biochemistry Laboratory	5
BIOL 103L	Toxic RNA Lab III	5
BIOL 104B	Human Genetic Variation Laboratory II	5
BIOL 105L	Eukaryotic Genetics Laboratory	5
BIOL 106L	Eukaryotic Genetic Engineering	5
BIOL 108L	Synthetic Gene Regulation Lab III	5
BIOL 109L	Yeast Molecular Genetics Laboratory	5
BIOL 115L	Eukaryotic Molecular Biology Laboratory	5
BIOL 120L	Development Laboratory	5
BIOL 122L	Phage Biology Lab II	5
BIOL 121L	Environmental Phage Biology Laboratory	5
BIOL 129L	Neurobiology Lab	5
BIOL 186L	Undergraduate Research in MCD Biology	5
CHEM 160L	Biochemistry Research Laboratory	5
CHEM 161L	Chemical Biology Research Laboratory	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample First-Year Four-Year Planner

Additional first-year sample planners

	Fall	Winter	Spring	Summer
Entering				
1st (frosh)	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL	
	MATH 11A or 19A	MATH 11B or 19B	BIOL 20A	
2nd (soph)	BIOE 20B	PHYS 6A PHYS 6L	BIOL 100	
	BIOL 20L	CHEM 8B	PHYS 6B	
	CHEM 8A CHEM 8L			
3rd (jr)	BIOL 101 BIOL 101L	BIOL 105	BIOL 110	
	PHYS 6C	BIOE 20C	STAT S 5 or STAT 7/STAT 7L	
4th (sr)	MCD Elective #1	BIOL 120	MCD Elective #2	
	BIOL 104L	UD LAB/DC		

* WRIT 2 should be taken in or before spring quarter of the second year.

The following general education requirements will be fulfilled by the major requirements listed in the above planner: MF, SI, and SR. In addition to the general education requirements satisfied by the above courses, a student will also need to complete courses satisfying the CC, ER, IM, TA, PE, and PR general education requirements.

Sample Transfer Two-Year Planner

Additional transfer student sample planners

	Fall	Winter	Spring	Summer
Entering				
3rd (jr)	BIOL 105	BIOL 100	BIOL 101 BIOL 101L	
	STAT 5 or STAT 7/STAT 7L	PHYS 6A PHYS 6L	PHYS 6B	
4th (sr)	BIOL 110	UD LAB/DC	MCD Elective #1	

PHYS 6C	BIOL 120	MCD Elective #2

This planner assumes that a student has completed all UC Transfer Pathway courses:

- General biology with lab (full introductory sequence) BIOL 20A, BIOE 20B, BIOL 20L, BIOE 20C
- General chemistry with lab (one-year sequence) CHEM 3A, CHEM 3B CHEM 3BL and CHEM 3C CHEM 3CL
- Calculus for STEM majors (one-year sequence) MATH 11A and MATH 11B
- Organic chemistry (full sequence with lab) CHEM 8A CHEM 8L and CHEM 8B

NEUROSCIENCE B.S.

Information and Policies

Introduction

Neuroscience, the study of the nervous system and behavior of animals, is a frontier area in biology, touching psychology on the one hand and computer science on the other. The neuroscience major provides students with rigorous preparation for graduate studies and research in the field of neuroscience. With proper advance planning, a student with virtually any degree can prepare a competitive application for medical school or health care professional school. Check our Health Careers webpage for more information on how you can academically prepare for a career in healthcare. Additional information is available at the UC Santa Cruz Career Center.

Program Learning Outcomes

Students who successfully complete the Neuroscience major will be able to:

- Demonstrate knowledge of how biochemistry, genetics, and molecular biology are used to elucidate both the function of cells and their organization into tissues.
- Recognize that biology has a basis in chemistry, physics, and mathematics.
- Describe how scientific method is used to explain natural phenomena.
- Use effective oral and written language skills to communicate scientific data and ideas.
- Understand safe laboratory practices and perform basic molecular biology techniques.
- Generate hypotheses, evaluate data, and design experiments to investigate a scientific problem.
- Present advanced knowledge in the specialized field of neuroscience.

Academic Advising for the Program

Students should take full advantage of academic advising and should keep in frequent contact with the advisers to stay informed about late announcements of courses, changes in scheduling, and opportunities for special study. Transfer students should also consult the Transfer Information and Policy Section. For additional advice and information:

MCD Advising
389 Thimann Labs
mcdadvising@ucsc.edu

Getting Started in the Major: Frosh

Prerequisites

Due to the demanding nature of the major, students must begin their science coursework as early as possible. MATH 11A or MATH 16A or MATH 19A; CHEM 3A, CHEM 3B, CHEM 3C, and CHEM 8A; and BIOL 20A, BIOE 20B, and BIOL 20L must be completed before the major declaration deadline in order for students to qualify for admission to MCD Biology-sponsored majors. For an overview of prerequisites and getting started in the major, please visit our neuroscience B.S. site.

An online mathematics placement examination is required to enroll in a math course. Biological science majors are expected to take this examination and are encouraged to work in the learning modules until they place into calculus. For more information see the mathematics placement website.

Transfer Information and Policy

Transfer Admission Screening Policy

MCD Biology encourages applications from transfer students in the biological sciences. The department has a major qualification policy that limits access to the program to students who have successfully completed a subset of foundational coursework. Transfer students are held to similar criteria when being assessed for admission to UC Santa Cruz as an MCD-sponsored major. See qualifying for the major as a transfer applicant for more information.

To be considered for admission as a proposed neuroscience B.S. major, transfer students must complete the following courses or their equivalents prior to transfer by the end of the spring term for students planning to enter in the fall.

To be considered for admission as a proposed neuroscience B.S. major during the winter term, transfer students must also complete a course equivalent to CHEM 8B prior to transfer.

One of these groups of courses

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	

CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus all the following courses

CHEM 8A	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Plus one of the following calculus courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

BIOL 20L is not required for students who have completed BIOL 20A and BIOE 20B at California community colleges.

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

	Either these courses	
MATH 11B	Calculus with Applications	5
	OR	
MATH 16B	Mathematics for Life Sciences	5
	OR	
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	AND	
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1
	AND	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	AND	
CHEM 8B	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2

Getting Started in the Major: Transfer Students

Transfer students who have met the major qualification requirements are encouraged to declare the major immediately during their first quarter at UC Santa Cruz. Transfer students should complete the required courses in genetics (BIOL 105), biochemistry (BIOL 100), and molecular biology (BIOL 101 and BIOL 101L) by the end of their first year at UCSC since they are prerequisites for the majority of other required courses.

Major Qualification Policy and Declaration Process

Major Qualification

The Molecular Cell and Developmental Biology Department has a qualification policy that applies to the biology B.S., molecular, cell and developmental biology B.S., and neuroscience B.S. majors.

To qualify for any of these majors, students must pass (with a grade of C or better) the following courses or their equivalents:

One of the following courses:

MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, and CHEM 1C or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as Chemistry 1A, 1B and 1C, with associated laboratories Chemistry 1M and 1N. As of academic year 2023-24, this series was replaced with two distinct series: Chemistry 3A, 3B and 3C, with labs Chemistry 3BL and 3CL; or Chemistry 4A and 4B with labs Chemistry 4AL and BL. Descriptions of these two series are provided here.

Plus all of the following courses:

CHEM 8A	Organic Chemistry	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Appeal Process

Students who are not eligible to declare the major may submit an appeal to the MCD Biology faculty adviser. The department will notify the student and their college of the outcome of the appeal within 15 working days of the quarterly appeal deadline. See our appeal process for more information.

How to Declare a Major

Students should submit a petition to declare by completing the online declaration petition as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

A student's petition will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

The Petition for Major/Minor declaration form can be accessed by going to MyUCSC and navigating to the Student Homepage and selecting the Undergraduate Student eForms tile > Petition for Major/Minor.

Letter Grade Policy

All courses that are taken to satisfy any major requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

At least half of the upper-division courses required for the major must be taken at UC Santa Cruz, not as transfer credits from another institution. If a student plans to transfer to UCSC from another institution, the student is advised to contact MCD Advising at UCSC before enrolling in upper-division courses at the student's institution or any institution other than UCSC. This advising will help students understand the limitation of transferring upper-division courses from other institutions to UCSC. For more information on transferring courses to UCSC, please consult the undergraduate website.

Once matriculated, a student must receive permission from the department to satisfy the BIOL 20A, BIOL 100, BIOL 105, BIOL 101 or BIOL 110 requirements with courses taken at other institutions. Students who wish to receive credit toward the major for these or other courses taken either at UCSC or at another institution should contact MCD Advising.

Double Majors and Major/Minor Combinations Policy

Students cannot double major/minor in Neuroscience B.S. and any other major/minor offered by the departments of Chemistry and Biochemistry, Ecology and Evolutionary Biology, Microbiology and Environmental Toxicology or MCD Biology, including the Global and Community Health B.S. major

Should a student choose to double major, they must qualify for and complete the disciplinary communication and comprehensive requirements for each of the majors.

Study Abroad

The UC Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. The MCD Biology Department encourages interested students to participate. Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, extensive laboratories, and/or field research experience.

Students interested in study abroad need to get an early start on their basic science requirements, including chemistry, mathematics, and introductory biology and must declare their major prior to applying to go abroad. Students interested in studying abroad should visit the EAP office as soon as possible to begin planning. They should also seek advice about their EAP plan for major courses at UC Santa Cruz from MCD Advising.

Honors

Honors in the majors are awarded to graduating students whose academic performance demonstrates excellence at a grade point average (GPA) of 3.5 or above. Highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above.

Medical and Professional School Admission

Medical and professional school admissions requirements vary; students should verify that their coursework will satisfy the admissions requirements of the programs to which they plan to apply.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

All of the following courses

BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	

CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as Chemistry 1A, 1B and 1C, with associated laboratories Chemistry 1M and 1N. As of academic year 2023-24, this series was replaced with two distinct series: Chemistry 3A, 3B and 3C, with labs Chemistry 3BL and 3CL; or Chemistry 4A and 4B with labs Chemistry 4AL and BL. Descriptions of these two series are provided here.

Plus all of the following courses

CHEM 8A	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8B	Organic Chemistry	5

Plus one of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 16A	Mathematics for Life Sciences	5
MATH 16B	Mathematics for Life Sciences	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Students may transition between the MATH 11 and MATH 19 series per the Calculus Series Transition Policy.

Plus one of the following options:

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus all of the following courses:

PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

Upper-Division Courses

All of the following courses:

BIOL 100	Biochemistry	5
BIOL 101	Molecular Biology	5
BIOL 105	Genetics	5
BIOL 125	Introduction to Neuroscience	5
BIOL 126	Neural Plasticity and Cognitive Neuroscience	5
BIOL 128	Developmental Neurobiology	5

Plus one of the following courses:

BIOL 101L	Molecular Biology Laboratory	2
BIOL 102L	Toxic RNA Lab II	5
BIOL 107L	Synthetic Gene Regulation Lab II	5
BIOL 122K	Phage Biology Lab I	5
CHEM 160K	Biochemistry Research Laboratory	5
CHEM 161K	Chemical Biology Research Laboratory	5

Plus one of the following courses:

BIOL 129A	Advanced Topics in System Neuroscience	5
BIOL 129B	Advanced Topics in Developmental Neurobiology	5
BIOL 129C	Advanced Topics in Nervous System Disorders	5

Plus the following laboratory course:

BIOL 129L	Neurobiology Lab	5

This course satisfies the disciplinary communication (DC) and comprehensive requirements.

Electives

One of the following electives:

NOTE: Lecture/lab combinations count as one course.

BIOE 131	Animal Physiology	5
BIOE 131L	Animal Physiology Laboratory	2
BIOL 110	Cell Biology	5
BIOL 114	Cancer Cell Biology	5
BIOL 115	Eukaryotic Molecular Biology	5
BIOL 118	Principles of Human Genetics	5
BME 110	Computational Biology Tools	5
BME 130	Genomes	5
BME 160	Research Programming in the Life Sciences	6
PHYS 180	Biophysics	5
PSYC 121	Perception	5

PSYC 123	Cognitive Neuroscience	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in neuroscience is satisfied by completing the following course:

BIOL 129L	Neurobiology Lab	5

Comprehensive Requirement

All majors require a comprehensive requirement. For the neuroscience B.S., this requirement can be satisfied by receiving a passing grade in the following laboratory course.

BIOL 129L	Neurobiology Lab	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample First-Year Student Four-Year Planner

Additional first-year student sample planners

	Fall	Winter	Spring	Summer
Entering				
1st (frosh)	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL	
	MATH 11A or MATH 19A	MATH 11B or MATH 19B	BIOL 20A	
2nd (soph)	BIOE 20B	CHEM 8B	BIOL 105	
	BIOL 20L	PHYS 6A	PHYS 6B	
	CHEM 8A CHEM 8L	WRIT 2/ME		
3rd (junior)	BIOL 100	BIOL 125	BIOL 101 BIOL 101L	
	PHYS 6C PHYS 6N	STAT 5 or STAT 7 STAT 7L	BIOL 126	
4th (senior)	Neuro Elective #1 of 1	BIOL 128	BIOL 129A, BIOL 129B or BIOL 129C	
		BIOL 129L		

* WRIT 2 should be taken in or before spring quarter of the second year.

The following general education requirements will be fulfilled by the major requirements listed in the above planner: MF, SI, and SR. In addition to the GE requirements satisfied by the above courses, a student will also need to complete courses satisfying the CC, ER, IM, TA, PE, and PR general education requirements.

Sample Transfer Two-Year Planner

Additional transfer student sample planners

	Fall	Winter	Spring	Summer
Entering				
3rd (junior)	BIOL 100	BIOL 105	BIOL 125	
	PHYS 6A	PHYS 6B	PHYS 6C PHYS 6N	

4th (senior)	BIOL 101 BIOL 101L	BIOL 126	BIOL 128
	Neuro Elective	BIOL 129L	BIOL 129A, BIOL 129B or BIOL 129C
	STATS 5 or STAT 7 STAT 7L		

This planner assumes that a student has completed all UC Transfer Pathway courses:

- General biology with lab (full introductory sequence) BIOL 20A, BIOE 20B, BIOL 20L, BIOE 20C
- General chemistry with lab (one-year sequence) CHEM 3A, CHEM 3B CHEM 3BL and CHEM 3C CHEM 3CL
- Calculus for STEM majors (one-year sequence) MATH 11A and MATH 11B
- Organic chemistry (full sequence with lab) CHEM 8A CHEM 8L and CHEM 8B

BIOLOGY MINOR

The biology minor is designed to incorporate elements of both the ecology and evolutionary biology discipline and the molecular, cell and developmental biology discipline.

Course Requirements

Complete the following requirements. Courses must be taken for a letter grade. Some courses may be satisfied via exam credit.

Lower-Division Courses

All of the following courses

BIOL 20A	Cell and Molecular Biology	5
BIOL 20L	Experimental Biology Laboratory	2
BIOE 20B	Development and Physiology	5
CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5

Plus the following courses:

CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, and CHEM 1C or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as Chemistry 1A, 1B and 1C, with associated laboratories Chemistry 1M and 1N. As of academic year 2023-24, this series was replaced with two distinct series: Chemistry 3A, 3B and 3C, with labs Chemistry 3BL and 3CL; or Chemistry 4A and 4B with labs Chemistry 4AL and BL. Descriptions of these two series are provided here.

Upper-Division Courses

All of the following courses:

BIOL 100	Biochemistry	5
BIOL 105	Genetics	5
BIOE 107	Ecology	5
BIOE 109	Evolution	5

Upper-Division Elective

Students complete one upper-division elective of five credits or more chosen from BIOE 100-181 or BIOL 100-181.

MOLECULAR, CELL AND DEVELOPMENTAL BIOLOGY M.S.

Introduction

Students apply to the master's degree program through the same portal as for the Ph.D. degree program. While the M.S. is research intensive, master's students do not do research rotations; they must identify a research adviser prior to the training period. Students are required to participate in laboratory research meetings and departmental seminar series every quarter.

Requirements

Course Requirements

Complete the graduate core course:

BIOL 200A	Critical Analysis of Scientific Literature	5

BIOL 200A to be completed in the first year.

And the following courses:

BIOL 288	Pedagogy in STEM	2
BIOL 289	Practice of Science	5

Enroll in the following seminar series each quarter:

BIOL 291	Molecular, Cellular, and Developmental Biology Seminar	2
BIOL 292	MCD Seminar	

Approved Graduate Electives

(M.S. students must complete two electives)

Note: Lecture/lab combinations count as one course. For BME 163 and BME 263, only one of these courses will be counted toward fulfillment of the electives.

BIOL 200E	Experimental Design	3
BIOL 200F	Logic and Approaches to Scientific Discovery	5
BIOL 201	RNA Processing	5
BIOL 205	Epigenetics	5
BIOL 206	Introduction to Stem Cell Biology	5
BIOL 215	Applied Statistics for Molecular, Cell, and Developmental Biology	5
BIOL 217	Influence of Environment and Experience on Brain Development	5
BIOL 218	CRISPR/Cas Technologies	5
BIOL 220	STEM Outreach	2
BIOL 226	Advanced Molecular Neuroscience	5
BIOL 228	Developmental Neurobiology	5
BIOL 230	Grant Writing in the Biomedical Sciences	5
BIOL 247	Stem Cell Research: Scientific, Ethical, Social, and Legal Issues	2
BIOL 290	Career Planning	2
BME 110	Computational Biology Tools	5
BME 130	Genomes	5
BME 160	Research Programming in the Life Sciences	6
BME 163	Applied Visualization and Analysis of Scientific Data	5
BME 263	Applied Visualization and Analysis of Scientific Data	5
BME 205	Bioinformatics Models and Algorithms	5
BME 229	Protein and Cell Engineering	5
BME 230A	Introduction to Computational Genomics and Systems Biology	5
BME 230B	Advanced Computational Genomics and Systems Biology	5
BME 237	Applied RNA Bioinformatics	5
BME 272	Precision Medicine	5
BME 273	Stem Cell Epi/Genomics	3
BME 275	Entrepreneurship in Biotechnology	5
BME 278	Stem Cell Biology	5
CHEM 200A	Advanced Biochemistry: Biophysical Methods	5
CHEM 200B	Advanced Biochemistry: Macromolecular Structure and Function	5
CHEM 200C	Advanced Biochemistry: Enzyme Mechanisms and Kinetics	5
CHEM 230	Grant Writing in Biomedical Research	5
CHEM 271	Chemical Biology	5
ECE 236	Optics and Microscopy	5
ECE 237	Image Processing and Reconstruction	5
METX 202	Cell and Molecular Toxicology	5
METX 206A	Advanced Microbiology	5
METX 210	Molecular and Cellular Basis of Bacterial Pathogenesis	5
METX 238	Pathogenesis: Molecular Mechanisms of Disease PDP, Training in teaching offered by the Institute for Scientist and Engineer Educators (ISEE)	5
STAT 108	Linear Regression	5
STAT 205B	Intermediate Classical Inference	5
STAT 208	Linear Statistical Models	5
STAT 266A	Data Visualization and Statistical Programming in R	3

Students who have had no or very little statistics should audit or take STAT 7 (5 credits) and perhaps also STAT 7L (2 credits) to learn the basics, before taking one of the graduate level courses.

Students may only count one of the following courses toward their graduate electives: BIOL 220, BIOL 230, BIOL 247, BIOL 290, BME 275, CHEM 230, and PDP (Professional Development Program).

Students may count either ECE 236 or ECE 237, but not both, toward their advanced graduate electives.

Other Requirements

Write a master's thesis based on original research (a scholarly dissertation of the literature and progress on research project; a peer-reviewed publication is not required for graduation).

Present a thesis defense in a departmental seminar. The student will present their research project in a public venue such as a departmental seminar or one of the research clubs (RNA club, chromatin club, neuro club, etc.).

[Optional Catchall]

Applying for Graduation

MOLECULAR, CELL AND DEVELOPMENTAL BIOLOGY PH.D.

Introduction

The program in Molecular, Cell, and Developmental (MCD) biology (courses BIOL) leads to the doctor of philosophy (Ph.D.) and is designed to prepare students for careers in research, teaching, and biotechnology. Current research in MCD biology focuses on such topics as the structure and function of RNA, gene expression, chromatin structure, epigenetics, cell signaling, cell division, development, nerve cell function, and stem cell biology.

Advancement to Candidacy

Course Requirements

Ph.D. students complete the graduate core courses, BIOL 200A, BIOL 200E, and BIOL 200F, along with BIOL 288, and BIOL 289 (ethics) in the first year, and BIOL 215 and BIOL 230 in their second year. Students are required to participate in laboratory research meetings and departmental seminar series (BIOL 291/BIOL 292) every quarter. First-year rotating Ph.D. students complete three six-week laboratory rotations. Students choose their rotation laboratories in consultation with the Graduate Advisory Committee. The laboratory rotations give students a chance to learn about the diverse fields and methods of inquiry and to interact with members of the department. At the end of each rotation, students present a short talk or present a poster to the department on their rotation project. At the end of winter quarter, students consult with rotation faculty to identify a permanent thesis laboratory.

Ph.D. students must take two approved advanced graduate electives, in addition to the core courses.

Complete the graduate core courses:

BIOL 200A	Critical Analysis of Scientific Literature	5
BIOL 200E	Experimental Design	3
BIOL 200F	Logic and Approaches to Scientific Discovery	5

Plus the following courses:

BIOL 215	Applied Statistics for Molecular, Cell, and Developmental Biology	5
BIOL 288	Pedagogy in STEM	2
BIOL 289	Practice of Science	5
BIOL 230	Grant Writing in the Biomedical Sciences	5

Enroll in the following seminar series each quarter:

BIOL 291	Molecular, Cellular, and Developmental Biology Seminar	2
BIOL 292	MCD Seminar	

Approved Graduate Electives

(Ph.D. students complete two)

Note: Lecture and lab combinations count as a single course. For BME 163 and BME 263, only one of these courses will be counted toward fulfillment of the electives.

BIOL 201	RNA Processing	5
BIOL 205	Epigenetics	5
BIOL 206	Introduction to Stem Cell Biology	5
BIOL 217	Influence of Environment and Experience on Brain Development	5
BIOL 218	CRISPR/Cas Technologies	5
BIOL 220	STEM Outreach	2
BIOL 226	Advanced Molecular Neuroscience	5
BIOL 228	Developmental Neurobiology	5
BIOL 230	Grant Writing in the Biomedical Sciences	5
BIOL 247	Stem Cell Research: Scientific, Ethical, Social, and Legal Issues	2
BIOL 290	Career Planning	2
BME 110	Computational Biology Tools	5
BME 130	Genomes	5
BME 160	Research Programming in the Life Sciences	6
BME 163	Applied Visualization and Analysis of Scientific Data	5
BME 205	Bioinformatics Models and Algorithms	5
BME 229	Protein and Cell Engineering	5
BME 230A	Introduction to Computational Genomics and Systems Biology	5
BME 230B	Advanced Computational Genomics and Systems Biology	5
BME 237	Applied RNA Bioinformatics	5
BME 263	Applied Visualization and Analysis of Scientific Data	5
BME 272	Precision Medicine	5
BME 273	Stem Cell Epi/Genomics	3
BME 275	Entrepreneurship in Biotechnology	5
BME 278	Stem Cell Biology	5
CHEM 200A	Advanced Biochemistry: Biophysical Methods	5
CHEM 200B	Advanced Biochemistry: Macromolecular Structure and Function	5
CHEM 200C	Advanced Biochemistry: Enzyme Mechanisms and Kinetics	5
CHEM 230	Grant Writing in Biomedical Research	5
CHEM 271	Chemical Biology	5
ECE 236	Optics and Microscopy	5
ECE 237	Image Processing and Reconstruction	5
METX 202	Cell and Molecular Toxicology	5
METX 206A	Advanced Microbiology	5
METX 210	Molecular and Cellular Basis of Bacterial Pathogenesis	5

METX 238	Pathogenesis: Molecular Mechanisms of Disease PDP, Training in teaching offered by the Institute for Scientist and Engineer Educators (ISEE)	5
STAT 108	Linear Regression	5
STAT 205B	Intermediate Classical Inference	5
STAT 208	Linear Statistical Models	5
STAT 266A	Data Visualization and Statistical Programming in R	3

Students who have had no or very little statistics should audit or take STAT 7 (5 credits) and perhaps also STAT 7L (2 credits) to learn the basics, before taking one of the graduate level courses.

Students may only count one of the following courses toward their graduate electives: BIOL 220, BIOL 230, BIOL 247, BIOL 290, BME 275, CHEM 230, and PDP (Professional Development Program).

Students may count either ECE 236 or ECE 237, but not both, toward their advanced graduate electives.

BIOL 215, CHEM 230, and BIOL 230 may only count as electives to Ph.D. students who matriculated prior to fall 2020.

Foreign Language Requirements

Teaching Requirement

Complete two quarters of service as a teaching assistant.

Pre-Qualifying Requirements

Qualifying Examination

Complete an oral and written qualifying examination.

Second-year Ph.D. students are required to submit a written proposal on their thesis research. The oral component of the qualifying examination, taken in spring quarter of the second year, is an oral examination on the proposal. The examining committee is comprised of three internal reviewers and one external reviewer.

Post-Qualifying Requirements

Advancement to Candidacy

Advancement to candidacy occurs by the end of the third year (nine quarters). Students must give a full research seminar (~30 minute talk followed by questions) in an MCD seminar slot**.** This should be attended and evaluated by the Thesis Advisory Committee. A passing evaluation requires demonstration of a good understanding of their project and background knowledge, and a clear presentation of their questions or hypotheses, tests of those, and progress to date. A passing evaluation leads to advancement to candidacy.

Students have an additional three years (nine quarters) to complete their degree within normative time.

Optional Catchall

Dissertation

Dissertation

Meet yearly, starting in the second year of study, with the student's thesis committee.

Complete thesis research resulting in peer-reviewed publications and a dissertation on original and significant work.

Once the qualifying examination is passed and prior to their department seminar, a student, with their faculty adviser, selects a thesis committee to help guide the student’s thesis research. This committee monitors the student’s progress and ultimately approves the final draft of the student’s dissertation. The student must meet with the thesis committee at least once a year after passing the qualifying examination.

Dissertation Defense

Present the thesis defense in a departmental seminar.

Academic Progress

Applying for Graduation

[Optional Catchall]

Ocean Sciences

A312 Earth and Marine Sciences Building
(831) 459-4730
https://oceansci.ucsc.edu/

PROGRAMS OFFERED

Ocean Sciences M.S. Plan 1 and Plan 2 (p. 465)

Ocean Sciences Ph.D. (p. 467)

OTHER PROGRAMS OF INTEREST

Environmental Sciences B.S. (p. 335)

Ecology and Evolution B.S. (p. 360)

Marine Biology B.S. (p. 369)

Earth Sciences B.S. (p. 318)

The Ocean Sciences Department includes faculty, students, and staff involved in oceanography and other marine sciences and offers undergraduate and graduate courses in these disciplines. Through faculty sponsors, students have access to a wide variety of research facilities and equipment, including

on-campus analytical chemistry, geology, and molecular biology laboratories for marine research; computing and imaging facilities; an onshore marine laboratory two miles from campus (Long Marine Laboratory), with aquariums and holding tanks that are supplied with running sea water; and a unique field station on Año Nuevo Island Reserve (19 miles north of Santa Cruz), especially suited for studies on pinnipeds and marine birds. The department supports collaborative studies utilizing the innovative technologies of the nearby Monterey Bay Aquarium Research Institute (MBARI), the Naval Postgraduate School, Stanford University's Hopkins Marine Station, California State University (CSU) Moss Landing Marine Laboratory (MLML), and other facilities. Students may also work at other University of California facilities, including the Bodega Marine Laboratories and Scripps Institute of Oceanography.

In addition to research and instructional activities along the California coast, interests of the core faculty and their students include biological, chemical, geological, and physical oceanography; sediment, marine, organic, and trace metal biogeochemistry; marine plankton, phytoplankton ecology and physiology, paleoceanography, aquatic microbial ecology, ecological modeling, and remote sensing (satellite oceanography); numeric modeling of coastal and basin-scale dynamics; top predator ecology, and impacts of climate change and disturbance; and midwater ecology, climatology, among others.

Ocean Sciences Department affiliated faculty in other departments represent a deep resource of research interests and methodologies including those pertaining to coral reef and kelp forest ecology, plate tectonics and continental margins, marine mammal behavior and physiology, and natural products from marine organisms. Student research projects have included participation in major scientific expeditions to various marine environments ranging from Polar Regions to the tropics.

UNDERGRADUATE PROGRAM

While offering a range of undergraduate courses, the Ocean Sciences Department presently only confers graduate degrees (Master of Science—M.S. or Doctor of Philosophy—Ph.D.) However, the undergraduate major in environmental science is sponsored by the Ocean Sciences and Earth and Planetary Sciences Departments. The environmental sciences major includes required and elective courses in ocean sciences. In addition, the undergraduate major in marine biology, sponsored by the Biological Sciences departments, includes required and elective courses in ocean sciences, and includes an ocean sciences concentration in Earth sciences for undergraduates. Students interested in ocean sciences should major in a discipline such as environmental science, biology, marine biology, chemistry, Earth sciences, physics, mathematics, or applied mathematics and take ocean sciences-related electives. Students with a bachelor's degree in one of these disciplines or equivalent coursework may apply directly for admission to the graduate program through the Division of Graduate Studies.

GRADUATE PROGRAM

Our graduate education mission is to train the next generation of talented and diverse ocean scientists. Through core training in oceanography and focused advanced training in biology, chemistry, Earth sciences, physics, and data science we prepare students to tackle the pressing issues facing society today. Ocean sciences is a highly interdisciplinary field that requires diversity in thinking and experience. We welcome and provide support for students with diverse backgrounds such as URM, LGBTQIA+, and first-generation college students. From faculty training to peer mentoring and other programmatic elements we are dedicated to fostering the success of all students in our program.

The Ocean Sciences Department offers both master of science and doctorate degree programs. The graduate programs in ocean sciences are designed to prepare students for careers in research, teaching, and other environmentally related endeavors. The graduate programs encourage collaborative and interdisciplinary approaches, and are designed to support and promote diversity, equity and inclusion. There are professional development events and opportunities such as an annual career panel, several designated emphasis degrees that can be combined with the ocean sciences graduate degrees, and training in innovative and inclusive teaching. There is an advising structure that provides support from a main advisor, thesis committee members, an advisory committee, and peers. A student-run group, Communicating Oceanographic Research Effectively (CORE), offers community building activities.

The fundamental requirement for admission to the program is substantial evidence of superior scholarship and aptitude for original research. Preparation for admission to the graduate program in ocean sciences should comprise an undergraduate degree in the discipline of one of the program specialty areas (e.g., biology or marine biology, geology or Earth sciences, chemistry, or physical science) or an equivalent background. If a student does not have a degree in one of these areas, the student must demonstrate that they have taken the classes necessary to do their research.

The prerequisites for entering either the master's or the Ph.D. programs are a minimum of two quarters or two semesters in each of the following: a calculus series; chemistry, biology, and physics. In addition, one course in each of the following is required: earth sciences or geological principles; and statistics or biostatistics.

Details regarding admission, graduate standing, financial aid, examinations, and the requirements for the master of science and doctor of philosophy degrees are available from the Division of Graduate Studies.

OCEAN SCIENCES M.S.

Introduction

The Ocean Sciences Department offers a master of science (M.S.) degree in ocean sciences. The ocean sciences M.S. degree can be attained through plan I: thesis (coursework and

thesis, minimum 42 credits), or plan II: examination (coursework and comprehensive examination, minimum 40 credits). The degree combines core courses and electives to provide depth and breadth in the ocean sciences. Graduates from the program are exceptionally prepared to take research or management positions in organizations concerned with the marine environment, to become educators, or to enter doctoral programs in ocean sciences or related fields. The thesis M.S. degree is preparation for research careers.

Whereas the doctoral program has an oceanographic orientation, the ocean sciences master's program is broader and has traditionally attracted many students in marine biology and ecology. Students are encouraged to select a course of study that draws on the expertise of the core ocean sciences faculty and any of the affiliated faculty in other departments. Customized programs of study that combine related disciplines are supported in the master's program.

Requirements

Course Requirements

To introduce students to the breadth and depth of the field of ocean sciences, students will be required to complete the following:

Plan I: M.S. (thesis) requirements:

OCEA 200 (Physical Oceanography) and any two of the remaining three core courses. Students are expected to complete all three of these courses in the first year of the program. Students are also encouraged to take the fourth core course, in which case it can count as an elective.

The core ocean sciences courses are expected to be completed in the first year

OCEA 200	Physical Oceanography	5
OCEA 220	Chemical Oceanography	5
OCEA 230	Biological Oceanography	5
OCEA 280	Marine Geology	5

Two graduate-level or upper-division electives

A minimum of two graduate-level or upper-division elective courses to provide depth in the chosen area of emphasis, one of which must be a 5-credit graduate-level course in statistics/data analysis, such as OCEA 260 (Introductory Data Analysis in the Ocean and Earth Sciences) or OCEA 267 (Applied Environmental Time Series Analysis), chosen in consultation with the student’s adviser and the department’s graduate advising committee. A maximum of one course may be a graduate-level seminar (e.g. OCEA 290).

Minimum of three courses in independent studies

A minimum of three courses in independent studies under the direction of an adviser, is required. Each quarter a student should take 15 credits of classes. Students beyond their first year will usually take 10 or 15 credits of Independent Studies each quarter.

OCEA 297	Independent Study

The following course is taken prior to or concurrent with being a teaching assistant

Recommended for fall quarter of the first year; generally offered during the fall quarter each year.

OCEA 296	Teaching in Ocean Sciences	2

Attendance in the following course is required each quarter of enrollment.

OCEA 292	Seminar

Plan II: M.S. (examination) requirements:

Completion of the four core ocean sciences courses is required.

The four core ocean sciences courses are required to be completed.

OCEA 200	Physical Oceanography	5
OCEA 220	Chemical Oceanography	5
OCEA 230	Biological Oceanography	5
OCEA 280	Marine Geology	5

Four graduate-level or upper-division elective courses

A minimum of four graduate-level or upper-division elective courses is required to provide depth in the chosen area of emphasis or supporting disciplines, one of which must be a 5-credit graduate-level course in statistics/data analysis, such as OCEA 260 (Introductory Data Analysis in the Ocean and Earth Sciences) or OCEA 267 (Applied Environmental Time Series Analysis). These courses are selected in consultation with the student's adviser and the department’s graduate advising committee (Plan 1 and II). A maximum of one course may be a graduate-level seminar (OCEA 290), and at least two courses must be graduate or upper-division undergraduate lecture courses.

Attendance in the following course is required each quarter of enrollment.

OCEA 292	Seminar

Other Requirements for Plan I: M.S. (thesis)

Plan I M.S. students must complete one TAship during their course of study, an M.S. thesis, and must make a public presentation of their thesis before the deadline in which all degree requirements are to be completed within the term of receiving the degree. In addition, the M.S. thesis satisfying all format and content requirements must be submitted to the Graduate Division before the deadline in which all degree requirements are to be completed within the term of receiving the degree.

Other Requirements for Plan II: M.S. (examination)

Plan II M.S. students must take and pass a comprehensive exam that covers the material from the core courses.

Optional Catchall

Applying for Graduation

Once requirements for the degree have been met, including approval from their academic adviser and the Ocean Sciences

Department, M.S. students may apply for the degree by the deadline for the quarter in which they would like to receive their degree. Deadlines are published in the Academic and Administrative Calendar each year.

OCEAN SCIENCES PH.D.

Introduction

The program leading to a doctorate in ocean sciences is designed around a core training in oceanography for all students, supplemented and focused by advanced training in oceanography and in the traditional disciplines—biology, chemistry, Earth sciences, and physics—as chosen by the student and their advisers. The core training is provided through courses in ocean sciences; a subset of which is taken by all students in the first two years, and reinforced by attendance of department seminars throughout the program. Preparation also includes upper-division/graduate courses in ocean sciences and in the specialty discipline, graduate seminars, independent study research credits, giving research talks, and a minimum requirement of one quarter as a teaching assistant. There is no formal language requirement. Students admitted to the Ph.D. program may receive a master's degree en route to the Ph.D after meeting the requirements for the M.S. II and successful completion of the Departmental Exam.

A scheduling meeting in the first quarter of enrollment is used to map out the course program in the first year. The course program is determined by a faculty advisory committee in consultation with the student and courses are drawn from Ocean Sciences and other science departments (e.g., Biology, Chemistry and Biochemistry, Earth and Planetary Sciences, Physics). A departmental oral examination covering material from the core courses is taken at the end of the student's first year in the program, typically during finals week of spring quarter. The purpose of this examination is to ensure that the doctoral student candidate has acquired sufficient fundamental knowledge of oceanography to proceed toward the doctoral degree.

To advance to candidacy in the Ph.D. program, each student must pass a qualifying examination, requiring a ~15-page written research proposal (single spaced, including figures, excluding references) describing three original, achievable research projects that is defended orally in front of the student's qualifying examination committee. The proposal should be structured to contain the following sections: 1) statement of the problem or problems and its/their significance, 2) scientific background including a literature review, 3) hypotheses, 4) research plan (what has/will be done, and how), 5) preliminary and expected results as well as contingency plans, and 6) a timeline detailed with major milestones up to and including the quarter/year of expected completion. The exam must demonstrate good understanding of the proposed research and relevant literature in the field as well as feasibility of the proposed, original research project(s). The qualifying examination committee must be established following procedures and deadlines of the Graduate Division. The proposal should be submitted to the committee no fewer than 10 business days before the oral defense. This examination is recommended to be taken during the fall quarter of the third year and no later than the end of the spring quarter of the third year.

Sample Pathways

The pathways within the ocean sciences Ph.D. program are differentiated from related degrees in the traditional disciplines by their focus on global-scale problems and interactions, a focus on the ocean, and their inherently interdisciplinary approach. Interdisciplinary projects across and between pathways are encouraged, as are interactions with faculty in related departments.

Biological Oceanography

This area of study involves the interactions of organisms with their chemical and physical environments. It includes research on the physiology and ecology of organisms, but differs from marine biology in its focus on the oceanographic setting of the organism in relationship to, for example, biogeochemical cycling and the effects of ocean currents on distributions of organisms.

Chemical Oceanography

The measurement of chemical distributions in the sea to understand fundamental ocean processes is the focus of this area of study. Research includes development of analytical techniques, measurement of inorganic and organic species and isotopes in marine particles, seawater and sediments, and investigation of marine biogeochemical processes using analytical and modeling approaches.

Geological Oceanography

Paleoceanography, paleoclimatology, and sediment geochemistry are the focus in this pathway. Research areas include the history of global geochemical cycles and composition of the ocean on various timescales, the fate and diagenesis of materials in sediments and their contribution to the paleoceanographic record, understanding ocean and climate history by the use of records of stable isotopes and trace elements, and paleoclimate modeling.

Physical Oceanography

The physics and dynamics of the ocean and atmosphere are the main aspects of this program. Research includes observational, computational, theoretical, and experimental physical oceanography, geophysical fluid dynamics, ocean acoustics, dynamical meteorology, climate, and global change.

Advancement to Candidacy

Course Requirements

To introduce students to the breadth and depth of the field of ocean sciences, students will be required to complete the following.

The four core ocean sciences courses are expected to be completed in the first year of the program prior to taking the departmental oral examination:

OCEA 200	Physical Oceanography	5
OCEA 220	Chemical Oceanography	5
OCEA 230	Biological Oceanography	5
OCEA 280	Marine Geology	5

Three Graduate-Level or Upper-Division Elective courses:

A minimum of three graduate-level or upper-division elective courses is required to provide depth in the chosen area of emphasis or supporting disciplines, one of which must be a 5-credit graduate-level course in statistics/data analysis, such as OCEA 260 (Introductory Data Analysis in the Ocean and Earth Sciences) or OCEA 267 (Applied Environmental Time Series Analysis). These courses are selected in consultation with the student's adviser and the department's graduate advising committee. A maximum of one course may be a graduate-level seminar (OCEA 290), and at least two courses must be graduate or upper-division undergraduate lecture courses.

Attendance in the following course is required each quarter of enrollment:

OCEA 292	Seminar

Independent Studies or Thesis Research:

A minimum of three courses in independent studies (OCEA 297, before advancing to candidacy), or thesis research (OCEA 299, after advancing to candidacy) under the direction of an adviser. Students beyond their first year will usually take 10 or 15 credits of independent study or thesis research each quarter.

OCEA 297	Independent Study
OCEA 299	Thesis Research

The following course is taken prior to, or concurrent with, being a teaching assistant

Recommended for fall quarter of the first year; generally offered during the fall quarter each year.

OCEA 296	Teaching in Ocean Sciences	2

En-Route Master's Requirements

Ph.D. students may request an *en-route* (Plan II, non thesis) master's degree after successfully passing the Departmental Exam and completing equivalent course requirements for the Plan II M.S. degree. These requirements are identical to the Ph.D. requirements other then the required course credits (40 credits for the en-route M.S.).

Applying for the *En-Route* M.S.

The *en-route* M.S. can be requested at any time once the requirements are met, but would typically occur either after completion of course requirements, or prior to the Qualifying Examination. Once requirements for the degree have been met, including approval from their academic adviser and the Ocean Sciences Department, Ph.D. students may apply for the degree by the deadline for the quarter in which they would like to receive their degree. Deadlines are published in the Academic and Administrative Calendar each year.

Teaching Requirement

Teaching experience is satisfied by one quarter of teaching assistant experience in ocean sciences or related departments at any time in their Ph.D.

Pre-Qualifying Requirements

Ph.D. students must pass a department examination typically taken at the end of their first year. The purpose of this exam is to ensure that the Ph.D. student has acquired sufficient fundamental knowledge of oceanography before developing their thesis proposal and taking their qualifying examination.

After successful completion of the Departmental Exam, Ph.D. students meeting the requirements for the M.S. II track are allowed to petition for the en route M.S. II degree.

Qualifying Exam

To advance to candidacy in the Ph.D. program, each student must pass a qualifying examination, requiring a ~15-page written research proposal (single spaced, including figures, excluding references) describing three original, achievable research projects that is defended orally in front of the student's qualifying examination committee. The proposal should be structured to contain the following sections: 1) statement of the problem or problems and its/their significance, 2) scientific background including a literature review, 3) hypotheses, 4) research plan (what has/will be done, and how), 5) preliminary and expected results as well as contingency plans, and 6) a timeline detailed with major milestones up to and including the quarter/year of expected completion. The exam must demonstrate good understanding of the proposed research and relevant literature in the field as well as feasibility of the proposed, original research project(s). The qualifying examination committee must be established following procedures and deadlines of the Graduate Division. The proposal should be submitted to the committee no fewer than 10 business days before the oral defense. This examination is recommended to be taken during the fall quarter of the third year and no later than the end of the spring quarter of the third year.

Post-Qualifying Requirements

Dissertation

Dissertation

The Ph.D. dissertation, demonstrating original thought and research, must be written, presented in an open seminar, and defended to the student's dissertation reading committee. It is intended to help guide and evaluate the student's program, study, and progress. The Ph.D. dissertation, satisfying all format and content requirements, must be submitted to the Graduate Division before the deadline in which all degree requirements are to be completed within the term of receiving the degree.

Dissertation Defense

The Ph.D. dissertation defense is composed of two parts: one part is the open presentation of the dissertation; the second part is a meeting, following the presentation, with the dissertation reading committee to determine completion of degree requirements. The Ph.D. dissertation defense must be presented before the deadline in which all degree requirements are to be completed within the term of receiving the degree.

Academic Progress

Ph.D. students meet with their primary research advisor every fall to discuss mutual expectations using the Annual Student/Sponsor Yearly Discussion form. They also meet with a member of the Ocean Sciences Department's advisory committee once each fall and spring to check on progress on program requirements (Mandatory Advising Meetings). Finally, in addition, during spring quarter each year, beginning with the second year and continuing until degree completion, students must meet with their thesis committee members and provide a research-focused annual academic progress report to the department. In the year a student completes the qualifying exam with their committee, the exam can take the place of a committee meeting.

Applying for Graduation

Once requirements for degree have been met, including approval from their academic adviser and the Ocean Sciences Department, Ph.D. students may apply for the degree by the deadline for the quarter in which they would like to receive their degree. Deadlines are published in the Academic and Administrative Calendar each year.

[Optional Catchall]

Physics

211 Interdisciplinary Sciences Building
(831) 459-3744
https://physics.ucsc.edu

PROGRAMS OFFERED

Physics B.S. (p. 471)

Physics (Astrophysics) B.S. (p. 477)

Applied Physics B.S. (p. 482)

Physics Minor (p. 489)

Science Education B.S. (p. 490)

Physics Contiguous Bachelor's/Master's Pathway (p. 495)

Physics M.S. (p. 496)

Physics Ph.D. (p. 497)

OTHER PROGRAMS OF INTEREST

Astrophysics Minor (p. 278)

Astronomy and Astrophysics Ph.D. (p. 279)

Physics seeks to discover the fundamental regularities or "laws" that govern our universe and to apply these laws to explain the behavior of fundamental and complex systems. The same underlying principles describe the behavior of atoms, lasers, living cells, and galaxies. Physics is, therefore, at the base of all modern science and technology, and this fundamental nature can be appreciated even at an elementary level.

The Physics Department offers majors in physics and applied physics. The physics major has a concentration in quantum information science, and the applied physics major in computational physics. There is also an interdepartmental major in physics (astrophysics), a collaborative program offered jointly by the Physics Department and the Astronomy and Astrophysics Department. These programs prepare students for graduate work in physics and astrophysics, and for engineering and other technical positions in industry. With appropriate courses in other disciplines, these majors provide excellent preparation for advanced study in technical subjects such as biology, chemistry, engineering, geophysics, and the philosophy of science. The applied physics major is excellent preparation for positions in industry directly upon graduation.

Faculty work with students in both formal and informal settings. Students have the opportunity to do a senior thesis. If they do a senior thesis, they will work individually with a faculty member.

The main areas of physics research at UCSC are the study of fundamental particles and interactions (high-energy physics), the study of condensed matter physics, materials physics, astrophysics/cosmology, and biophysics.

Efforts in high-energy physics are aided by the presence of an organized research unit, the Santa Cruz Institute for Particle Physics (SCIPP). The SCIPP experimentalists play significant roles in experiments at some of the major accelerator laboratories in the world, including the SLAC National Accelerator Laboratory at Stanford University and the European Council for Nuclear Research (CERN) near Geneva, Switzerland. SCIPP experimentalists have also played an important role in creating the major satellite for gamma-ray astronomy (the Fermi Gamma-ray Space Telescope), are involved in the Dark Energy Survey, and conduct a thriving particle astrophysics program detecting TeV gamma rays as part of the UC VERITAS collaboration. SCIPP theorists are active in the phenomenology of high-energy particle interactions, including dark matter models, the theory of strong and electroweak interactions, electroweak symmetry breaking and Higgs bosons, theories of supersymmetry, superstrings, and gravity. SCIPP also maintains a vigorous program in particle astrophysics, including research in high-energy astrophysics, dark matter, formation of galaxies and large-scale structure in the universe, and theories of cosmology and the very early universe. SCIPP is also home to a research program in experimental

biophysics, exploiting instrumentation technologies developed in other areas of physics for the study of functional organization and development of neural systems in a variety of living organisms. In addition, there is closely related research in biomedical applications such as retinal prosthesis.

The presence of the strong astrophysics group in the Astronomy and Astrophysics Department at UCSC provides a healthy symbiosis in this area. UCSC is the headquarters for the University of California Observatories, which includes the Lick Observatory near San Jose and the Keck Observatory in Hawaii. These provide additional opportunities for collaboration between researchers in the Physics Department and the Astronomy and Astrophysics Department. The strong relationship between the two departments enables them to run the physics (astrophysics) major jointly.

Condensed matter and materials physics research at UCSC covers a range of topics including the behavior of exotic many-electron systems (for example, superconductors) and quantum materials (such as topological insulators and Weyl semimetals); magnetic phase transitions; magnetic and magnetoelectric surfaces, interfaces, and thin films; two-dimensional materials and heterostructures; complex systems (proteins, DNA, and polymers); biophysics; and the development of new electronic devices using novel materials. The experimental program includes optical, magnetometry, magnetotransport, X-ray, and specific heat measurement techniques, as well as thin film growth and characterization facilities at UCSC. X-ray and synchrotron radiation scattering and spectroscopy measurements are available at the Lawrence Berkeley National Laboratory Advanced Light Source and at the Stanford Synchrotron Radiation Light-source, while neutron scattering measurements are performed at the NIST Center for Neutron Research and the Oak Ridge Spallation Neutron Source. Undergraduate students are actively involved in several condensed matter physics laboratories during the academic year and summer months.

UNDERGRADUATE PROGRAM

Undergraduate Majors

The physics, physics (astrophysics), and applied physics major programs provide a comprehensive coverage of the field and the background necessary for graduate school or industrial careers. Students earn a bachelor of science (B.S.) degree. The physics (astrophysics) program is offered jointly by the Physics Department and the Astronomy and Astrophysics Department.

The UC Santa Cruz physics, physics (astrophysics), and applied physics programs begin with a four-quarter presentation of the introductory concepts of the subject, Introduction to Physics, PHYS 5A, PHYS 5B, PHYS 5C, and PHYS 5D. Note that the applied physics program also requires completion of a general chemistry course except for the computational physics concentration. In order for a student to finish the UCSC physics program in four years, it is important to start the Introduction to Physics sequence as early as possible. Students who complete a major sponsored by the Physics Department cannot complete a second major sponsored by the Physics Department or a physics minor.

This introductory sequence is followed by a course that provides an introduction to quantum physics and its applications, Modern Physics, PHYS 102. The programs continue with a two-quarter sequence in mathematical methods of physics, PHYS 116A and PHYS 116C, designed to provide the mathematics preparation necessary for most of the upper-division physics courses required for the majors. Included in the upper-division programs are two intensive laboratory courses designed to illustrate both historical experiments that were important in the development of physics, astrophysics, and applied physics, and modern experimental methods. Advanced and especially motivated students may enroll in some graduate courses with the approval of the instructor and department chair. Students interested in future careers in aerospace-related fields should consider the applied physics major, which gives them an opportunity to take relevant elective courses.

The optional senior thesis provides the opportunity for students to apply their skills to problems of interest to them, either theoretical or experimental, usually with technical advice from a faculty member. The senior thesis may be based on the student's original research or participation in a faculty member's research project or a review of some particular area of physics, under the supervision of a faculty member. The senior thesis is a distinctive part of the UCSC physics major program and entails a substantial investment of both student and faculty time. The learning experience involved in the thesis, as well as the thesis itself, has proven extremely valuable to students in enhancing employment opportunities upon graduation or in gaining admission to graduate school.

The Physics Department is also the administrative home of the science education major, which is a collaboration between several departments in the Physical and Biological Sciences Division and the Education Department. This major is designed for a career in teaching in California high schools by preparing students for the California Subject Examination for Teachers. (Students interested in a high school teaching career will have to fulfill additional requirements after the degree, such as earning a teaching credential.)

Courses for Non-Majors

The department offers the three-quarter sequence PHYS 6A, PHYS 6B and PHYS 6C that covers introductory physics at a level suitable for many majors. One-quarter overviews of physics, PHYS 1A and PHYS 1B, and a course on the physics underpinning music, PHYS 80U, are also offered by the department.

GRADUATE PROGRAM

The Physics Department offers graduate programs leading to the Master of Science (M.S.) and/or the Doctor of Philosophy (Ph.D.) degrees. Each student has a faculty advisor who helps to determine which courses are most appropriate, taking into account the student's background and interests. The student-faculty ratio is low so that M.S. and Ph.D. students can work

closely with faculty and pursue programs that fit their individual needs. Research is currently conducted in theoretical and experimental particle physics, theoretical and experimental condensed matter physics (including materials physics and biophysics), and in theoretical and experimental/observational high-energy astrophysics (including cosmology).

Students may obtain a master's degree through coursework (eight physics graduate courses) and submission of an approved thesis. The thesis requirement may be waived by passing four sections of the written Ph.D. qualifying examination. Master's candidates are encouraged to write a research thesis and may do so in any of the research fields in the program, thereby developing laboratory and computational skills in areas such as electronics design, computer simulation and visualization, cryogenics, X-ray scattering, complex novel materials and devices, or materials science. Each M.S. student is assigned a faculty advisor who helps to design a coursework plan suited to the interests of the student.

Physics students and faculty use a number of UCSC research facilities described at the beginning of this section and elsewhere in this catalog, including facilities of the Santa Cruz Institute for Particle Physics (SCIPP) and the University of California Observatories (headquartered at UCSC). There is strong interaction with other disciplines, especially astronomy and astrophysics, biology, chemistry, Earth sciences, electrical engineering, and mathematics. Proximity to the SLAC National Accelerator Laboratory and the Stanford Synchrotron Radiation Laboratory provides additional local research opportunities. UCSC faculty and graduate students also participate in research programs at CERN in Geneva, Los Alamos, Oak Ridge National Laboratory, NASA Ames, NREL, Lucent, Xerox, IBM, Bell Labs, and other national and international laboratories.

Application materials and brochures describing the physics M.S. and Ph.D. graduate programs in more detail may be obtained by visiting the Physics Department website or by contacting the Division of Graduate Studies.

PHYSICS B.S.

Information and Policies

Introduction

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities, and attitudes that students are expected to develop over the course of their studies. The program learning outcomes communicate the faculty's expectations to students, provide a framework for faculty evaluation of the curriculum based on empirical data, and help improve and measure the impact of implemented changes. Students graduating with a B.S. in physics will demonstrate:

PLO 1. Ability to solve problems using concepts in classical and quantum mechanics, statistical mechanics and electromagnetism.

PLO 2. Proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.

PLO 3. Ability to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.

PLO 4. Ability to communicate scientific content effectively, both orally and in writing.

Academic Advising for the Program

The department undergraduate adviser (physicsadvising@ucsc.edu) works closely with students interested in pursuing the major to ensure that they begin the program immediately and follow the appropriate steps toward its completion.

Getting Started in the Major: Frosh

Before coming to the University of California, Santa Cruz:

High school students coming to UC Santa Cruz as frosh should emphasize their mathematics preparation with the expectation that they will take the first calculus course, MATH 19A, before their second quarter at UCSC. Students who come to UC Santa Cruz with credit for MATH 19A will be able to start the Physics 5 series or Physics 15 series in the first quarter. PHYS 5A is offered in the fall and winter quarters each year. Students with a score of 5 on the AP Physics C Mechanics and AP Physics C Electricity and Magnetism examinations are exempt from taking PHYS 5A and PHYS 5C respectively, and the associated lab courses.

After coming to UC Santa Cruz:

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UCSC.

Incoming students in the physics major should complete the Math Placement process as early as possible, so that the placement is posted before enrollment begins.For more information, please review the Math Placement website.

In their first term, students should enroll in the highest course in the following sequence that they are eligible for: MATH 2, MATH 3, MATH 19A, MATH 19B, MATH 23A, MATH 23B. Students should not take MATH 11A or MATH 11B or MATH 16A or MATH 16B. Graduating in four years is still possible for a student who places into MATH 2 or MATH 3; the department undergraduate adviser and the department's alternative paths webpage should be consulted.

Students who come to UC Santa Cruz with credit for MATH 19A, and have room in their schedule, should take PHYS 5A or PHYS 15A and PHYS 5L (unless they have a score of 5 on the AP Physics C Mechanics examination) in their first term. Those who come to UCSC with credit for MATH 19B and PHYS 5A and PHYS 5L, and have room in their schedule, may consider taking PHYS 5C or PHYS 15C and PHYS 5N (unless they have a score of 5 on the AP Physics C Electricity Magnetism examination) in their first term. The Physics Department tries to match incoming students who are interested with research opportunities, if they are available.

Students who for some reason do not start the courses for the major in their first term should consult the department undergraduate adviser and the alternative paths webpage. Students who do not begin the lower-division requirements during their first year will have difficulty completing the program within four years.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5

A minimum GPA of 2.7 must be obtained in the following courses

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5

In addition, the following course is recommended prior to transfer to ensure timely graduation:

PHYS 5D	Introduction to Physics IV	5

Students entering UC Santa Cruz in the winter quarter must complete

PHYS 5D	Introduction to Physics IV	5
MATH 23B	Vector Calculus	5

in addition to the requirements for students entering in the fall quarter. (This is true for years when winter admission is open.)

Getting Started in the Major: Transfer Students

Transfer students admitted to UC Santa Cruz in the physics major who have satisfied the above screening requirements may declare the major immediately upon arrival at UC Santa Cruz. They should contact the undergraduate advisor to draw up an academic plan.

Incoming transfer students should enroll in the following courses in their first term:

- PHYS 5D, unless they have credit for the course, in which case PHYS 102;
- MATH 23B, unless they have credit for the course, in which case they may enroll in PHYS 116A or an elective or general education course;
- ASTR 119, unless they have knowledge of the Python programming language, in which case they may enroll in PHYS 133 after obtaining a permission code.

Students who have completed courses that should be equivalent to PHYS 5D or MATH 23B but are not formally articulated as such should contact the undergraduate adviser to have their courses evaluated.

Transfer students entering UC Santa Cruz in the winter quarter should meet with the undergraduate adviser upon arrival to draw up an academic plan.

Students who are proposed in a different major (other than applied physics or physics [astrophysics]) and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify to declare the physics major, students must achieve a cumulative grade point average (GPA) of 2.70 or greater in the following courses, or their equivalents:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5

PHYS 15A can be used instead of PHYS 5A, and PHYS 15C instead of PHYS 5C. All qualification courses must be completed prior to the major declaration deadline.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair by the later date of either 15 days from the date the notification was sent, or one week after the start of instruction during the quarter after the final relevant grade was received (generally in PHYS 5C or PHYS 5D). They also must arrange to meet with one of the faculty mentors listed for Declaring the Major. Within 15 days of receipt of the appeal, after consulting with the faculty mentor, the department chair will either finalize the denial of admission or specify further conditions for admission or approve admission to the major, and will notify the student and their college of the decision. For more information about the appeal process, see Appeal Process.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

All students are required to review their academic plan with a faculty mentor prior to declaring the major. For instructions on petitioning to declare, go to Declaring Your Major.

Letter Grade Policy

All courses used to satisfy the physics major requirements must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Students who complete a major sponsored by the Physics Department cannot complete a second major sponsored by the Physics Department or a physics minor.

Students who complete the Physics B.S. and the astrophysics minor cannot use any courses that satisfy the requirements for the minor as electives for the major.

Study Abroad

Honors

The department awards "honors" (3.5 grade point average or better) and "highest honors" (3.8 grade point average or better) to top graduating students each year. The department also awards "honors" for outstanding work on the senior thesis, made upon the recommendation of the faculty thesis adviser.

Timely Graduation and Alternative Plans

- Students planning a senior thesis should find a faculty thesis adviser as early as possible, but no later than the beginning of the senior year for four-year students or the beginning of the second year for transfer students. For further information about the senior thesis, see Senior Thesis.
- Students who join a major program of the Physics Department with some of the required courses completed, or have room in their program for additional courses, should consult with the Physics Department undergraduate adviser.
- Students who fall behind the planners should consult the Physics Department undergraduate adviser and Alternatives.
- All the transfer major planners assume that the Intersegmental General Education Transfer Curriculum (IGETC) has been completed in community college, or has been partially completed and can be finished while at UC Santa Cruz (including summers).

[Optional Catchall]

General Major

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

PHYS 5A	Introduction to Physics I	5
PHYS 15A	Honors Introduction to Physics I	5

Plus one of the following courses:

PHYS 5C	Introduction to Physics III	5
PHYS 15C	Honors Introduction to Physics - III	5

Plus all of the following courses:

PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5B	Introduction to Physics II	5
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 5D	Introduction to Physics IV	5

At present, there is no Honors version of PHYS 5B.

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Plus one of the following courses or equivalent:

ASTR 119	Introduction to Scientific Computing	5
CSE 20	Beginning Programming in Python	5
ASTR 19	Practical Programming for the Sciences	5

ASTR 119 is strongly recommended. A test-out option is available for CSE 20.

Upper-Division Courses

All of the following courses:

PHYS 102	Modern Physics	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 105	Mechanics	5
PHYS 110A	Electricity, Magnetism, and Optics	5

PHYS 112	Thermodynamics and Statistical Mechanics	5
PHYS 133	Intermediate Laboratory	5
PHYS 134	Physics Advanced Laboratory	5
PHYS 139A	Quantum Mechanics I	5

Capacity in the lab courses PHYS 133 and PHYS 134 is limited, and they should be taken as early as possible.

Completing both MATH 21 and MATH 24 can substitute for PHYS 116A.

PHYS 116C is waived for students who are pursuing a dual major in physics and a mathematics B.A. or B.S., and take MATH 107 in fall 2017 or later.

And one of these two courses:

PHYS 110B	Electricity, Magnetism, and Optics	5
PHYS 139B	Quantum Mechanics II	5

Electives

Three additional 5-credit courses chosen from PHYS 100 - PHYS 180 or ASTR 111 - ASTR 118. In some cases, with the approval of the department, one of the elective requirements may be satisfied by an upper-division science or engineering course.

Students who wish to go to graduate school in physics after the Physics B.S. are recommended to complete both PHYS 110B and PHYS 139B instead of one of them.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy the upper-division disciplinary communication (DC) requirement. Students in the physics major satisfy the DC requirement by completing one of the following options:

	Either this course	
PHYS 182	Scientific Communication for Physicists	5
	or these courses	
PHYS 195A	Senior Thesis I	5
PHYS 195B	Senior Thesis II	5

Comprehensive Requirement

The comprehensive requirement is satisfied by completing the following course:

PHYS 134	Physics Advanced Laboratory	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Physics B.S.: Freshman Academic Plan (for students without credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19A (or MATH 20A)	MATH 19B (or MATH 20B)	MATH 23A
		(PHYS 5A or PHYS 15A) PHYS 5L	PHYS 5B PHYS 5M
2nd (soph)	(PHYS 5C or PHYS 15C) PHYS 5N	ASTR 119	PHYS 105
	PHYS 5D	PHYS 116A	PHYS 116C
	MATH 23B		PHYS 133
3rd (junior)	PHYS 102	PHYS 112	
	PHYS 110A	PHYS 110B	
4th (senior)	PHYS 139A	PHYS 182**	Elective
	Elective	PHYS 134	
		Elective	

Physics B.S.: Freshman Academic Plan (for students with credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19B (or MATH 20B)	MATH 23A	MATH 23B
	PHYS 5A or PHYS 15A	PHYS 5C or PHYS 15C	PHYS 5B
	PHYS 5L	PHYS 5N	PHYS 5M
2nd (soph)	PHYS 116A	ASTR 119	PHYS 105

	PHYS 5D	PHYS 116C	PHYS 133
3rd (junior)	PHYS 102	PHYS 112	
	PHYS 110A	PHYS 110B	
4th (senior)	PHYS 139A	PHYS 182**	Elective
	Elective	PHYS 134	
		Elective	

**Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

In addition to the specific courses shown in this planner, a student must complete courses satisfying the C, ER, CC, IM, TA, PR and PE general education requirements.

Students looking for an alternative pathway through the major should consult the physics adviser.

Physics B.S. Transfer Academic Plan One

	Fall	Winter	Spring
1st (junior)	MATH 23B	PHYS 116A	PHYS 116C
	PHYS 133	PHYS 134	PHYS 105
	PHYS 102		
2nd (senior)	PHYS 110A	PHYS 110B	Elective
	PHYS 139A	PHYS 112	PHYS 182*
	Elective	Elective	

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

This planner assumes that a student has completed PHYS 5D and general education requirements.

Physics B.S. Transfer Academic Plan Two

For students who have not completed the equivalent of PHYS 5D:

	Fall	Winter	Spring
1st Year	MATH 23B		PHYS 105
	PHYS 5D	PHYS 102	PHYS 133
	ASTR 119	PHYS 116A	PHYS 116C
2nd Year	PHYS 110A	PHYS 110B	PHYS 134
	PHYS 139A	PHYS 112	Elective
	Elective	Elective	PHYS 182*

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

Quantum Information Science Concentration

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

PHYS 5A	Introduction to Physics I	5
PHYS 15A	Honors Introduction to Physics I	5

Plus one of the following courses:

PHYS 5C	Introduction to Physics III	5
PHYS 15C	Honors Introduction to Physics - III	5

Plus all of the following courses:

PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5B	Introduction to Physics II	5
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 5D	Introduction to Physics IV	5

At present, there is no Honors version of PHYS 5B.

Plus all of the following courses:

MATH 23A	Vector Calculus	5

MATH 23B	Vector Calculus	5

Plus one of the following courses:

CSE 20	Beginning Programming in Python	5
ASTR 19	Practical Programming for the Sciences	5
ASTR 119	Introduction to Scientific Computing	5

A test-out option is available for CSE 20. ASTR 119 is recommended.

Upper-Division Courses

All of the following courses

PHYS 102	Modern Physics	5
PHYS 133	Intermediate Laboratory	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 105	Mechanics	5
PHYS 110A	Electricity, Magnetism, and Optics	5
PHYS 112	Thermodynamics and Statistical Mechanics	5
PHYS 150	Quantum Computing	5
PHYS 139A	Quantum Mechanics I	5
PHYS 139B	Quantum Mechanics II	5
PHYS 138	Quantum Information Science Laboratory	5

Completing both MATH 21 and MATH 24 can substitute for PHYS 116A.

PHYS 116C is waived for students who are pursuing a dual major in applied physics and a mathematics B.A. or B.S. and take MATH 107 in the year 2017 or later.

Plus one of the following courses:

PHYS 156	Applications of Quantum Materials	5
PHYS 157	Frontier of Quantum Materials	5

Electives

One additional 5-credit physics course that has not been used to satisfy any other requirement for the major, chosen from PHYS 100 - PHYS 180.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy the upper-division communication (DC) requirement. Students in the physics major satisfy the DC requirement by completing one of the following options:

Either this course:

PHYS 182	Scientific Communication for Physicists	5

Or these courses:

PHYS 195A	Senior Thesis I	5
PHYS 195B	Senior Thesis II	5

Students interested in doing a senior thesis should have found a faculty thesis advisor by the beginning of their senior year. They should contact physicsadvising@ucsc.edu or their faculty mentor if they need assistance.

Comprehensive Requirement

The comprehensive requirement is satisfied by completing the following course:

PHYS 138	Quantum Information Science Laboratory	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Quantum Information Science Concentration Freshman Academic Plan (for students without credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19A (or MATH 20A)	MATH 19B (or MATH 20B)	MATH 23A
		(PHYS 5A or PHYS 15A) PHYS 5L	PHYS 5B PHYS 5M
2nd (soph)	(PHYS 5C or PHYS 15C) PHYS 5N	ASTR 119	PHYS 105
	PHYS 5D	PHYS 116A	PHYS 116C
	MATH 23B		
3rd (junior)	PHYS 102	PHYS 112	PHYS 182**
	PHYS 110A	PHYS 133	
4th (senior)	PHYS 139A	PHYS 139B	PHYS 150

	PHYS 138	Elective	PHYS 156 or PHYS 157

Quantum Information Science Concentration Freshman Academic Plan (for students with credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19B (or MATH 20B)	MATH 23A	MATH 23B
	(PHYS 5A or PHYS 15A) PHYS 5L	(PHYS 5C or PHYS 15C) PHYS 5N	PHYS 5B PHYS 5M
2nd (soph)	PHYS 116A	ASTR 119	PHYS 105
	PHYS 5D	PHYS 116C	PHYS 133
3rd (junior)	PHYS 102	PHYS 112	PHYS 182**
	PHYS 110A		
4th (senior)	PHYS 139A	PHYS 139B	PHYS 150
	PHYS 138	Elective	PHYS 156 or PHYS 157

** Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

In addition to the specific courses shown in this planner, a student must complete courses satisfying the C, ER, CC, IM, TA, PR, and PR general education requirements.

Students looking for an alternative pathway through the major should consult the physics advisor.

Quantum Information Science Concentration Transfer Academic Plan

	Fall	Winter	Spring
1st (junior)	MATH 23B	ASTR 119	PHYS 105
	PHYS 102*	PHYS 116A	PHYS 116C
	PHYS 133		
2nd (senior)	PHYS 110A	PHYS 139B	PHYS 156 or PHYS 157
	PHYS 139A	PHYS 112	PHYS 150
	PHYS 138	PHYS 182**	Elective

* This planner assumes that a student has completed PHYS 5D and general education requirements. Students who have not completed PHYS 5D will take it in the fall, followed by PHYS 102 in the winter.

** Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

Students who wish to do a more demanding senior thesis or seek greater flexibility in choosing electives may consider delaying their graduation.

PHYSICS (ASTROPHYSICS) B.S.

Information and Policies

Introduction

Program Learning Outcomes

Program learning outcomes (PLO) summarize the most important knowledge, skills, abilities, and attitudes that students are expected to develop over the course of their studies. The program learning outcomes communicate the faculty's expectations to students, provide a framework for faculty evaluation of the curriculum based on empirical data, and help improve and measure the impact of implemented changes. Students graduating with a B.S. in Physics (Astrophysics) will demonstrate:

PLO 1. Ability to solve problems using concepts in classical and quantum mechanics, statistical mechanics and electromagnetism.

PLO 2. Proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics and astrophysics.

PLO 3. Ability to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.

PLO 4. Ability to communicate scientific content effectively, both orally and in writing.

PLO 5. Ability to apply physics concepts to understand astrophysical phenomena, to plan and carry out the collection of astrophysical data through observations and/or from archival datasets, and to analyze it to draw valid conclusions.

Academic Advising for the Program

The department undergraduate adviser (physicsadvising@ucsc.edu) works closely with students interested in pursuing the major to ensure that they begin the program immediately and follow the appropriate steps toward its completion.

Getting Started in the Major: Frosh

Before coming to the University of California, Santa Cruz:

High school students coming to UC Santa Cruz as frosh should emphasize their mathematics preparation with the expectation that they will take the first calculus course, MATH 19A, before their second quarter at UCSC. Students who come to UC Santa Cruz with credit for MATH 19A will be able to start the Physics 5 series or Physics 15 series in the first quarter. PHYS 5A is offered in the fall and winter quarters each year. Students with a score of 5 on the AP Physics C Mechanics and AP Physics C Electricity and Magnetism examinations are exempt from taking PHYS 5A and PHYS 5C respectively, and the associated lab courses.

After coming to UC Santa Cruz:

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UCSC.

Incoming students in the physics major should complete the Math Placement process as early as possible, so that the placement is posted before enrollment begins.For more information, please review the Math Placement website.

In their first term, students should enroll in the highest course in the following sequence that they are eligible for: MATH 2, MATH 3, MATH 19A, MATH 19B, MATH 23A, MATH 23B. Students should not take MATH 11A or MATH 11B or MATH 16A or MATH 16B. Graduating in four years is still possible for a student who places into MATH 2 or MATH 3; the department undergraduate adviser and the department's alternatives webpage should be consulted.

Students who come to UC Santa Cruz with credit for MATH 19A, and have room in their schedule, should take PHYS 5A or Physics 15A and PHYS 5L (unless they have a score of 5 on the AP Physics C Mechanics examination) and PHYS 5L in their first term. Those who come to UCSC with credit for MATH 19B and PHYS 5A and PHYS 5L, and have room in their schedule, may consider taking PHYS 5C or Physics 15C and PHYS 5N (unless they have a score of 5 on the AP Physics C Electricity Magnetism examination) in their first term. The Physics Department tries to match incoming students who are interested with research opportunities, if they are available.

Students who for some reason do not start the courses for the major in their first term should consult the department undergraduate adviser and the alternatives webpage. Students who do not begin the lower-division requirements during their first year will have difficulty completing the program within four years.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5

A minimum GPA of 2.7 must be obtained in the following courses

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5

In addition, the following course is recommended prior to transfer to ensure timely graduation:

PHYS 5D	Introduction to Physics IV	5

Students entering UC Santa Cruz in the winter quarter must complete

PHYS 5D	Introduction to Physics IV	5
MATH 23B	Vector Calculus	5

In addition to the requirements for students entering in the fall quarter. (This is true for years when winter admission is open.)

Getting Started in the Major: Transfer Students

Transfer students admitted to UC Santa Cruz in the physics (astrophysics) major who have satisfied the above screening requirements may declare the major immediately upon arrival at UC Santa Cruz. They should contact the undergraduate adviser to draw up an academic plan.

Incoming transfer students should enroll in the following courses in their first term:

- PHYS 5D, unless they have credit for the course, in which case PHYS 102;

- MATH 23B, unless they have credit for the course, in which case they may enroll in PHYS 116A or an elective or general education course;
- ASTR 119, unless they have knowledge of the Python programming language, in which case they may enroll in PHYS 133 after obtaining a permission code.

Students who have completed courses that should be equivalent to PHYS 5D or MATH 23B but is not formally articulated as such should contact the undergraduate adviser to have their courses evaluated.

Transfer students entering UC Santa Cruz in the winter quarter should meet with the undergraduate adviser upon arrival to draw up an academic plan.

Students who are proposed in a different major (other than physics or applied physics) and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify to declare the physics (astrophysics) major, students must achieve a cumulative grade point average (GPA) of 2.70 or greater in the following courses, or their equivalents:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5

PHYS 15A can be used instead of PHYS 5A, and PHYS 15C instead of PHYS 5C. All qualification courses must be completed prior to the major declaration deadline.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair by the later date of either 15 days from the date the notification was sent, or one week after the start of instruction during the quarter after the final relevant grade was received (generally in PHYS 5C or PHYS 5D). They also must arrange to meet with one of the faculty mentors listed for Declaring the Major. Within 15 days of receipt of the appeal, after consulting with the faculty mentor, the department chair will either finalize the denial of admission or specify further conditions for admission or approve admission to the major, and will notify the student and their college of the decision. For more information about the appeal process, see Appeal Process.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

All students are required to review their academic plan with a faculty mentor prior to declaring the major. For instructions on petitioning to declare, go to Declaring Your Major.

Letter Grade Policy

All courses used to satisfy the physics (astrophysics) major requirements must be taken for a letter grade.

[Optional Catchall]

Double Majors and Major/Minor Combinations Policy

Students who complete a major sponsored by the Physics Department cannot complete a second major sponsored by the Physics Department or a physics minor.

Students cannot complete both the physics (astrophysics) major and the astrophysics minor.

Study Abroad

Honors

The department awards "honors" (3.5 grade point average or better) and "highest honors"(3.8 grade point average or better) to top graduating students each year. The department also awards "honors" for outstanding work on the senior thesis, made upon the recommendation of the faculty thesis adviser.

Timely Graduation and Alternative Plans

- Students planning a senior thesis should find a faculty thesis advisor as early as possible, but no later than the beginning of the senior year for four-year students or the beginning of the second year for transfer students. For further information about the senior thesis, see Senior Thesis.
- Students who join a major program of the Physics Department with some of the required courses completed, or have room in their program for additional courses, should consult with the Physics Department undergraduate adviser.
- Students who fall behind the planners should consult the Physics Department undergraduate adviser and Alternatives.
- All the transfer major planners assume that IGETC has been completed in community college, or has been partially completed and can be finished while at UC Santa Cruz (including summers).

[Optional Catchall]

Requirements and Planners

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

PHYS 5A	Introduction to Physics I	5
PHYS 15A	Honors Introduction to Physics I	5

Plus one of the following courses:

PHYS 5C	Introduction to Physics III	5
PHYS 15C	Honors Introduction to Physics - III	5

Plus all of the following courses:

PHYS 5B	Introduction to Physics II	5
PHYS 5L	Introduction to Physics I Laboratory	1
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 5D	Introduction to Physics IV	5

At present, there is no Honors version of PHYS 5B.

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Plus one of the following courses or equivalent:

ASTR 119	Introduction to Scientific Computing	5
CSE 20	Beginning Programming in Python	5
ASTR 19	Practical Programming for the Sciences	5

ASTR 119 is strongly recommended. A test-out option is available for CSE 20.

Plus one of the following options:

	Either this course	
ASTR 21	The Diverse Universe: Stars, Planets, and Galaxies	5
	or these courses	
ASTR 9A	Introduction to Research in Physics and Astrophysics	2
ASTR 9B	Introduction to Research in Physics and Astrophysics	3

Upper-Division Courses

All of the following courses:

PHYS 102	Modern Physics	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 105	Mechanics	5
PHYS 110A	Electricity, Magnetism, and Optics	5
PHYS 110B	Electricity, Magnetism, and Optics	5
PHYS 112	Thermodynamics and Statistical Mechanics	5
PHYS 133	Intermediate Laboratory	5
PHYS 139A	Quantum Mechanics I	5

Completing both MATH 21 and MATH 24 can substitute for PHYS 116A.

PHYS 116C is waived for students who are pursuing a dual major in physics (astrophysics) and mathematics B.A. or B.S., and take MATH 107 in Fall 2017 or later.

Plus one of the following options:

	Either this course	
PHYS 135	Astrophysics Advanced Laboratory	5
	or these courses	
PHYS 135A	Astrophysics Advanced Laboratory	3
PHYS 135B	Astrophysics Advanced Laboratory	2
	or this course	
ASTR 136	Advanced Astronomy Laboratory	5
or any three of these courses		
ASTR 136A	Advanced Astronomy Lab: Astrometry	2
ASTR 136B	Advanced Astronomy Lab: Galaxy Rotation Curves and Dark Matter	2
ASTR 136C	Advanced Astronomy Lab: Stellar Photometry	2
ASTR 136D	Advanced Astronomy Lab: Wavefront Measurement	2
ASTR 136E	Advanced Astronomy Lab: Adaptive Optics	2
ASTR 136G	Advanced Astronomy Lab: Detectors	2
ASTR 136H	Advanced Astronomy Lab: Fourier Optics	2

Capacity in the lab courses is limited, and they should be taken as early as possible. PHYS 135A and PHYS 135B are not scheduled to be offered in the next few years.

Electives

Complete three courses chosen from the following:

ASTR 111	Order-of-Magnitude Astrophysics	5
ASTR 112	Physics of Stars	5
ASTR 113	Introduction to Cosmology	5
ASTR 117	High Energy Astrophysics	5
ASTR 118	Physics of Planetary Systems	5
PHYS 129	Particle Physics and Astrophysics	5
PHYS 137	Advanced Optics Laboratory	5
PHYS 171	General Relativity, Black Holes, and Cosmology	5
EART 160	Planetary Science	5
EART 162	Planetary Interiors	5
EART 163	Planetary Surfaces	5
EART 164	Planetary Atmospheres	5
AM 107	Introduction to Fluid Dynamics	5
PHYS 130	Multiwavelength Astronomical Techniques	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy the upper-division disciplinary communication (DC) requirement. Students in the physics (astrophysics) major satisfy the DC requirement by completing one of the following options:

	Either this course	
PHYS 182	Scientific Communication for Physicists	5
	or these courses	
PHYS 195A	Senior Thesis I	5
PHYS 195B	Senior Thesis II	5

Comprehensive Requirement

The comprehensive requirement is satisfied by completing one of the following options:

	Either this course	
PHYS 135	Astrophysics Advanced Laboratory	5
	or these courses	
PHYS 135A	Astrophysics Advanced Laboratory	3
PHYS 135B	Astrophysics Advanced Laboratory	2
	or this course	
ASTR 136	Advanced Astronomy Laboratory	5
or any three of these courses		
ASTR 136A	Advanced Astronomy Lab: Astrometry	2
ASTR 136B	Advanced Astronomy Lab: Galaxy Rotation Curves and Dark Matter	2
ASTR 136C	Advanced Astronomy Lab: Stellar Photometry	2
ASTR 136D	Advanced Astronomy Lab: Wavefront Measurement	2
ASTR 136E	Advanced Astronomy Lab: Adaptive Optics	2
ASTR 136G	Advanced Astronomy Lab: Detectors	2
ASTR 136H	Advanced Astronomy Lab: Fourier Optics	2

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Physics (Astrophysics) B.S.: Freshman Academic Plan (for students without credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19A or MATH 20A	MATH 19B or MATH 20B	MATH 23A
		PHYS 5A/PHYS 5L or PHYS 15A/PHYS 5L	PHYS 5B/PHYS 5M
		PHYS 5L	
2nd (soph)	PHYS 5C/PHYS 5N or PHYS 15C/PHYS 5N	ASTR 119	PHYS 105
	PHYS 5D	PHYS 116A	PHYS 116C
	MATH 23B	ASTR 21	
3rd (junior)	PHYS 110A	PHYS 110B	
	PHYS 102	PHYS 112	Elective
	PHYS 133		
4th (senior)	PHYS 135	PHYS 182**	

	PHYS 139A	Elective	Elective

Physics (Astrophysics) B.S.: Freshman Academic Plan (for students with credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19B or MATH 20B	MATH 23A	MATH 23B
	PHYS 5A/PHYS 5L or PHYS 15A/PHYS 5L	PHYS 5C/PHYS 5N or PHYS 15C/PHYS 5N	PHYS 5B/PHYS 5M
2nd (soph)	PHYS 116A	ASTR 119	PHYS 105
	PHYS 5D	PHYS 116C	PHYS 133
		ASTR 21	
3rd (junior)	PHYS 110A	PHYS 110B	
	PHYS 102	PHYS 112	Elective
4th (senior)	PHYS 135	PHYS 182**	
	PHYS 139A	Elective	Elective

**Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

In addition to the specific courses shown in this planner, a student must complete courses satisfying the C, ER, CC, IM, TA, PR and PE general education requirements.

Students looking for an alternative pathway through the major should consult the physics advisor.

Physics (Astrophysics) B.S.: Transfer Academic Plan One

	Fall	Winter	Spring
1st (junior)	MATH 23B	ASTR 21	PHYS 105
	PHYS 102	PHYS 116A	PHYS 116C
	PHYS 133	ASTR 119	Elective
2nd (senior)	PHYS 110A	PHYS 110B	PHYS 182*
	PHYS 139A	PHYS 112	Elective
	PHYS 135	Elective	

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

This planner assumes that a student has completed PHYS 5D and general education requirements.

Students who wish to do a more demanding senior thesis or seek greater flexibility in choosing electives or take additional courses to be better prepared for graduate school may consider delaying graduation.

Physics (Astrophysics) B.S.: Transfer Academic Plan Two

For students who have not completed the equivalent of PHYS 5D.

	Fall	Winter	Spring
1st Year	MATH 23B	PHYS 102	PHYS 105
	PHYS 5D	PHYS 116A	PHYS 116C
	ASTR 119	ASTR 21	Elective
2nd Year	PHYS 110A	PHYS 110B	ASTR 136 or PHYS 135
	PHYS 139A	PHYS 112	PHYS 182*
	PHYS 133	Elective	Elective

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

APPLIED PHYSICS B.S.

Information and Policies

Introduction

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities, and attitudes that students are expected to develop over the course of their studies. The program learning outcomes communicate the faculty's expectations to students, provide a framework for faculty evaluation of the curriculum based on empirical data, and help improve and measure the impact of implemented changes. Students graduating with a B.S. in Applied Physics will demonstrate:

PLO 1. Ability to solve problems using concepts in classical and quantum mechanics, statistical mechanics and electromagnetism.

PLO 2. Proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.

PLO 3. Ability to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.

PLO 4. Ability to communicate scientific content effectively, both orally and in writing.

Academic Advising for the Program

The department undergraduate adviser (physicsadvising@ucsc.edu) works closely with students interested in pursuing the major to ensure that they begin the program immediately and follow the appropriate steps toward its completion.

Getting Started in the Major: Frosh

Before coming to the University of California, Santa Cruz:

High school students coming to UC Santa Cruz, as frosh should emphasize their mathematics preparation with the expectation that they will take the first calculus course, MATH 19A, before their second quarter at UCSC. Students who come to UCSC with credit for MATH 19A will be able to start the Physics 5 series or Physics 15 series in the first quarter. PHYS 5A is offered in the fall and winter quarters each year. Students with a score of 5 on the AP Physics C Mechanics and AP Physics C Electricity and Magnetism examinations are exempt from taking PHYS 5A and PHYS 5C respectively, and the associated lab courses.

After coming to UC Santa Cruz:

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UCSC.

Incoming students in the Physics major should complete the Math Placement process as early as possible, so that the placement is posted before enrollment begins. For more information, please review the Math Placement website.

In their first term, students should enroll in the highest course in the following sequence that they are eligible for: MATH 2, MATH 3, MATH 19A, MATH 19B, MATH 23A, MATH 23B. Students should not take MATH 11A or MATH 11B or MATH 16A or MATH 16B. Graduating in four years is still possible for a student who places into MATH 2 or MATH 3; the department undergraduate adviser and the department's Alternatives webpage should be consulted.

Students who come to UC Santa Cruz with credit for MATH 19A, and have room in their schedule, should take PHYS 5A or PHYS 15A and PHYS 5L (unless they have a score of 5 on the AP Physics C Mechanics examination) in their first term. Those who come to UCSC with credit for MATH 19B and PHYS 5A and PHYS 5L, and have room in their schedule, may consider taking PHYS 5C or PHYS 15C and PHYS 5N (unless they have a score of 5 on the AP Physics C Electricity Magnetism examination) in their first term. The Physics Department tries to match incoming students who are interested with research opportunities, if they are available.

Students who for some reason do not start the courses for the major in their first term should consult the department undergraduate adviser and the Alternatives webpage. Students who do not begin the lower-division requirements during their first year will have difficulty completing the program within four years.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5

A minimum GPA of 2.7 must be obtained in the following courses

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5

In addition, the following course is recommended prior to transfer to ensure timely graduation:

PHYS 5D	Introduction to Physics IV	5

Students entering UC Santa Cruz in the winter quarter must complete

PHYS 5D	Introduction to Physics IV	5
MATH 23B	Vector Calculus	5

Getting Started in the Major: Transfer Students

Transfer students admitted to UC Santa Cruz in the applied physics major who have satisfied the above screening requirements may declare the major immediately upon arrival

at UC Santa Cruz. They should contact the undergraduate adviser to draw up an academic plan.

Incoming transfer students should enroll in the following courses in their first term:

- PHYS 5D, unless they have credit for the course, in which case PHYS 102;
- MATH 23B, unless they have credit for the course, in which case they may enroll in PHYS 116A or an elective or general education course;
- ASTR 119, unless they have knowledge of the Python programming language and basic statistics, in which case they may enroll in PHYS 133 after obtaining a permission code.

Students who have completed courses that should be equivalent to PHYS 5D or MATH 23B but is not formally articulated as such should contact the undergraduate adviser to have their courses evaluated.

Transfer students entering UC Santa Cruz in the winter quarter should meet with the undergraduate adviser upon arrival to draw up an academic plan.

Students who are proposed in a different major (other than physics or physics (astrophysics)) and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify to declare the Applied Physics major, students must achieve a cumulative grade point average (GPA) of 2.70 or greater in the following courses, or their equivalents:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5

PHYS 15A can be used instead of PHYS 5A, and PHYS 15C instead of PHYS 5C. All qualification courses must be completed prior to the major declaration deadline.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair by the later date of either 15 days from the date the notification was sent, or one week after the start of instruction during the quarter after the final relevant grade was received (generally in PHYS 5C or PHYS 5D). They also must arrange to meet with one of the faculty mentors listed for Declaring the Major. Within 15 days of receipt of the appeal, after consulting with the faculty mentor, the department chair will either finalize the denial of admission or specify further conditions for admission or approve admission to the major, and will notify the student and their college of the decision.

For more information about the appeal process, see Appeal Process.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

All students are required to review their academic plan with a faculty mentor prior to declaring the major. For instructions on petitioning to declare, go to Declaring Your Major.

Letter Grade Policy

All courses used to satisfy any of the applied physics major requirements must be taken for a letter grade, except the lower-division chemistry requirement.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Students who complete a major sponsored by the Physics Department cannot complete a second major sponsored by the Physics Department or a physics minor.

Study Abroad

Honors

The department awards "honors" (3.5 grade point average or better) and "highest honors"(3.8 grade point average or better) to top graduating students each year. The department also awards "honors" for outstanding work on the senior thesis, made upon the recommendation of the faculty thesis adviser.

Timely Graduation and Alternative Plans

- Students planning a senior thesis should find a faculty thesis adviser as early as possible, but no later than the beginning of the senior year for four-year students or the beginning of the second year for transfer students. For further information about the senior thesis, see Senior Thesis.
- Students who join a major program of the Physics Department with some of the required courses completed, or have room in their program for additional courses, should consult with the Physics Department undergraduate adviser.

- Students who fall behind the planners should consult the Physics Department undergraduate adviser and Alternatives.
- All the transfer major planners assume that Intersegmental General Education Transfer Curriculum (IGETC) has been completed in community college, or has been partially completed and can be finished while at UC Santa Cruz (including summers).

[Optional Catchall]

Standard Applied Physics Major

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

PHYS 5A	Introduction to Physics I	5
PHYS 15A	Honors Introduction to Physics I	5

Plus one of the following courses:

PHYS 5C	Introduction to Physics III	5
PHYS 15C	Honors Introduction to Physics - III	5

Plus all of the following courses:

PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 5D	Introduction to Physics IV	5

At present, there is no Honors version of PHYS 5B.

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Plus one of the following courses:

CHEM 3A	General Chemistry	5
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

CHEM 4A has a corequisite lab course, CHEM 4AL. The lab is not required for the major, but counts toward overall credits for graduation.

CHEM 1A or CHEM 1B can substitute for CHEM 3A.

Plus one of the following courses or equivalent:

ASTR 119	Introduction to Scientific Computing	5
CSE 20	Beginning Programming in Python	5
ASTR 19	Practical Programming for the Sciences	5

A test-out option is available for CSE 20.

Upper-Division Courses

All of the following courses:

PHYS 102	Modern Physics	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 105	Mechanics	5
PHYS 110A	Electricity, Magnetism, and Optics	5
PHYS 110B	Electricity, Magnetism, and Optics	5
PHYS 112	Thermodynamics and Statistical Mechanics	5
PHYS 133	Intermediate Laboratory	5
PHYS 134	Physics Advanced Laboratory	5

Students may take ECE 135/ECE 135L instead of PHYS 110A and PHYS 110B. This is not recommended for students who wish to pursue graduate studies in physics.

Capacity in the lab courses PHYS 133 and PHYS 134 is limited, and they should be taken as early as possible.

Completing both MATH 21 and MATH 24 can substitute for PHYS 116A.

PHYS 116C is waived for students who are pursuing a dual major in applied physics and a mathematics B.A. or B.S., and take MATH 107 in fall 2017 or later.

Electives

Complete three courses chosen from the following, at least one of which has to be a Physics Department course:

PHYS 115	Computational Physics	5
PHYS 120	Polymer Physics	5
PHYS 137	Advanced Optics Laboratory	5
PHYS 139A	Quantum Mechanics I	5
PHYS 139B	Quantum Mechanics II	5
PHYS 157	Frontier of Quantum Materials	5
PHYS 150	Quantum Computing	5
PHYS 152	Physics and Machine Learning	5
PHYS 156	Applications of Quantum Materials	5
PHYS 160	Practical Electronics	5
PHYS 180	Biophysics	5
AM 107	Introduction to Fluid Dynamics	5
CHEM 163B	Chemical Thermodynamics	5

EART 121	The Atmosphere	5
EART 172	Geophysical Fluid Dynamics	5
ECE 101	Introduction to Electronic Circuits	5
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5

Or other courses with approval of the undergraduate faculty advisor.

Students interested in going to graduate school in physics should consider completing the Physics B.S. instead of the Applied Physics B.S. Students who wish to go to graduate school in physics after the Applied Physics B.S. are recommended to complete PHYS 110A and PHYS 110B instead of ECE 135 and ECE 135L, and complete PHY 139A and PHYS 139B.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy the upper-division disciplinary communication (DC) requirement. Students in the applied physics major satisfy the DC requirement by completing one of the following options:

	Either this course	
PHYS 182	Scientific Communication for Physicists	5
	or these courses	
PHYS 195A	Senior Thesis I	5
PHYS 195B	Senior Thesis II	5

Comprehensive Requirement

The comprehensive requirement is satisfied by completing the following course:

PHYS 134	Physics Advanced Laboratory	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements (p. 1438) for more information.

Applied Physics B.S.: Freshman Academic Plan (for students without credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19A or MATH 20A	MATH 19B or MATH 20B	MATH 23A
		CHEM 3A	PHYS 5B/PHYS 5M
		PHYS 5A/PHYS 5L or PHYS 15A/PHYS 5L	
2nd (soph)	PHYS 5C/PHYS 5N or PHYS 15C/PHYS 5N	ASTR 119	PHYS 105
	PHYS 5D	PHYS 116A	PHYS 116C
	MATH 23B		
3rd (junior)	PHYS 102	PHYS 110B	PHYS 134
	PHYS 110A	PHYS 112	Elective
	PHYS 133		
4th (senior)	Elective	PHYS 182**	Elective

Applied Physics B.S.: Freshman Academic Plan (for students with credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19B or MATH 20B	MATH 23A	MATH 23B
	PHYS 5APHYS 5L or PHYS 15A/PHYS 5L	CHEM 3A	PHYS 5B/PHYS 5M
		PHYS 5C/PHYS 5N or PHYS 15C/PHYS 5N	

2nd (soph)	PHYS 116A	ASTR 119	PHYS 105
	PHYS 5D	PHYS 116C	PHYS 133
3rd (junior)	PHYS 102	PHYS 110B	PHYS 134
	PHYS 110A	PHYS 112	Elective
4th (senior)	Elective	PHYS 182**	Elective

**Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

In addition to the specific courses shown in this planner, a student must complete courses satisfying the C, ER, CC, IM, TA, PR and PE general education requirements.

Students looking for an alternative pathway through the major should consult the physics adviser.

Applied Physics B.S.: Transfer Academic Plan One

	Fall	Winter	Spring
1st (junior)	MATH 23B	CHEM 3A	PHYS 105
	PHYS 102	PHYS 116A	PHYS 116C
	ASTR 119		PHYS 133
2nd (senior)	PHYS 110A	PHYS 110B	PHYS 134
	Elective	PHYS 112	Elective
		Elective	PHYS 182*

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

This planner assumes that a student has completed PHYS 5D and general education requirements.

Students who wish to do a more demanding senior thesis or seek greater flexibility in choosing electives may consider delaying graduation.

Applied Physics B.S.: Transfer Academic Plan Two

For students who have not completed the equivalent of PHYS 5D.

	Fall	Winter	Spring
1st Year	MATH 23B	PHYS 102	PHYS 105
	PHYS 5D	CHEM 3A	PHYS 133
	ASTR 119	PHYS 116A	PHYS 116C
2nd Year	PHYS 110A	PHYS 110B	Elective
	Elective	PHYS 112	PHYS 182*
		Elective	PHYS 134

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

Computational Physics Concentration

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus one of the following courses:

PHYS 5A	Introduction to Physics I	5
PHYS 15A	Honors Introduction to Physics I	5

Plus one of the following courses:

PHYS 5C	Introduction to Physics III	5
PHYS 15C	Honors Introduction to Physics - III	5

Plus all of the following courses:

PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 5D	Introduction to Physics IV	5

At present, there is no Honors version of PHYS 5B.

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Plus both of the following courses:

CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7

A test-out option is available for CSE 20.

Upper-Division Courses

All of the following courses:

PHYS 102	Modern Physics	5
PHYS 116A	Mathematical Methods in Physics	5
PHYS 116C	Mathematical Methods in Physics	5
PHYS 105	Mechanics	5
PHYS 110A	Electricity, Magnetism, and Optics	5
PHYS 112	Thermodynamics and Statistical Mechanics	5
STAT 131	Introduction to Probability Theory	5
PHYS 115	Computational Physics	5

Completing both MATH 21 and MATH 24 can substitute for PHYS 116A.

PHYS 116C is waived for students who are pursuing a dual major in applied physics and a mathematics B.A. or B.S., and take MATH 107 in fall 2017 or later.

Electives

Complete three courses chosen from the following, of which at least one must be PHYS 150 or PHYS 152.

PHYS 150	Quantum Computing	5
PHYS 152	Physics and Machine Learning	5
PHYS 110B	Electricity, Magnetism, and Optics	5
PHYS 139A	Quantum Mechanics I	5
AM 148	GPU Programming for Scientific Computations	5
BME 205	Bioinformatics Models and Algorithms	5
CHEM 264	Computational Materials	5
EART 124	Modeling Earth's Climate	5

At most one course can be taken from PHYS 110B and PHYS 139A.

BME 205 has several prerequisites which are not major requirements.

This concentration is not intended for students who wish to go to graduate school in physics. A student who wishes to do so should take PHYS 139A, PHYS 139B, PHYS 110B and PHYS 116B, as part of the major requirements or in addition to them.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy the upper-division disciplinary communication (DC) requirement. Students in the applied physics major satisfy the DC requirement by completing one of the following options:

	Either this course	
PHYS 182	Scientific Communication for Physicists	5
	or these courses	
PHYS 195A	Senior Thesis I	5
PHYS 195B	Senior Thesis II	5

Comprehensive Requirement

The comprehensive requirement is satisfied by completing the following course:

PHYS 115	Computational Physics	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements (p. 1438) for more information.

Computational Physics Concentration: Freshman Academic Plan (for students without credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19A or MATH 20A	MATH 19B or MATH 20B	MATH 23A
		PHYS 5A/PHYS 5L or PHYS 15A/PHYS 5L	PHYS 5B/PHYS 5M
2nd (soph)	PHYS 5C/PHYS 5N or PHYS 15C/PHYS 5N	CSE 20	PHYS 105
	PHYS 5D	PHYS 116A	PHYS 116C
			CSE 30
	MATH 23B		
3rd	PHYS 102	PHYS 112	STAT 131

(junior)	PHYS 110A		
4th (senior)	PHYS 115	PHYS 182**	Elective
	Elective	Elective	

Computational Physics Concentration: Freshman Academic Plan (for students with credit for MATH 19A)

	Fall	Winter	Spring
1st (frosh)	MATH 19B or MATH 20B	MATH 23A	MATH 23B
	PHYS 5A/PHYS 5L or PHYS 15A/PHYS 5L	PHYS 5C/PHYS 5N or PHYS 15C/PHYS 5N	PHYS 5B/PHYS 5M
2nd (soph)	PHYS 116A	PHYS 116C	PHYS 105
	PHYS 5D	CSE 20	CSE 30
3rd (junior)	PHYS 102	PHYS 112	STAT 131
	PHYS 110A		
4th (senior)	PHYS 115	PHYS 182**	Elective
	Elective	Elective	

**Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.In addition to the specific courses shown in this planner, a student must complete courses satisfying the ER, CC, IM, TA, PR and PE general education requirements.

Students looking for an alternative pathway through the major should consult the physics adviser.

Computational Physics Concentration: Transfer Academic Plan One

	Fall	Winter	Spring
1st (junior)	MATH 23B	CSE 20	PHYS 105
	PHYS 102	PHYS 116A	PHYS 116C
			CSE 30
2nd (senior)	PHYS 110A	PHYS 182*	STAT 131
	PHYS 115	PHYS 112	Elective
		Elective	Elective

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

This planner assumes that a student has completed PHYS 5D and general education requirements.

Students who wish to do a more demanding senior thesis or seek greater flexibility in choosing electives may consider delaying graduation.

Computational Physics Concentration: Transfer Academic Plan Two

For students who have not completed the equivalent of PHYS 5D.

	Fall	Winter	Spring
1st Year	MATH 23B	PHYS 102	PHYS 105
	PHYS 5D	CSE 20	CSE 30
		PHYS 116A	PHYS 116C
2nd Year	PHYS 110A	PHYS 182*	Elective
	PHYS 115	PHYS 112	STAT 131
	Elective		Elective

*Students writing a senior thesis should replace PHYS 182 with the two-quarter sequence PHYS 195A and PHYS 195B.

PHYSICS MINOR

Course Requirements

To complete the physics minor students complete the following courses or their equivalents. Some courses may be satisfied via exam credit. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Choose one of the following options:

	Either these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5L	Introduction to Physics I Laboratory	1
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

PHYS 15A can substitute for PHYS 5A, and PHYS 15C for PHYS 5C.

Plus the following course:

PHYS 5D	Introduction to Physics IV	5

Plus one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Plus all of the following courses:

MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Upper-Division Courses

All of the following courses:

PHYS 102	Modern Physics	5
PHYS 133	Intermediate Laboratory	5

Plus three elective courses

These can be any 5-credit physics upper-division courses chosen from PHYS 100 to PHYS 180, or courses from the following list:

AM 107	Introduction to Fluid Dynamics	5
AM 114	Introduction to Dynamical Systems	5
ASTR 111	Order-of-Magnitude Astrophysics	5
ASTR 112	Physics of Stars	5
ASTR 113	Introduction to Cosmology	5
ASTR 117	High Energy Astrophysics	5
ASTR 118	Physics of Planetary Systems	5
EART 121	The Atmosphere	5
EART 160	Planetary Science	5
EART 172	Geophysical Fluid Dynamics	5
ECE 101	Introduction to Electronic Circuits	5
ECE 102	Properties of Materials	5
ECE 103	Signals and Systems	5
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 171	Analog Electronics	5
ECE 172	Advanced Analog Circuits	5
ECE 178	Device Electronics	5
MATH 130	Celestial Mechanics	5

The elective courses cannot be offered by the department that sponsors the student's major. Other courses may be taken as electives with the approval of the Physics Department undergraduate faculty adviser.

Students who complete a major sponsored by the Physics Department cannot complete a second major sponsored by the Physics Department or the physics minor.

SCIENCE EDUCATION B.S.

Information and Policies

Introduction

Twenty-first century science educators must be able to help their students develop and apply a scientific perspective to a wide range of information. The science education major is designed to prepare future secondary science teachers in California with a broad background across the sciences—the physical sciences, life sciences, Earth sciences, and space sciences—with advanced specialization in two fields of science (chosen from physics, chemistry, biology, and Earth sciences). The major integrates education coursework and middle and high school classroom internships designed to develop skills and knowledge relevant to teaching K-12 students in the state of California. The major is mainly intended to prepare students for teacher certification programs and the California Subject Examinations for Teachers (CSET), so that they can teach science in California high schools.

Cal Teach is one home base for all students in this major, no matter the choices for specialization. Cal Teach (CaT) provides the required sequence of middle and high school-based internships and associated courses in partnership with schools throughout Santa Cruz County. Each internship placement depends on school schedules and the intern's schedule, interests, and academic preparation. The CaT seminar courses provide the framework for science education majors to develop classroom-management strategies, practice communicating scientific concepts for non-specialists (children), and design lessons to teach the science standards currently used in K-12 education. Departmental advising is provided by the Physics Department and the program faculty.

The program is designed to prepare outstanding candidates to enter teaching credential programs after completion. Students earn a Bachelor of Science (B.S.) degree. They do not earn a teaching credential. Most students elect to complete this after graduation. Details of how to prepare for admission to a teaching credential program are available on the Education Department's Careers in K-12 School Teaching page.

Program Learning Outcomes

Learning outcomes summarize the most important knowledge, skills, abilities, and attitudes that students are expected to develop over the course of their studies. The program learning outcomes communicate the faculty's expectations to students, provide a framework for faculty evaluation of the curriculum based on empirical data, and help improve and measure the impact of implemented changes:

- Students will demonstrate knowledge and an understanding of scientific connections across the broad spectrum of the sciences.
- Students will demonstrate advanced knowledge in two areas of specialization.
- Students will show that they have learned laboratory skills in multiple scientific fields, enabling them to take measurements in a laboratory and in the field and analyze the measurements to draw valid conclusions.
- Students will communicate scientific concepts effectively and accurately, both orally and in writing, for both college-level and secondary audiences
- Students will apply strategies to address a diversity of K-12 learners' needs.

Academic Advising for the Program

Academic advising for the major is provided by the Physics Department undergraduate adviser. Transfer students should also consult the Transfer Information and Policy section of this program statement. Students should contact calteach@ucsc.edu as early as possible to be set up to enroll in the Cal Teach internship courses, which are required for the major.

Getting Started in the Major: Frosh

This is a course-intensive program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz.

This major is designed for students interested in teaching science in California high schools. It may be suitable for students who start out in other science majors and are interested in high school teaching.

Because of the broad based nature of the major, with introductory courses in physics, chemistry and mathematics, there is considerable flexibility in what courses are taken in the first two years, as long as enough courses required for the major are completed. However, it is simplest to follow the appropriate major planner given here; students should consult with the physics undergraduate adviser if they want to do something different.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Students should complete at least two courses in the calculus sequence (MATH 11A and MATH 11B or MATH 19A and MATH 19B) in the first year; MATH 19A and MATH 19B are required for students who choose physics as one of their specializations.

Transfer Information and Policy

Transfer Admission Screening Policy

Note: This major is intended for students who are interested in teaching science in high schools in the state of California. For more information, please see the program statement for this major in the UC Santa Cruz General Catalog.

Six of the following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall.

BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
BIOL 20A	Cell and Molecular Biology	5
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
PHYS 6A	Introductory Physics I	5
PHYS 6B	Introductory Physics II	5
PHYS 6C	Introductory Physics III	5
STAT 5	Statistics	5
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Courses from either the CHEM 3 series or the CHEM 4 series, not both, can be used. Students can complete CHEM

1A, CHEM 1B and CHEM 1C as an alternative to CHEM 3A, CHEM 3B and CHEM 3C.

Getting Started in the Major: Transfer Students

Transfer students admitted to UC Santa Cruz in this major should contact the Physics Department undergraduate adviser as soon as possible to draw up an academic plan, specifying the two fields out of physics, chemistry, biology and earth sciences which they wish to specialize in. Because the program includes courses from several departments, and different students complete different courses prior to matriculation, an individual academic plan is essential for timely graduation. If any courses that are not articulated to UC Santa Cruz courses have been completed, they may be reviewed for equivalence if requested; course descriptions and other details may be needed for such a review.

Students should also contact CalTeach as soon as possible after coming to UC Santa Cruz to be set up to enroll in the CalTeach internship courses, which are required for the major.

Students may declare the major at any time after coming to UC Santa Cruz. Contact physics advising for details.

Students who are proposed in a different major and have advanced standing when they come to UC Santa Cruz require permission from the Science Education faculty program director to change into the major.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete at least six 5-credit courses from the lower-division course requirements before they can declare the major. (Lecture/lab combinations count as one course.)

In addition, students are strongly encouraged to complete EDUC 50C before deciding to declare this major.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the program director through physicsadvising@ucsc.edu by the later date of either 15 days from the date the notification was sent, or one week after the start of instruction during the quarter after the final relevant grade was received. Within 15 days of receipt of the appeal, the program director will either finalize the denial of admission or specify further conditions for admission, and will notify the student and their college of the decision.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

Students should meet with the Physics Department undergraduate adviser and prepare an academic plan when they declare the major. (Transfer students should have prepared an academic plan already; see the section Getting Started in the Major: Transfer Students.)

Letter Grade Policy

All courses used to satisfy any of the major requirements must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Study Abroad

Honors

Honors in the major are awarded to graduating students whose academic performance demonstrates excellence at a grade point average (GPA) of 3.5 or above in the courses used to satisfy major requirements. Highest honors are awarded to those students whose performance demonstrates the highest level of excellence and results in a GPA of 3.8 or above in the courses used to satisfy major requirements. The program faculty reserve the right to withhold honors and highest honors based on other criteria such as an incident of academic dishonesty.

[Optional Catchall]

Requirements and Planners

Course Requirements

Lower-Division Courses

Choose one of the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 11A	Calculus with Applications	5

Plus one of the following courses:

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 11B	Calculus with Applications	5

Plus the following course:

MATH 22	Introduction to Calculus of Several Variables	5

MATH 22 is waived for a student who chooses their electives from chemistry and biology or from Earth sciences and biology.

Plus one of the following options:

	Either these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

Plus one of the following options:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, CHEM 1B, CHEM 1C, CHEM 1M, and CHEM 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B, and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B, and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following options:

	Either these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1
	or these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1

Plus all of the following courses:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5

Plus one of the following courses:

ASTR 1	Introduction to the Cosmos	5
ASTR 2	Overview of the Universe	5
ASTR 5	Introductory Astronomy: The Formation and Evolution of the Universe	5
ASTR 10	From the Big Bang to Planet Earth	5

Plus one of the following options:

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or this course	
ASTR 119	Introduction to Scientific Computing	5

ASTR 119 should be taken by students who select physics as one of their fields of specialization (see the Electives section below), to enable them to take the required course PHYS 133.

Plus the following course:

EDUC 50C	CAL Teach 1: Science	2

Upper-Division Courses

The following course:

EART 110A	Evolution of the Earth	7

Plus one of the following courses:

EDUC 100A	Cal Teach 2: Science and Mathematics	2
EDUC 100C	Cal Teach 2: Science	2

Plus all of the following courses:

EDUC 185L	Introduction to Teaching: Cal Teach 3	3
EDUC 185C	Introduction to Teaching Science	5

Plus one of the following courses:

EDUC 177	Teaching Linguistically Diverse Students	5

EDUC 128	Immigrants and Education	5
EDUC 140	Language, Diversity, and Learning	5
EDUC 181	Race, Class, and Culture in Education	5

Electives

All the courses from any two of the following fields must be completed:

Field 1: Physics

PHYS 5D	Introduction to Physics IV	5
PHYS 102	Modern Physics	5
PHYS 133	Intermediate Laboratory	5

Field 2: Chemistry

CHEM 8A	Organic Chemistry	5
CHEM 8L	Organic Chemistry Laboratory	2
CHEM 8B	Organic Chemistry	5
CHEM 8M	Organic Chemistry Laboratory	2

Field 3: Biology

BIOL 105	Genetics	5
BIOE 107	Ecology	5
BIOE 109	Evolution	5

Field 4: Earth Sciences

EART 110B	Earth as a Chemical System	5
EART 110M	Earth as a Chemical System Laboratory	2
OCEA 90	Fundamentals of Climate	5

Disciplinary Communication (DC) Requirement

The disciplinary communication requirement for this major is fulfilled by completing:

Choose one of the following courses:

EDUC 100A	Cal Teach 2: Science and Mathematics	2
EDUC 100C	Cal Teach 2: Science	2

Plus the following course:

EDUC 185L	Introduction to Teaching: Cal Teach 3	3

Comprehensive Requirement

The senior capstone requirement for this major is fulfilled by completing:

EDUC 185C	Introduction to Teaching Science	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements (p. 1438) for more information.

Four-Year Planner

There are several alternatives to this planner. However, changes to an individual plan must take into account various prerequisites, both within the sequence of courses in a single discipline and between disciplines. Consult with an adviser before attempting an alternative path.

	Fall	Winter	Spring	Summer
Entering				
1st (frosh)	MATH 11A[#]	MATH 11B	BIOE 20C	
	CHEM 3A	CHEM 3B & CHEM 3BL	CHEM 3C & CHEM 3CL	
2nd (soph)	PHYS 6A & PHYS 6L[#]	PHYS 6B & PHYS 6M	PHYS 6C & PHYS 6N	
	EART 5 & EART 5L	BIOL 20A	BIOE 20B	
	EDUC 50C**	STAT 5	EDUC 100C	
3rd (junior)	ASTR course	MATH 22*	EDUC 185C	
	EART 110A	EDUC diversity course	Field A course	
	Field A course	Field A course		
4th (senior)	Field B course	Field B course	Field B course	
			EDUC 185L	

In addition to the specific courses shown in these planners, a student must complete courses satisfying the CC, IM and TA general education requirements.

#Students choosing physics as one of their fields of specialization must take MATH 19A and 19B instead of MATH 11A and MATH 11B, and the PHYS 5 series of courses instead of PHYS 6.

*MATH 22 is a prerequisite for CHEM 163A (recommended for chemistry + Earth sciences) and CHEM 163B (recommended for chemistry + physics). MATH 22 is required for this major only if a student chooses physics as one of their fields or chooses the combination chemistry + Earth sciences. Consult your adviser with questions.

**See advance enrollment requirements and process in the Lower-Division Courses section above.

Field A and B refer to the two subject areas a student chooses for specialization. Courses in each field are:

1. Physics: PHYS 5D (fall), PHYS 102 (winter), PHYS 133 (spring)
2. Earth sciences: OCEA 90 (fall), EART 110B & EART 110M (winter), Earth science upper-division elective (spring).
3. Biology: BIOL 105 (fall), BIOE 107 (winter), BIOE 109 (spring)
4. Chemistry (three options):
    a. CHEM 163A (fall), CHEM 8A & CHEM 8L (winter), CHEM 8B & CHEM 8M (spring) for chemistry with Earth sciences
    b. CHEM 8A & CHEM 8L (fall), CHEM 163B (winter), CHEM 8B & CHEM 8M (spring) for chemistry with physics
    c. CHEM 8A & CHEM 8L (fall), CHEM 8B & CHEM 8M (winter), CHEM 103 (spring) for chemistry with biology

Transfer Planner

	Fall	Winter	Spring	Summer
Entering				
1st (junior)	EART 5 & EART 5L	EDUC 50C**	EDUC 100C	
	ASTR course	MATH 22*	Field A course	
	Field A course	Field A course	EDUC 185C	
2nd (senior)	Breadth course 1	Breadth course 2	Breadth course 3	
	EART 110A	EDUC diversity course	EDUC 185L	
	Field B course	Field B course	Field B course	

*MATH 22 is a prerequisite for CHEM 163A (recommended for chemistry + Earth sciences) and CHEM 163B (recommended for chemistry + physics). A student who has completed the equivalent at their community college will not need to complete this course at UC Santa Cruz. MATH 22 is required for this major only if a student chooses physics as one of their fields or chooses the combination chemistry + Earth sciences. Consult your adviser with questions.

**See advance enrollment requirements and process in the Lower-Division Courses section above.

This planner assumes that the student has completed all general education requirements, and nine courses out of the 12 breadth requirements in physics, chemistry, biology and mathematics & statistics. The remaining three "breadth courses" can be taken in the three slots shown.

Elective courses for each field are described below the four-year planner. If courses in Field A cannot be taken in the junior year, they can be exchanged with the breadth courses shown in the senior year.

PHYSICS CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

Information and Policies

Introduction

The five-year combined Bachelor's/Master's degree physics program provides undergraduate students the opportunity to earn a Master of Science (M.S.) degree in five years. Students are able to start their graduate coursework in their junior year and can use up to two elective requirements between degrees. This program is designed for students who intend to go into industry upon graduation and is not well-suited for those who ultimately want to obtain a Ph.D. in physics. The Combined B.S./M.S. has a two-stage application, one at the departmental level (due second quarter of junior year) and then another at the graduate program level (due first quarter of senior year). Upon successful completion of their undergraduate requirements students are awarded their B.S. in Physics, and providing that they still meet the relevant criteria, may continue into the M.S. program. In order to be awarded the M.S. students finish any remaining M.S. coursework and then defend their M.S. thesis.

Requirements for taking graduate courses:

Students enrolling in PHYS 210, PHYS 212, or PHYS 215 must earn a B or better in the related undergraduate course as a prerequisite. For example, for a student to take PHYS 210 in their senior year they must acquire a grade of B or better in PHYS 105.

Graduate courses taken while registered as an undergraduate must be taken for a letter grade.

Departmental Admission Requirements:

- 3.3 GPA overall and within physics
- Two letters of recommendation (at least one from a physics faculty member)
- Departmental Application
- Statement of Purpose. This statement should explain your interest in the BS./M.S. program and your proposed research topic.
- Due by the end of the second quarter of junior year

Graduate Program Requirements:

- 3.0 GPA overall and within physics
- Successful completion of PHYS 139A, taken for a letter grade and completed with a B or better, even if not required for the undergraduate degree
- Three letters of recommendation (two from physics faculty, one from research adviser)
- Unofficial transcripts
- Statement of Purpose
- Due by the end of the first quarter of their senior year.

Letters of recommendation for departmental admission requirements can overlap with letters of recommendation for graduate program requirements.

Course Requirements

All of the following

PHYS 210	Classical Mechanics and Thermal Physics	5
PHYS 212	Electromagnetism I	5
PHYS 215	Introduction to Non-Relativistic Quantum Mechanics	5
PHYS 219	Statistical Physics	5
PHYS 297A	Independent Study	5
PHYS 297A	Independent Study	5

Students must take 10 credits of PHYS 297A as a graduate student. These should be taken in winter and spring of the "+1" year. Modifications to this schedule are allowed with permission of the program director.

Plus four graduate courses from M.S. electives

PHYS 214	Electromagnetism II	5
PHYS 216	Advanced Topics in Non-Relativistic Quantum Mechanics	5
PHYS 217	Quantum Field Theory I	5
PHYS 218	Quantum Field Theory II	5
PHYS 220	Theory of Many-Body Physics	5
PHYS 221A	Introduction to Particle Physics I	5
PHYS 221B	Introduction to Particle Physics II	5
PHYS 222	Quantum Field Theory III	5
PHYS 224	Particle Astrophysics and Cosmology	5
PHYS 226	General Relativity	5
PHYS 231	Introduction to Condensed Matter Physics	5
PHYS 232	Condensed Matter Physics	5
PHYS 233	Advanced Condensed Matter Physics	5
PHYS 234	Soft Condensed Matter Physics	5
PHYS 240	Polymer Physics	5
PHYS 242	Computational Physics	5
PHYS 251	Group Theory and Modern Physics	5
PHYS 290	Special Topics	5

With approval from the program director, students may take graduate courses from other departments.

PHYSICS M.S.

Introduction

The Physics Department welcomes students interested in the master's degree. Master's candidates can perform research in any of the areas covered by the department. They develop laboratory and computational skills which are of value in many fields. These include electronics design, computer simulation and visualization, cryogenics, X-ray scattering, complex novel materials and devices, materials science and biophysics. Each M.S. student is assigned a faculty adviser who helps to design a coursework plan suited to the interests of the student.

Physics students and faculty use a number of UC Santa Cruz research facilities described at the beginning of this section and elsewhere in this catalog, including facilities of the Santa Cruz Institute for Particle Physics(SCIPP) and the UC Observatories (headquartered at UC Santa Cruz). There is strong interaction with other disciplines, especially astronomy and astrophysics, biology, chemistry, Earth sciences,

electrical engineering, and mathematics. Proximity to the SLAC National Accelerator Laboratory and the Stanford Synchrotron Radiation Laboratory provides additional local research opportunities. UC Santa Cruz faculty and graduate students also participate in research programs at CERN in Geneva, Los Alamos, Oak Ridge National Laboratory, NASA Ames, NREL, Lucent, Xerox, IBM, Bell Labs, and other national and international laboratories.

The application procedure and requirements for the M.S. program is identical to those of the Ph.D. program.

Application materials and brochures describing the physics M.S. and Ph.D. graduate programs in more detail may be obtained by visiting the Physics Department website or by contacting the Division of Graduate Studies.

Students pursuing the Ph.D. degree can apply for a master's degree upon successful completion of the requirements for a master's degree.

Requirements

Course Requirements

The following courses are required for M.S. students:

PHYS 202	Introduction to Teaching in Physics	1
PHYS 210	Classical Mechanics and Thermal Physics	5
PHYS 212	Electromagnetism I	5
PHYS 215	Introduction to Non-Relativistic Quantum Mechanics	5
PHYS 219	Statistical Physics	5

Choose four of the following courses:

PHYS 214	Electromagnetism II	5
PHYS 216	Advanced Topics in Non-Relativistic Quantum Mechanics	5
PHYS 217	Quantum Field Theory I	5
PHYS 218	Quantum Field Theory II	5
PHYS 220	Theory of Many-Body Physics	5
PHYS 221A	Introduction to Particle Physics I	5
PHYS 221B	Introduction to Particle Physics II	5
PHYS 222	Quantum Field Theory III	5
PHYS 224	Particle Astrophysics and Cosmology	5
PHYS 226	General Relativity	5
PHYS 231	Introduction to Condensed Matter Physics	5
PHYS 232	Condensed Matter Physics	5
PHYS 233	Advanced Condensed Matter Physics	5
PHYS 234	Soft Condensed Matter Physics	5
PHYS 240	Polymer Physics	5
PHYS 242	Computational Physics	5
PHYS 251	Group Theory and Modern Physics	5
PHYS 290	Special Topics	5

M.S. Thesis Requirement

Students may obtain a master’s degree through coursework (nine physics graduate courses) and submission of an approved thesis. The thesis requirement may be waived by passing four sections of the written pre-qualifying examination. Master’s candidates are encouraged to write a research thesis and may do so in any of the research fields in the program, thereby developing laboratory and computational skills in areas such as electronics design, computer simulation and visualization, cryogenics, X-ray scattering, complex novel materials and devices, or materials science. Each M.S. student is assigned a faculty adviser who helps to design a coursework plan suited to the interests of the student.

Other Requirements

[Optional Catchall]

Applying for Graduation

Students must apply for graduation in order to receive their M.S. degree. The form can be found on the physics graduate student forms page and should be submitted to the Graduate Division.

PHYSICS PH.D.

Introduction

The Ph.D. program in physics at UC Santa Cruz is a leader in outstanding physics research programs. We provide intellectually rich, vibrant, and challenging courses to prepare students for careers in experimental and theoretical astrophysics, biophysics, condensed matter physics and materials science, cosmology, particle physics theory, and particle physics experiments. Aligning a student's research interests and those of the department are particularly important; each doctoral student is assigned a faculty advisor who helps design a research project suited to both.

Admission Process

We are committed to providing an excellent education to a diverse population of graduate students, and encourage candidates from all backgrounds to apply. While taking into consideration a candidate's undergraduate grade point average (GPA), letters of recommendation, student statements, and Graduate Record Examinations (GRE) scores (if provided), applicants are not disqualified based on any single factor. We employ a holistic process to assess candidates’ knowledge and passion for physics, as well as whether or not they have the

perseverance and tenacity required to complete the doctoral program. In particular, the department recognizes the documented limitations of the GRE as an equitable predictor of success in graduate studies and research.

More information on the admission process can be found on the Physics Department's admissions page.

Advancement to Candidacy

To Advance to Candidacy (ATC), students must:

- complete all course requirements;
- have no Incomplete (I) grades;
- pass all five sections of the Written Qualifying Exams;
- nominate an Oral Qualifying Exam Committee and pass the Oral Qualifying Exam;
- nominate a Dissertation Reading Committee;
- pay the ATC fee.

Course Requirements

The exact number of courses required to complete the degree will depend on a student's preparation for graduate study and on their progress toward the degree as evaluated by the department.

Core courses

In the first year of study, Ph.D. students are expected to take two core graduate-level courses per quarter from the following list of courses required for the Ph.D. degree:

PHYS 210	Classical Mechanics and Thermal Physics	5
PHYS 212	Electromagnetism I	5
PHYS 214	Electromagnetism II	5
PHYS 215	Introduction to Non-Relativistic Quantum Mechanics	5
PHYS 216	Advanced Topics in Non-Relativistic Quantum Mechanics	5
PHYS 219	Statistical Physics	5

Additional first-year courses

First-year students are also required to take the following two courses:

PHYS 205	Introduction to Research in Physics	2
PHYS 202	Introduction to Teaching in Physics	1

Additional course first and second years

First- and second-year students are required to take the following course every quarter:

PHYS 292	Seminar

Elective courses

An additional requirement are two graduate-level electives chosen in consultation with the student's faculty adviser. Students are allowed to take more than two electives.

The table below is for informational purposes only. A student's plan may vary depending on prior coursework, research opportunity, and individual circumstance.

Sample Planner

Year	Fall	Winter	Spring	Summer
1st	Written Quals			TA/GSI/Research
	PHYS 202	PHYS 205	PHYS 216	
	PHYS 210	PHYS 214	PHYS 219	
	PHYS 212	PHYS 215	PHYS 292	
	PHYS 292	PHYS 292		
2nd	Written Quals		Apply for M.S.	TA/GSI/Research
	Grad Elective	Grad Elective	PHYS	
	PHYS 297A/PHYS 297B	PHYS 297A/PHYS 297B	PHYS	
	PHYS 292	PHYS 292	Join Research Group	
3rd	PHYS 297B	PHYS 297B	PHYS	TA/GSI/Research
	Nominate Oral Qual Committee	Schedule Oral Qualifying Exam	Take Oral Qualifying Exams	International Student Deadline to ATC
			Nominate Dissertation Reading Committee	

4th	PHYS 299B	PHYS 299B	PHYS 299B	TA/GSI/Research
5th	PHYS 299B	PHYS 299B	PHYS 299B	TA/GSI/Research
				Five-Year funding guarantee ends
6th	PHYS 299B	PHYS 299B	PHYS 299B	Deadline to graduate in normative time
			Appy for Ph.D.	
			Defend Dissertation	

Foreign Language Requirements

Teaching Requirements

Written Qualifying Exams

All Ph.D. students must pass a qualifying examination consisting of five written tests in the areas of:

- mathematical methods
- classical mechanics
- quantum mechanics
- statistical mechanics
- electricity and magnetism

Once a student passes an examination in any one of the five areas they do not need to take an exam in that area again.

Students have a first opportunity to take these five tests at the beginning of their first year. If necessary, students have a second opportunity to pass the written tests at the beginning of the second year. Students with at most one or two failed tests have a third opportunity to pass their remaining tests at the beginning of the winter quarter of their second year.

Students who fail any of the remaining tests at this third and last attempt, and students who have not passed three or more of the five written tests after two attempts can either transfer to the terminal M.S. program, or appeal to the Graduate Committee to continue on the Ph.D. route. In the latter case, the Graduate Committee considers whether there is evidence of likely success in the Ph.D. program. The committee evaluates and reviews the student's progress toward candidacy, including performance in courses and progress in research, and may require possible remedial coursework or an oral examination, or may require that the student transfer to the terminal M.S. route.

Qualifying Examination

Undertaking and passing the Qualifying Exam is the next step.

1) Student submits the **Committee Nomination of Doctoral Qualifying Examination**

After identifying an appropriate research project with their faculty advisor, students form an Oral Qualifying Examination Committee:

- At least four examiners, one of whom is not a member of the student's department;
- The Committee Chair, a tenured ladder-rank UCSC faculty member (the Physics Department allows the student's faculty advisor);
- A ladder-rank UCSC faculty member (may be the advisor), typically but not necessarily from the Physics Department.
- A ladder-rank faculty member (may be the advisor), typically but not necessarily from the Physics Department.
- The outside member must be a tenured ladder-rank UCSC faculty member from a department other than Physics; a tenured faculty member of the same or similar discipline from another academic institution; OR a recognized expert in the student's research area from outside academic with significant research experience equivalent to a tenured faculty member.

In the event that the outside member is not from UCSC, they must have credentials equivalent to a tenured faculty member as judged by the Graduate Committee and the Graduate Dean. The outside member's CV must be submitted along with the QE exam committee nomination form.

Additional members may be added to the committee above the minimum requirements. Students should consult their advisors about the membership of their committee.

A ladder rank faculty (Academic Senate member) holds the title of Assistant Professor, Associate Professor, or Professor. Associate Professors and Professors have tenure.

2) At the Oral Qualifying Examination, the student presents their research progress, outlines a path to successful completion of their dissertation work, and answers questions both about their research program and about the research area generally.

3) Committee Chair submits the outcome of the exam on the Report on Qualifying Examinations to the Graduate Coordinator, preferably within one week of the exam;

4) Student submits the Nominations for Dissertation Reading Committee to the Graduate Coordinator

Advancement to Candidacy takes effect on the first day of the quarter following the receipt of the Qualifying Examination Report, the Dissertation Reading Committee Form, Language Requirement form (if applicable), and the Advancement to Candidacy fee in the Graduate Division. Additionally, the student must be registered for at least one quarter between advancing to candidacy and the awarding of the degree.

Graduate Handbook - Degree Requirements and Completion

Post-Qualifying Requirements

Additional Information

Full-Time Status

Full-time status is considered:

- at least 10 credits per quarter for graduate students not yet Advanced to Candidacy;
- at least 10 credits per quarter for graduate students who have Advanced to Candidacy;
- at least 10 or 12 credits per quarter for International student graduates depending on your visa. Please check with ISSS on course minimum requirements for your visa.

Registrar - Enrollment Information

ISSS - Maintaining a Full Time Course Load

Grade Requirements

All graduate students in graduate or undergraduate courses will be graded Satisfactory (S), Unsatisfactory (U), or Incomplete (I).

Graduate students also have the option of receiving a letter grade of A, B, C, D, or I in most courses. The grades of A or B shall be awarded for satisfactory work. Grades of C or D will not satisfy any course requirement for a graduate degree at UCSC.

Graduate Handbook - Degree Requirements and Completion

Dissertation

Dissertation

Ph.D. candidates prepare and submit a dissertation based on original research under the supervision of their research advisor. When the student and advisor agree that the thesis is nearing completion or is complete, the thesis is examined by the student's Dissertation Reading Committee.

Dissertation and Thesis Checklist

Dissertation and Thesis Guidelines

Dissertation Reading Committee

The Dissertation Reading Committee must have a minimum of three readers, and at least half of the committee must be members of the Santa Cruz Division of the Academic Senate (typically composed of the same members as the Oral Qualifying Examination Committee). A change in membership of the committee must be approved by the Graduate Dean.

Nominations for a Dissertation Reading Committee to read and pass upon the dissertation, subject to the approval of the Graduate Dean, should be submitted to the Graduate Division with the report of the oral qualifying examination.

Dissertation Defense

A public dissertation defense is required. Students should work with their committee to confirm a defense date and time. The Physics Department can assist with providing a room for the defense and with publicizing the event. Students should have a final or nearly final draft of their dissertation and provide it to their committee prior to the defense. We suggest at least one month prior, but this is at the committee’s discretion. The graduate advisor and/or the Graduate Committee can provide guidance as to the procedures for selection of committee membership, the format of the examination, and required reporting.

Academic Progress

Annual evaluation ordinarily is the joint responsibility of the graduate coordinator and the assigned faculty advisor or the chair of the student's doctoral committee. An evaluation should include a brief review of the student's work to date, with particular attention to the period since the last report, describing the student's progress toward the degree, pointing out any areas in which improvement is recommended or required, and establishing academic objectives for the following period.

The results of annual reviews are committed to writing and signed by the supervisor and another faculty member. This is to ensure evaluation and consent by more than one individual faculty member, who may also be a principal source of financial and other support. Before a doctoral student has advanced to candidacy, the second signer may be the graduate coordinator; after advancement, a second thesis committee member must also sign. The annual evaluations are distributed to the student and kept in the student's file in the department office. They form the basis for decisions about continued financial support, academic probation and/or dismissal, extensions of financial aid beyond normative time, and other matters.

Normative time to degree for the program is six years.

Applying for Graduation

Students apply for the Ph.D. and submit to the Graduate Coordinator at the beginning of the term they intend to graduate:

Application for the Ph.D. Degree

Additional Information

Ph.D. Residency Requirement

The minimum residence requirement for the Ph.D. degree is six terms, three of which must be spent in residence at the University of California, Santa Cruz campus. Residence is established by the satisfactory completion of one course per term.

See the Division of Graduate Studies for information on dissertation requirements and completion.

Exit Forms

Ph.D. graduates are asked to complete:

- National Science Foundation (NSF) Survey of Earned Doctorates
- UCSC Doctoral Placement Survey

Science Communication

Kresge Annex A
(831) 459-4475
https://scicom.ucsc.edu

PROGRAMS OFFERED

Science Communication M.S. (p. 501)

SCIENCE COMMUNICATION M.S.

Introduction

The Science Communication (SCIC) master's program is a graduate program comprised of one track: science writing. Students combine a background in scientific research with a desire to communicate science to the general public. The program focuses on the practice of conceiving, reporting, writing, and editing articles on scientific, medical, environmental, and technological subjects for newspapers and magazines, online news outlets, universities and federal agencies, and special publications directed at general readers. The program in science writing offers intensive training in news, features, multimedia storytelling, profiles and essays, and investigative reporting. Graduates receive a Master of Science (M.S.) in science writing. For more information about our graduation rates and other information, please visit our website.

Requirements

Course Requirements

The program accepts 10 students per year. Enrollment in science writing classes is strictly limited to students enrolled in the program. The program consists of one academic year of full-time study, beginning in fall quarter, followed by a full-time summer internship lasting a minimum of 10 weeks. Science Notes, the UCSC online science magazine, is produced annually by the graduate students. Please see the current issue and an archive of past issues on our website.

The program consists of a required sequence of six courses covering the main skills of professional journalism:

SCIC 201A	Reporting and Writing Science News	5
SCIC 201B	The Science Feature	5
SCIC 201C	Profile and Essay Writing	5
SCIC 201D	Policy and Investigative Reporting	5
SCIC 201E	Multimedia Science News	5
SCIC 202	Writing and Editing Workshop	5

Other Requirements

Admission to the Science Communication Graduate Program

Students who have an intimate acquaintance with the theory and practice of science, an aptitude for writing, and a strong desire to communicate science to the general public are ideal candidates for the program. All applicants must have a prior degree in science or engineering (B.S./B.A., M.S., or Ph.D.) to be eligible. Other admission requirements are: full-time research experience of at least six months duration; and at least three references from faculty or supervisors familiar with the applicant's research and communications skills. Applications and instructions can be found online through the UCSC Graduate Division website.

Further Information

Details about the Science Communication M.S. program may be obtained from the Science Communication Program office, our website, or by sending e-mail to scicom@ucsc.edu.

[Optional Catchall]

Applying for Graduation

BASKIN ENGINEERING

Baskin Engineering
335 Baskin Engineering Building
(831) 459-2158
engineering.ucsc.edu

Dean’s Office
335 Baskin Engineering
(831) 459-2158

Undergraduate Office
227 Baskin Engineering
(831) 459-5840

Graduate Office
595 Engineering 2
(831) 459-3531

Professor Alexander Wolf, Dean

Baskin Engineering (BE) has a high-technology focus incorporating programs and curricula that educate students to meet the changing demands of society and a high-technology global marketplace. The school offers a stimulating academic

environment that provides a foundation for professional growth as well as a lifetime of learning. Baskin Engineering programs and courses prepare students for the human aspects, as well as the technical challenges, of careers in engineering, computer science, and bioinformatics. Baskin Engineering includes the Department of Applied Mathematics, the Department of Biomolecular Engineering, the Department of Computational Media, the Department of Computer Science and Engineering, the Department of Electrical and Computer Engineering, and the Department of Statistics.

GRADUATE STUDY

Baskin Engineering offers 16 graduate programs designed to prepare students for advanced study and research in major areas of biomolecular, computer, and electrical engineering, as well as statistics and applied mathematics:

- Applied Mathematics M.S. and Ph.D.
- Biomolecular Engineering and Bioinformatics M.S. and Ph.D.
- Computational Media M.S. and Ph.D.
- Computer Science and Engineering M.S. and Ph.D.
- Electrical and Computer Engineering M.S. and Ph.D.
- Games and Playable Media M.S.
- Human Computer Interaction M.S.
- Natural Language Processing M.S.
- Scientific Computing and Applied Mathematics M.S.
- Statistical Science M.S. and Ph.D.

These programs are described in subsequent sections. The aim of these programs is to develop professionals who can address the complex scientific and technological problems of today and tomorrow.

Graduate Student Affairs Office

The Baskin Engineering Graduate Student Affairs/Advising Office offers general advising for prospective and current students in Baskin Engineering graduate programs. The office handles general advising, financial support processing, and degree certifications. Graduate students obtain and submit all paperwork requiring departmental approval to the Graduate Student Affairs office. Students may obtain additional information and assistance on the Baskin Engineering Graduate Student Affairs website.

UNDERGRADUATE STUDY

Undergraduate Majors

Baskin Engineering offers eight undergraduate Bachelor of Science (B.S.), three Bachelor of Arts (B.A.) and three contiguous B.S./M.S. degree programs in the following majors:

- Applied Mathematics B.S.
- Biomolecular Engineering and Bioinformatics B.S. or contiguous B.S/M.S.*
- Biotechnology B.A.
- Computer Engineering B.S. or contiguous B.S./Computer Science and Engineering M.S.
- Computer Science B.A. and B.S. or contiguous B.S./Computer Science and Engineering M.S.
- Computer Science: Computer Game Design B.S.
- Electrical Engineering B.S. or contiguous B.S./Electrical and Computer Engineering M.S.
- Network and Digital Technology B.A.
- Robotics Engineering B.S. or contiguous B.S./Electrical and Computer Engineering M.S.
- Scientific Computing and Applied Mathematics contiguous B.S./M.S.
- Statistical Science contiguous B.S./M.S.
- Technology and Information Management B.S.

*The contiguous B.S./M.S. is only available from the bioinformatics concentration in the B.S.

Applied Mathematics. Applied mathematics is a field of research specializing in the development and application of analytical and numerical tools and techniques toward the solution of complex quantitative problems in science and engineering. A Bachelor of Science (B.S.) in Applied Mathematics prepares graduates for careers in the industry (usually in research and development) or academia (either in teaching and/or in research at university or governmental laboratories or agencies). It can be a terminal degree, or prepare students for graduate school in applied mathematics or related fields.

Biomolecular Engineering and Bioinformatics. The biomolecular engineering and bioinformatics major includes the biomolecular engineering (BME) and bioinformatics (BINF) concentrations. The BME concentration is designed for students interested in protein engineering, stem cell engineering, and synthetic biology. The emphasis is on designing biomolecules (DNA, RNA, proteins) and cells for particular functions, and the underlying sciences are biochemistry and cell biology. The BINF concentration combines mathematics, science, and engineering to explore and understand biological data from high-throughput experiments, such as genome sequencing, gene-expression chips, and proteomics experiments. The program builds upon the research and academic strengths of the faculty in the Biomolecular Engineering Department.

Biotechnology. The Bachelor of Arts in Biotechnology is intended for students who plan to be involved in the biotechnology industry as writers, artists, ethicists, executives, sales force, regulators, lawyers, politicians, and other roles

that require an understanding of the technology, but not the intensive training needed for technicians, research scientists, engineers, and bioinformaticians. (For those more technical roles, the biomolecular engineering and bioinformatics major or the molecular, cell, and developmental biology major is recommended.) A biotechnology student completing the program will have familiarity with several different biotechnologies and be able to apply ethical reasoning to make decisions about biotechnology in a global, economic, environmental, and societal context.

Computer Engineering. The computer engineering curriculum focuses on making digital systems that work. It overlaps with computer science on one end (software systems) and with electrical engineering on the other (digital hardware). The emphasis of our program is on design rather than analysis—on making things work, rather than on explaining the abstract theory of computation or electronics. The program's emphasis on problem solving provides both excellent training for future engineers and a strong foundation for graduate study. The combined B.S./M.S. program provides an opportunity for outstanding undergraduates to begin advanced study and earn both degrees in five years.

Computer Science. The computer science curriculum has options that include topics in hardware and software, giving students a solid grounding in both theoretical and practical aspects of computer technology and computer usage. The bachelor of arts focus is designed to give students a solid grounding in both theoretical and practical topics in computer science, computer engineering, and mathematics while leaving flexibility for a broad program of study, including many courses outside of science and engineering. The bachelor of science curriculum has a stronger concentration in the sciences, with more courses in computer science and computer engineering. Students become proficient in many areas, with a good academic foundation for various careers in the software industry, as well as preparation for graduate school.

Computer Science: Computer Game Design. The computer game design curriculum is a four-year interdisciplinary program that focuses on the technical, dramatic, and artistic elements of computer games. The program provides a rigorous education in computer science, in concert with a broad introduction to those aspects of art, music, narrative, digital media, and computer engineering most relevant to games. A game design studio sequence permits students to create substantial video games as part of a multi-student team. Students receive proficiency in many aspects of computer science, a good academic foundation for careers in the computer game industry or information technology industry, or for the pursuit of graduate studies in computer science, or computer game design.

Electrical Engineering. The electrical engineering curriculum provides a balance of engineering science and design and allows students to specialize in both the traditional topics and the latest subjects in electrical engineering. Students may concentrate their electives in the areas of communications and signal processing, control and signal processing, electronics and photonics, power and energy systems, digital hardware, or robotics and automation. The major is designed to attract motivated students who, upon graduation, will be sought by employers in the high-tech industry. The electrical engineering program is accredited by The Engineering Accreditation Commission of ABET, https://www.abet.org.

Network and Digital Technology. The network and digital technology B.A. program provides students with in-depth knowledge of the underlying structure and function of network and computer technology and the design processes which make these technologies function. The program, through its flexible requirements, is especially tailored to students who wish to combine technology with other fields, such as through a double major or a minor, or who, through the choice of electives, wish to concentrate on the digital design or computer networks aspects of computer engineering in preparation for future employment. The network and digital technology B.A. program is offered by the Computer Science and Engineering Department.

Robotics Engineering. The robotics engineering program prepares graduates for rewarding careers at the interfaces between electrical, computer, and mechanical engineering. UCSC robotics engineering graduates have a thorough grounding in the principles and practices of robotics and control, and the scientific and mathematical principles upon which they are built; graduates will be prepared for further education (both formal and informal) and for productive employment in industry.

Technology and Information Management. The technology and information management (TIM) curriculum is multidisciplinary and focuses on the fusion of information systems, technology, and business management for two purposes: the use of information systems to solve business problems and the management of technology, which includes new product development and enterprise management. Students must learn the mathematics, science, and technical fundamentals of computer science and engineering as well as understand the environment in which information technology (IT) solutions will be applied—through economics, business, and management of technology courses. It is a rigorous, challenging major for those students wanting to pursue careers in information systems management and the management of technology.

Undergraduate Minors

Undergraduate students may choose from the following nine minor options:

Applied Mathematics. The applied mathematics minor is available to students who wish to develop 1) proficiency in modeling real-life problems using mathematics and 2) knowledge of standard, practical analytical and numerical methods for the solution of these models. This minor could be combined with a major in any of the physical, biological, mathematical, or engineering sciences as preparation for a graduate degree in that field or in applied mathematics.

Assistive Technology. The guiding principle of the assistive technology minor is robotic assistance for people with

movement disabilities, which can include such concepts as motorized prostheses, exosuits, motorized wheelchairs, or follow-me luggage.

Bioelectronics and Biophotonics. The bioelectronics and biophotonics minor is primarily focused on electronics and photonics from devices to systems required for interfacing biology with electronics from sensors to actuators and diagnostics.

Bioinformatics. The bioinformatics minor is intended primarily for bioinformatics tool users who are majoring in a biological or chemical specialty. The bioinformatics minor is also appropriate for computer science or computer engineering majors who are considering graduate work in bioinformatics.

Computer Engineering. The computer engineering minor provides a solid foundation in digital hardware, electronics, and computer software, as well as the prerequisite material in mathematics and physics. The minor is well-suited to students who wish to take part in the design of computer and embedded systems in any discipline.

Computer Science. The computer science minor is available for students whose primary interest is in another area, and are interested in the applications of computer science in other areas of study, from art and music to business and science.

Electrical Engineering. The electrical engineering minor provides a solid foundation in the core areas of electronic circuits and signals and systems, as well as the prerequisite material in mathematics and physics. Concentration of upper-division electives in either of the major tracks constitutes substantial and focused work in the discipline of electrical engineering. This minor is particularly suitable for students with majors in applied physics or any Baskin Engineering major.

Statistics. The statistics minor is available for students who wish to gain a quantitative understanding of how to a) measure uncertainty, and b) make good decisions on the basis of incomplete or imperfect information and apply these skills to their interests in another field. This minor could also be combined with a major in mathematics as preparation for a graduate degree in statistics or biostatistics.

Technology and Information Management. The technology and information management minor provides undergraduates in Baskin Engineering as well in other programs and divisions in the university, such as economics and business management economics, the physical and biological sciences, and arts, the opportunity to expand the breadth of their knowledge and training to include the management of information systems and the management of technology.

Undergraduate Advising Office

The Baskin Engineering undergraduate advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Students may obtain additional information and assistance on the Baskin Engineering undergraduate advising website.

Admission to Baskin Engineering Majors

High School Preparation for Engineering Students

It is recommended that high school students intending to apply to a Baskin Engineering major have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Comparable college mathematics and science courses completed at other institutions also serve to properly prepare students for these majors.

College Board Advanced Placement Credit

Prospective students are encouraged to take the College Board Advanced Placement (AP) and International Baccalaureate (IBH) Examinations as acceptable scores on these examinations may satisfy both university or major degree requirements. Prospective engineering students should consider taking examinations in computer science, mathematics, economics, chemistry, physics, or biology. Students must provide official examination scores to the UCSC Office of Admissions to be granted credit toward course prerequisites or degree requirements. The following AP and IBH scores are accepted for course credit requirements as follows:

CEEB AP Exam	Score	UCSC Course Credit
Biology	5	BIOL 20A, Cell and Molecular Biology; and BIOE 20B, Development and Physiology
Computer Science: Exam A	3	CSE 10, Intro. to Computer Science
	4 or 5	CSE 5J, Intro. to Programming in Java
Computer Science: Principles	3, 4, 5	CSE 10, Intro. to Computer Science
Economics: Microeconomics	4 or 5	ECON 1, Introductory Microeconomics
Economics: Macroeconomics	4 or 5	ECON 2, Introductory Macroeconomics
Mathematics: Precalculus	3, 4, 5	MATH 3, Precalculus
Mathematics: Calculus AB	3	MATH 3 or AM 3, Precalculus
Mathematics: Calculus AB	4 or 5	MATH 3 or AM 3, Precalculus MATH 11A, Calculus with Applications MATH 19A, Calculus for Science, Engineering and Math
Mathematics: Calculus BC	3	MATH 3 or AM 3, Precalculus MATH 11A, Calculus with Applications MATH 19A, Calculus for Science, Engineering and Math
Mathematics: Calculus BC	4 or 5	MATH 3 or AM 3, Precalculus MATH 11A, Calculus with Applications; and MATH 11B, Calculus with Applications MATH 19A, Calculus for Science, Engineering and Math; and MATH 19B Calculus for Science, Engineering and Math
Physics: C Mechanics	4 or 5	PHYS 6A and PHYS 6L

	5	Phys 5A and PHYS 5L
Physics: C Electricity and Magnetism	4 or 5	PHYS 6C and PHYS 6N
	5	PHYS 5C and PHYS 5N

International Baccalaureate Credit

IBH Exam	Score	UCSC Course Credit
Computer Science	5, 6, 7	Computer Science and Engineering 5J, Introduction to Programming in Java

Students may check with the Office of Admissions for details about other AP and IBH examinations that also satisfy university requirements.

Admission as First-Year Students

Students interested in pursuing a Baskin Engineering major should indicate the major as their first or second choice on the UC application for admissions. Most Baskin Engineering programs require that students be listed as a proposed major in order to be admitted. The proposed major status is also required to enroll in many BE major courses.

Computer Science

Students interested in pursuing a computer science B.S. or B.A. **must** indicate the major on their University of California application for admission. Students who do not indicate this on their application will **NOT** be allowed to declare the computer science major. Students must be admitted as proposed computer science majors in order to declare the major.

Proposed Major Retention

A proposed engineering major status carries several benefits including being connected to advising, receiving pertinent communication, and priority access to enrolling in some required major courses. Baskin Engineering majors require students to be listed as a proposed major in one of the following majors in order to declare: biomolecular engineering and bioinformatics, computer engineering, computer science: computer game design, computer science (B.A. and B.S.), electrical engineering, robotics or technology and information management.

Students who are interested in computer science who are **NOT** listed as proposed computer science majors will not be allowed to migrate into the major. Students must properly list computer science as their proposed major.

Students pursuing applied mathematics, network and digital technology and biotechnology are not required to be proposed in any BE majors in order to declare applied mathematics, network and digital technology and biotechnology.

Students in their fourth quarter or beyond who would like to become a proposed major, or students who are proposed and would like to retain their proposed status, must have passed MATH 19A or MATH 20A, and two additional classes from the following list within their first three quarters: CHEM 3A or CHEM 4A, BIOL 20A, CSE 12, CSE 13S or ECE 13, CSE 16, CSE 30, MATH 19B, MATH 20B, PHYS 5A, PHYS 5C, TIM 50, or TIM 58.

Students who are in an engineering proposed major and who do not meet these criteria will be removed from their proposed major. Students who want to change to an engineering proposed major must also meet these criteria. Students that do not meet these criteria can appeal this decision within 15 days of notification. Within 15 days of receipt of the appeal, the student will receive the appeal decision. More information about the appeals process can be found on the Undergraduate Advising website.

Declaring a Baskin Engineering Major

The Baskin Engineering major declaration process can be found on the BE Undergraduate Advising Declare Your Major page. Students should start the declaration of major process as soon as they complete the major qualification requirements or reach their declaration deadline quarter (whichever comes first). Major qualification criteria for BE majors are specified on the BE Undergraduate Advising Major Qualification Requirements page.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses. Major declaration petitions must be submitted by the sixth quarter of study at UC Santa Cruz (second regular quarter for students admitted with upper-division standing), including students petitioning to declare a BE major as their second major.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision within 15 days of notification by following the steps on the BE Undergraduate Advising Major Declaration Appeal site. In most cases, within 15 days of receipt of the appeal, the student will receive the appeal decision.

If you have further questions concerning the appeal process, please contact the Undergraduate Advising Office at (831) 459-5840 or email bsoeadvising@ucsc.edu.

Junior Transfer Acceptance to Majors

Baskin Engineering strongly encourages applications from transfer students. Due to the prerequisite structure for upper-division courses, prospective transfer students should have completed as many of the lower-division major requirements as possible to complete the degree within a reasonable time.

Students must plan carefully because many courses must be taken sequentially.

Students are encouraged to follow the new UC Transfer Pathways. Any student who finishes the UC Transfer Pathways courses for computer science will more than satisfy the admission requirements for transfer to computer science, computer engineering, robotics, and network and digital technology. Any student who finishes the UC Transfer Pathways courses for electrical engineering will more than satisfy the admission requirements for electrical engineering, computer engineering, and robotics. Note that each department will have different GPA requirements for these courses.

Completion of mathematics and engineering courses is essential for transfer students; those applying to selective majors should carefully verify the admission requirements for their major.

Students who apply as transfer students with junior status (90 quarter credits or more of transfer credit) who wish to earn a degree from Baskin Engineering must indicate a Baskin Engineering major as their first choice on their UC application.

Acceptance into the major is based on the student's academic college record and preparation for the major. Applicants are encouraged to take and excel in as many courses that are equivalent to the department's lower-division major requirements as possible. For many Baskin Engineering majors, this includes completion of a year of calculus (accepted as equivalent to Mathematics 19A-B), linear algebra, differential equations, a year of calculus-based physics courses (accepted as equivalent to Physics 5A, 5B, 5C), and two programming courses are strongly recommended.

Letter Grade Policy

Starting Fall 2014, all students admitted to a Baskin Engineering major, or seeking admission to a major, must take all courses required for that major for a letter grade.

Ethics Requirement

Graduates of Baskin Engineering are expected to become professionals with the highest ethical standards. Knowledge and practice of professional ethics is a requirement for the degree. Examples of professional society codes of ethics are available on the IEEE and ACM websites. Students of Baskin Engineering are also expected to adhere to high ethical standards while pursuing their undergraduate studies.

Substitutions for Courses Taken at UCSC

Undergraduate engineering students who wish to substitute a major course with a course from UC Santa Cruz must first consult the Baskin Engineering Undergraduate Advising Office. The advising office requires a Petition for Course Substitution be approved before credit for an alternate course can be applied to any Baskin Engineering major requirement. Petition forms are available on the Undergraduate Advising Forms, Petitions, and Policies page.

Petitions and procedures for approval must be obtained from and submitted to the Undergraduate Advising Office.

Course Equivalencies and Substitutions Taken at an Outside Institution

Students should seek pre-approval for the use of courses planned to be taken at another institution when those courses are not already articulated (visit Assist.org). Courses may not apply to major or minor requirements if they are not articulated or pre-approved.

If the course is not listed on Assist.org, students must submit a course substitution petition to the BE Undergraduate Advising Office to have it reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Four-Year Institutions and the UC Education Abroad Program (UCEAP)

Students who intend to take a course at a four-year institution or UC Education Abroad, must submit a Course Substitution Petition to the BE Undergraduate Advising Office to have the course reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

If the course is approved for equivalency, then the student must also receive approval by their major department PRIOR to taking the class. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Computing

Personal Computer Requirement

Baskin Engineering (BE) requires that all BE students own a laptop. A MAC or PC from the last several years is generally acceptable. The exact Normal minimum specifications appear on the Undergraduate Advising website.

Computing Facilities

Baskin Engineering houses research facilities and teaching laboratories in the Baskin Engineering Building for courses in programming, software design, circuits, electronics, graphics, digital design, and computer and system architecture. Emphasis in these laboratories is on state-of-the-art

equipment, including personal computers, engineering workstations, a 1000-processor Linux cluster, logic analyzers, microprocessor development systems, a wireless network for mobile computers, and network support at 100MB/sec. All Unix computers and workstations and most personal computers on campus are networked together, allowing students to access Baskin Engineering and the Information Technology Services (ITS) facilities from any computer account on campus. For a more complete description of the computing facilities on campus, see the ITS website.

Prerequisites

Because of the sequential nature of the Baskin Engineering curricula, most courses have prerequisites, which are listed in the course descriptions. Students should carefully review these descriptions in the catalog and the quarterly Schedule of Classes. Students must have passed all prerequisites of a course for which they are enrolling. Pre-enrolled students who then fail a prerequisite are no longer eligible to be enrolled in the course and will be dropped.

Students who have transferable course work from another institution that appears to satisfy a UCSC course prerequisite, but is not listed in current articulation agreements, should promptly consult with the Baskin Engineering staff advisers for guidance. Students will be asked to present records from the other institution to document the course equivalency. Until such evidence has been verified by the department, students attempting to enroll in a course using a prerequisite course that was not completed at UCSC will be informed that they have not satisfied the course prerequisite. (See Course Equivalencies and Substitutions Taken at an Outside Institution above.)

Permission Numbers

Students not meeting the regular prerequisite requirements for courses sponsored by Baskin Engineering may petition the course instructor to receive a permission number to enroll. The instructor may ask a student to demonstrate the ability and/or potential to succeed in the course or may request additional information to formulate a decision. If no instructor has been assigned to the course, please contact the Undergraduate Advising Office for direction. The Computer Science and Engineering Department requires that students wait until the first day of instruction to contact instructors about enrolling in their courses.

Fees

Materials Fee

Students should be aware that some laboratory courses require each student to purchase miscellaneous parts or a material kit for completion of the laboratory work. Some laboratory courses may include consumable (one-time use) parts and materials that are distributed to the entire class. Some laboratory kits include parts that the student will assemble into a project and keep. Please refer to the Baskin Engineering Laboratory Support web page for specific course material-fee amounts.

Miscellaneous Fees

Miscellaneous breakage or loss of equipment fees are assessed to address the cost of damaged laboratory equipment and loss of laboratory materials due to abuse or negligence. This fee is only charged if a student breaks or loses laboratory equipment or materials and is not a mandatory fee charged to all students taking the course. Please refer to the Baskin Engineering Laboratory Support web page for more information.

Applied Mathematics

Baskin Engineering
(831) 459-2158
engineering.ucsc.edu

PROGRAMS OFFERED

Applied Mathematics B.S. (p. 509)

Applied Mathematics Minor (p. 517)

Scientific Computing and Applied Mathematics Contiguous Bachelor's/Master's Pathway (p. 518)

Applied Mathematics M.S. (p. 519)

Applied Mathematics Ph.D. (p. 520)

Scientific Computing and Applied Mathematics M.S. (p. 523)

Scientific Computing Designated Emphasis (p. 525)

Applied mathematics is a discipline devoted to the use of mathematical methods and reasoning to solve real-world problems of a scientific or decision-making nature in a wide variety of subjects, principally (but not exclusively) in engineering, medicine, the physical and biological sciences, and the social sciences.

The Applied Mathematics Department at UC Santa Cruz offers a Bachelor of Science (B.S.) degree in Applied Mathematics, Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in Applied Mathematics, and a M.S. program in Scientific Computing and Applied Mathematics (SciCAM). The department also offers a Designated Emphasis in Scientific Computing, and an undergraduate minor in Applied Mathematics.

Additional information on these programs can be found on the department's website.

UNDERGRADUATE PROGRAM

The Department of Applied Mathematics offers a B.S. degree in Applied Mathematics. The goal of the program is to prepare students for careers in industry (usually in research and development) or academia (either in teaching and/or in research at university or governmental laboratories or agencies). The program can be a terminal degree, or can be

used to prepare students for graduate school in applied mathematics or related fields.

GRADUATE PROGRAM

The Department of Applied Mathematics offers M.S. and Ph.D. programs in Applied Mathematics, as well as a M.S. program in Scientific Computing and Applied Mathematics (SciCAM), and a Designated Emphasis in Scientific Computing.

The goal of the Applied Mathematics graduate program is to help students develop into independent scholars who are prepared for productive careers in research, teaching, and industry. The M.S. degree may be used as a terminal degree or as the first step toward the associated Ph.D. degree.

The goal of the SciCAM M.S. program is primarily to prepare students interested in scientific computing for productive careers in industry. However, it also serves as excellent preparation for students who prefer to pursue an academic career and wish to transfer into a Ph.D. program later, either in scientific computing/applied mathematics, or in a field related to their undergraduate degree.

APPLIED MATHEMATICS B.S.

Information and Policies

Introduction

Applied mathematics is a field of research specializing in the development and application of analytical and numerical tools and techniques toward the solution of complex quantitative problems in science and engineering. A Bachelor of Science (B.S.) in Applied Mathematics prepares graduates for careers in the industry (usually in research and development) or academia (either in teaching and/or in research at university or governmental laboratories or agencies). It can be a terminal degree, or it can prepare students for graduate school in applied mathematics or related fields.

The applied mathematics major at the University of California, Santa Cruz provides students with holistic training in mathematical modeling. The core of the degree program includes six courses that introduce modern analytical (and semi-analytical) techniques as well as general aspects of scientific computing. Students gain further depth or breadth by taking three (or more) electives among a large list of upper-division or graduate courses offered by applied mathematics faculty or in related subject areas. Finally, students learn to apply the techniques and tools learned through two capstone courses that focus on modeling “real-life” quantitative problems in science and engineering. In these courses, students also learn additional skills such as mathematical abstraction, critical thinking, and disciplinary communication.

The major has been designed to allow students to pursue an additional minor or major in an area of applications of mathematics (such as physics, astrophysics, Earth sciences, computer sciences, computer engineering, electrical engineering), and/or to pursue the 4+1 pathway into the Master of Science (M.S.) degree program in Scientific Computing and Applied Mathematics also offered by the Department of Applied Mathematics.

Academic Advising for the Program

Baskin Engineering's Undergraduate Advising Office is located in the Baskin Engineering Building, Room 225. It can be contacted by email at bsoeadvising@ucsc.edu or at the Baskin Engineering Undergraduate Advising website.

Transfer students to the program should consult the Transfer Students section of the Baskin Engineering Undergraduate Advising website.

Program Learning Outcomes

Recipients of a B.S. degree in applied mathematics at UC Santa Cruz are expected to have the following skills and experiences:

1. To be able to take a real-life science or engineering problem, and create a mathematical model for it, under the supervision of a professor.
2. To be competent with a number of analytical methods for the solution of linear algebra problems, as well as ordinary and partial differential equations.
3. To be competent with constructing numerical algorithms for the solution of linear algebra problems and ordinary differential equations.
4. To be competent in at least two scientific computing languages such as: Fortran, C, Python, R, Matlab, etc. and to be familiar with other computational elements such as Unix-type operating systems, the use of compilers, professional scientific computing libraries, efficient IO algorithms, data visualization tools, etc.
5. To be able to analyze critically the results obtained from a proposed model, and identify when the model is inappropriate.
6. To be able to communicate clearly and coherently with professionals (orally and in writing), in order to: (1) understand what is needed of the mathematical model prior to the investigation; and (2) report on the results of the model after the investigation.

Optional Catchall

Getting Started in the Major: Frosh

It is recommended that high school students intending to apply to this major have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Comparable college mathematics and science courses completed at another institution also serve to properly prepare students for this major.

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz.

Math placement may be required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer Admission Screening Policy

To be considered for admission to the applied mathematics major, incoming transfer students should complete the following courses:

One of the following courses:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Plus one of the following

	Either this course	
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Plus one of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. Instructions for declaring a major in Baskin Engineering are on the Baskin Engineering's Declare Your Major website. If you satisfy the transfer admissions screening requirements, you are not required to take additional coursework in order to declare.

Major Qualification Policy and Declaration Process

Major Qualification

In order to be admitted into the applied mathematics major, students must be listed as a proposed major within the Baskin Engineering or within the Division of Physical and Biological Sciences. Please refer to Prepare to Declare a Baskin Engineering Major.

Transfers to the program should consult the Transfer Admission Screening Requirements and the Transfer Students section of the Baskin Engineering Undergraduate Affairs page.

In addition to being listed as a proposed Baskin Engineering or Physical and Biological Sciences major, admission to the applied mathematics major is based on passing the following foundational courses:

Foundation Courses

One of the following series:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Plus one of the following options

AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

AM 30 is preferred.

Plus one of the following:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

AM 10 is preferred.

Plus one of the following:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

AM 20 is preferred.

Appeal Process

Denials of admission to the major may be appealed by submitting a letter to Baskin Engineering's Undergraduate Advising office, addressed to the program undergraduate director within 15 days from the date the notification was mailed. The appeal letter must describe why the prior performance is not an accurate reflection of the student's potential. Within 15 days of receipt of the appeal, the

Undergraduate Advising office will notify the student and their college of the decision.

How to Declare a Major

There are four steps to declaring a Baskin Engineering major. For a detailed guide to this process, please consult Baskin Engineering's Declare Your Major website.

Students should start the major declaration process by completing Step One on the Baskin Engineering's Declare Your Major website as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

Letter Grade Policy

Baskin Engineering requires letter grades for all courses in an engineering major.

[Optional Catchall]

Course Substitution Policy

Undergraduate engineering students who wish to substitute a major course with a course from UC Santa Cruz must first consult Baskin Engineering's Undergraduate Advising Office. The advising office requires a Petition for Course Substitution be approved before credit for an alternate course can be applied to any Baskin Engineering major requirement. Petition forms are available at the undergraduate advising office and on the Baskin Engineering advising website.

Petitions and procedures for approval must be obtained from and submitted to the Undergraduate Advising Office.

Double Majors and Major/Minor Combinations Policy

Students who are planning a double-major with physics can replace the AM 100 and AM 112 courses with the PHYS 116A and PHYS 116C courses. Special approval by both undergraduate directors will be required to do so.

Education Abroad Program (EAP)

Honors

Students must obtain a GPA of 3.8 or higher in the courses in the major to be considered for the distinction of "Highest Honors in the Major." Students must obtain a GPA of 3.5 or higher in the courses in the major to be considered for the distinction of "Honors in the Major." Baskin Engineering reserves the right to withhold honors based on other criteria, such as an incident of academic dishonesty.

Baskin Engineering Policies

Please refer to Baskin Engineering's Admission to School of Engineering Majors section of the catalog for additional policies that apply to all Baskin Engineering programs. These policies include admission to the major and the need for students to obtain preapproval before taking courses elsewhere.

Requirements and Planners

Course Requirements

Course requirements are divided into foundational lower-division courses and advanced upper-division courses. Some courses may be satisfied via exam credit.

Lower-Division Courses

Choose one of the following series:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Credit for one or both MATH 19A and MATH 19B may be granted with adequate performance on the CEEB calculus AB or BC Advanced Placement examinations.

Plus one of the following courses:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

AM 10 is preferred.

Plus one of the following courses:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

AM 20 is preferred.

Plus one of the following options:

AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

AM 30 is preferred.

Plus one of the following options:

CSE 16	Applied Discrete Mathematics	5
MATH 100	Introduction to Proof and Problem Solving	5

MATH 100 is strongly recommended for students who eventually wish to take some upper-division electives in mathematics.

Plus one of the following programming courses

CSE 20	Beginning Programming in Python	5
CSE 13S	Computer Systems and C Programming	7
ECE 13	Computer Systems and C Programming	7
ASTR 19	Practical Programming for the Sciences	5

Through the lower-division programming course, students are expected to be competent in Python or C programming. The lower-division programming requirement can be satisfied with a prior programming course that is equivalent to one of CSE 20, CSE 13S, ECE 13, and ASTR 19 either via articulation on Assist.org or via approval by the applied mathematics program by sending a syllabus of the course to the department for review. The requirement can also be satisfied by passing the CSE 20 Testout exam after matriculation at UCSC.

Lower-Division Electives

Students are required to take two lower-division electives from the following list, in preparation for the upper-division electives they are later required to take. Students are encouraged to plan ahead carefully in consultation with undergraduate advising in making their selection.

EART, ECE, PHYS lower-division electives

Students interested in EART, ECE, PHYS upper-division electives should consider taking some of the following PHYS lower-division electives.

Several of these courses have corequisite lab courses. Lecture/lab combinations count as one course. Associated labs are required only when required by the lecture.

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5C	Introduction to Physics III	5
ASTR 21	The Diverse Universe: Stars, Planets, and Galaxies	5

CSE or ECE lower-division electives

Students interested in CSE or ECE upper-division electives should consider taking some of the following CSE or ECE lower-division electives (in addition to possible PHYS electives):

CSE 30	Programming Abstractions: Python	7
ECE 9	Statics and Mechanics of Materials	5

ECON and STAT lower-division electives

Students interested in ECON or STAT upper-division electives should consider taking some of the following ECON or STAT lower-division electives. Note that lecture/lab combinations count as one course.

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

STAT 17 (and associated lab STAT 17L) are strongly recommended for students wishing to take upper-division electives in economics.

Lower-division electives for mathematical biology

Students interested in mathematical biology (in particular AM 115) should consider taking some of the following BIOL or BIOE lower-division electives:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20C	Ecology and Evolution	5

Upper-Division Courses

Complete the following core courses:

AM 100	Mathematical Methods for Engineers	5
AM 129	Foundations of Scientific Computing for Scientists and Engineers	5

Plus one of the following courses:

AM 147	Computational Methods and Applications	5
MATH 148	Numerical Analysis	5

Plus the following courses:

AM 112	Introduction to Partial Differential Equations	5
AM 114	Introduction to Dynamical Systems	5

Plus one of the following courses:

STAT 131	Introduction to Probability Theory	5
CSE 107	Probability and Statistics for Engineers	5

Upper-Division Electives

Students are required to take three upper-division elective courses from the following list of possible electives. Up to one of these electives can be replaced by a 5-credit independent study to do research with one of the program faculty.

Note that many of these electives have lower-division prerequisites. Students should plan carefully which ones to take to ensure they are prepared for their selected upper-division electives. Also note that enrollment in the graduate courses is by permission of the instructor, who will verify adequate preparation.

The upper-division electives should ideally be selected to form a concentration that prepares the student for their desired career or future choice of graduate school. Students interested in pursuing graduate school in applied mathematics (at UC Santa Cruz or elsewhere) are encouraged to choose upper-division electives from AM or MATH. Students interested in graduate school in a different discipline are strongly encouraged to pursue a minor (or a double-major) in that discipline, and choose upper-division electives that count for both the applied mathematics major and the minor or double major. Students interested in a career in the private sector should select upper-division electives that prepare them for that career, with recommendations listed on this website.

Possible AM Electives

Any 5-credit upper-division (100-199) or graduate (200-299) AM course that is not already a core course. AM 198 can only be used once for elective credit. AM 200, AM 211, and the AM 280 series and above may not be used.

Possible ASTR electives

ASTR 112	Physics of Stars	5
ASTR 113	Introduction to Cosmology	5
ASTR 119	Introduction to Scientific Computing	5

Possible BME electives

BME 118	Mathematics of the Mind	5
BME 160	Research Programming in the Life Sciences	6

Possible CSE Electives

Note that many require lower-division CSE courses. Lecture/lab combinations count as one course.

CSE 101	Introduction to Data Structures and Algorithms	5
CSE 102	Introduction to Analysis of Algorithms	5
CSE 104	Computability and Computational Complexity	5
CSE 106	Applied Graph Theory and Algorithms	5
CSE 108	Algorithmic Foundations of Cryptography	5
CSE 113	Parallel and Concurrent Programming	5
CSE 140	Artificial Intelligence	5
CSE 142	Machine Learning	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 160	Introduction to Computer Graphics	7
CSE 161	Introduction to Data Visualization	5
CSE 161L	Data Visualization Laboratory	2
CSE 162	Advanced Computer Graphics and Animation	5
CSE 162L	Advanced Computer Graphics and Animation Laboratory	2

Note that most of these courses require CSE 101 as prerequisite. Enrollment restrictions may apply to many of these courses on short notice, and some have multiple upper-division prerequisites, and may, therefore, only be appropriate for double majors (or major-minor combinations).

Possible EART Electives

Note that many require lower-division PHYS or CHEM courses:

EART 112	Geophysical Data Science	5
EART 118	Seismotectonics	5
EART 119A	Introduction to Scientific Programming	5
EART 121	The Atmosphere	5
EART 124	Modeling Earth's Climate	5
EART 160	Planetary Science	5
EART 162	Planetary Interiors	5
EART 163	Planetary Surfaces	5
EART 164	Planetary Atmospheres	5

Either of the following courses:

EART 125	Statistics and Data Analysis in the Geosciences	5
EART 225	Statistics and Data Analysis in the Geosciences	5

Either of the following courses:

EART 172	Geophysical Fluid Dynamics	5
EART 272	Geophysical Fluid Dynamics	5

Possible ECE Electives

Lecture-lab combinations count as one course.

ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 103	Signals and Systems	5
ECE 115	Introduction to Solid Mechanics	5
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5

ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 149	Introduction to Cyber-physical Systems	5
ECE 151	Communications Systems	5
ECE 153	Digital Signal Processing	5
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 179	Decision Analysis in Management	5

Note that most of these courses require ECE 101 as prerequisite. Many of these courses have more than one upper-division prerequisite beyond those that are already part of the core requirements. These courses may only be appropriate for double majors (or major-minor combinations).

Possible ECON Electives

Note that many require ECON lower-division courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100B	Intermediate Macroeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5
ECON 101	Managerial Economics	5
ECON 113	Introduction to Econometrics	5
ECON 114	Advanced Quantitative Methods	6
ECON 115	Introduction to Management Sciences	5
ECON 124	Machine Learning for Economists	5
ECON 166A	Game Theory and Applications I	5

Note that some of these courses require more than one upper-division ECON prerequisite. Also, some of these courses have enrollment restrictions, and may require permission by the instructor and may, therefore, only be appropriate for double majors (or major-minor combinations).

Possible MATH Electives

MATH 105A	Real Analysis	5
MATH 105B	Real Analysis	5
MATH 105C	Real Analysis	5
MATH 110	Introduction to Number Theory	5
MATH 111A	Algebra	5
MATH 111T	Algebra	5
MATH 114	Introduction to Financial Mathematics	5
MATH 115	Graph Theory	5
MATH 116	Combinatorics	5
MATH 117	Advanced Linear Algebra	5
MATH 118	Advanced Number Theory	5
MATH 120	Coding Theory	5
MATH 121A	Differential Geometry	5
MATH 121B	Differential Geometry and Topology	5
MATH 124	Introduction to Topology	5
MATH 130	Celestial Mechanics	5
MATH 134	Cryptography	5
MATH 140	Industrial Mathematics	5
MATH 152	Programming for Mathematics	5
MATH 160	Mathematical Logic I	5

Note that most MATH electives require MATH 100 as a prerequisite, and that several of these courses have more than one upper division pre-requisite, or recommended prerequisites that students should take. These courses may only be appropriate for double majors, or for major-minor combinations.

Possible OCEA Electives

Note that some require lower-division PHYS electives, or upper-division ESCI electives:

OCEA 260	Introductory Data Analysis in the Ocean and Earth Sciences	5
OCEA 267	Applied Environmental Time Series Analysis	5
OCEA 286	Introduction to Ocean Modeling	5

Either of the following courses:

OCEA 100	Physical Oceanography	5
OCEA 200	Physical Oceanography	5

Either of the following courses:

OCEA 111	Climate Dynamics	5
OCEA 211	Climate Dynamics	5

Possible PHYS Electives

Note that many require lower-division PHYS courses:

PHYS 105	Mechanics	5
PHYS 110A	Electricity, Magnetism, and Optics	5
PHYS 110B	Electricity, Magnetism, and Optics	5
PHYS 139A	Quantum Mechanics I	5
PHYS 139B	Quantum Mechanics II	5
PHYS 150	Quantum Computing	5
PHYS 171	General Relativity, Black Holes, and Cosmology	5

The prerequisites of PHYS 116A and PHYS 116C are waived for students who have taken AM 100 and AM 112.

PHYS 139A, PHYS 139B, PHYS 171 are courses that have more than one upper-division prerequisite beyond those that are already part of the core requirements. These courses may only be appropriate for double majors (or major-minor combinations).

Possible STAT Electives

STAT 108	Linear Regression	5
STAT 132	Classical and Bayesian Inference	5

STAT 205	Introduction to Classical Statistical Learning	5

Possible TIM Electives

TIM 147	Introduction to Data Mining for Business	5
TIM 150	Optimization for Management	5

Disciplinary Communication (DC) Requirement

The DC requirement in the Applied Mathematics B.S. is satisfied by completing the capstone course AM 170A (see below).

Comprehensive Requirement

Students satisfy the senior comprehensive requirement by completing the capstone course sequence:

Either these two courses:

AM 170A	Mathematical Modeling 1	5
AM 170B	Mathematical Modeling 2	5

Or these two courses:

AM 170A	Mathematical Modeling 1	5
AM 195	Senior Thesis Research	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are four sample academic plans that students can use to plan their sequence of courses in the major. The first two plans are suggested guidelines for students who begin their studies in their frosh year. Such students, if they plan carefully, will have several openings free to take other breadth courses they find interesting, or pursue an additional minor or major. The other two plans are for students transferring to UC Santa Cruz as juniors.

We generally encourage students to take AM 112 later in their curriculum, as this course requires proficiency in many different aspects of applied mathematics.

Plan One: This is a possible planner for a student entering UCSC in their frosh year who is prepared to go directly into MATH 19A or MATH 20A.

	Fall	Winter	Spring	**Summer**
Entering				College 1A Summer Edge (optional)
1st Year	MATH 19A	CSE 20	AM 20	
	AM 10	MATH 19B	CSE 16	
	College 1	WRIT 1/WRIT 1E (if needed)	Lower div elective	
2nd Year	AM 30	Lower-div elective	STAT 131	
	WRIT 2*	Lower-div elective	AM100	
3rd Year	AM114	AM 170A	Upper-div elective	
	Upper-div elective	AM 147		
4th Year	AM 129	AM 112	AM 170B	
		Upper-div elective		

* WRIT 2 should be taken in or before spring quarter of the second year.

The SI general education requirement is satisfied by passing the capstone course AM 170B. The MF general education requirement is satisfied by passing any of the lower-division mathematical foundations requirements.

Plan Two: This is a possible planner for a student entering UCSC their frosh year who needs to take preparatory courses prior to MATH 19A to ensure a successful outcome in this course.

	Fall	Winter	Spring	**Summer**
Entering				College 1A Summer Edge (optional)
1st Year	MATH 2	MATH 3 Lower-div elective WRIT 1/WRIT 1E (if needed)	MATH 19A Lower-div elective	
2nd Year	AM 10 MATH 19B WRIT 2*	AM 20 CSE 20	AM 30 CSE 16	
3rd Year	STAT 131 AM 114	AM 170A AM 147	AM 100 Upper-div elective	
4th Year	AM 129 Upper-div elective	AM 112 Upper-div elective	AM 170B	

* WRIT 2 should be taken in or before spring quarter of the second year.

The SI general education requirement is satisfied by passing the capstone course AM 170B. The MF general education requirement is satisfied by passing any of the lower-division mathematical foundations requirements.

Plan Three: This is a sample planner for a transfer student. It assumes the student has taken the majority of their general education requirements prior to joining UCSC.

	Fall	Winter	Spring	**Summer**
Entering				KRSG 1T Summer Edge (optional)
Junior Year	CSE 20 AM 100 Lower-div elective	CSE16 AM 147 Lower-div elective	STAT 131 Upper-div elective	
Senior Year	AM 114 AM 129 Upper-div elective	AM 170A AM 112	AM 170B Upper-div elective	

Plan Four: This is a sample planner for a transfer student interested in the 4+1 program for the comprehensive exam track. For the thesis track, replace two (or three) M.S. electives with Independent Studies. Note that the planner must ensure that there are at least 35 credits taken as a graduate student during the M.S. year.

	Fall	Winter	Spring	**Summer**
Entering				KRSG 1T Summer Edge

			(optional)
Junior Year	CSE 20	CSE16	STAT 131
	AM 100	AM 147	Upper-div elective
	Lower-div elective	Lower-div elective	Upper-div elective
Senior Year	AM 129	AM 170A	AM 170B
	AM 114	AM 112	Upper-div elective
M.S. Year*	M.S. elective	AM 213A	AM 213B
	M.S. elective	AM 160	AM 250
	Seminar	M.S. elective	Seminar

* Students in the 4+1 program take seven regular courses consisting of AM 160, AM 213A, AM 213B, AM 250 and three M.S. electives in their M.S. year. The specific arrangement of these seven courses shown in the M.S. year schedule above is just a sample and is subject to change.

APPLIED MATHEMATICS MINOR

The applied mathematics minor is available for students who wish to develop (1) proficiency in modeling real-life problems using mathematics; and (2) knowledge of standard, practical analytical and numerical methods for the solution of these models. This minor could be combined with a major in any of the physical, biological, mathematical, or engineering sciences as preparation for a graduate degree in that field or in applied mathematics.

Course Requirements

The applied math minor consists of the following requirements. Some courses may be satisfied via exam credit. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Basic calculus sequence:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5
	AND	
	Either these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or this course	
AM 30	Multivariate Calculus for Engineers	5

Plus one of the following sequences

	Either these courses	
AM 10	Linear Algebra for Engineers	5
AM 20	Ordinary Differential Equations for Engineers	5
	or these courses	
MATH 21	Linear Algebra	5
MATH 24	Ordinary Differential Equations	5
	or this course	
PHYS 116A	Mathematical Methods in Physics	5

Note: Students who complete MATH 21 and MATH 24 or PHYS 116A are strongly recommended to complete the MATLAB self-paced tutorial.

Upper Division Courses

Complete one course from each of the following categories

Mathematical Methods

AM 100	Mathematical Methods for Engineers	5

Dynamical Systems

AM 114	Introduction to Dynamical Systems	5

Introduction to Numerical Methods

AM 147	Computational Methods and Applications	5
PHYS 115	Computational Physics	5
MATH 148	Numerical Analysis	5

Partial Differential Equations

AM 112	Introduction to Partial Differential Equations	5
PHYS 116C	Mathematical Methods in Physics	5
MATH 107	Partial Differential Equations	5

Plus One Applied Mathematics Elective from the Following List

Any 5-credit upper-division (100-199) or graduate (200-299) AM course that is not already listed in the categories above. Independent studies (AM 198), AM 200, 211, and the 280 series and above may not be used.

CSE 107	Probability and Statistics for Engineers	5
ECE 103	Signals and Systems	5
ECE 115	Introduction to Solid Mechanics	5
ECE 141	Feedback Control Systems	5
MATH 103A	Complex Analysis	5
MATH 117	Advanced Linear Algebra	5
MATH 121A	Differential Geometry	5
PHYS 105	Mechanics	5
PHYS 139A	Quantum Mechanics I	5
PHYS 139B	Quantum Mechanics II	5
PHYS 171	General Relativity, Black Holes, and Cosmology	5
STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

Students may also propose other electives which use applied mathematical methods, subject to approval by the department.

SCIENTIFIC COMPUTING AND APPLIED MATHEMATICS CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

4+1 Contiguous Pathway leading to the SciCAM M.S. Degree

The 4+1 pathway into the SciCAM M.S. program is an option that allows undergraduates at UC Santa Cruz to (1) take the SciCAM foundational courses (AM 100, AM 112, AM 114, AM 129, and AM 147) during their undergraduate degree in preparation to join the 1-year track of the SciCAM program, and (2) apply to SciCAM through a streamlined application process. Undergraduate students currently enrolled in approved programs have the opportunity, any time between the start of their junior year and the end of the fall quarter of their senior year, to join the 4+1 contiguous pathway leading to the SciCAM degree program. Approved programs are:

- B.S. in Applied Mathematics
- B.S. in Astrophysics
- B.S. in Computer Engineering
- B.S. in Computer Science
- B.S. in Electrical Engineering
- B.A. in Mathematics (pure and computational)
- B.S. in Physics
- B.S in Robotics Engineering

Qualified undergraduates from other undergraduate majors may also apply to the 4+1 pathway and their applications will be considered on a case by case basis.

Admission Requirements

The requirements for admission into the 4+1 pathway are (1) a cumulative GPA of 3.3 or higher, and (2) to have taken, or to have a plan to take, at least four of the five SciCAM foundational courses before the end of their senior year. The five foundational courses are: AM 100 (Mathematical Methods for Engineers III), AM 112 (Introduction to Partial Differential Equations), AM 114 (Introduction to Dynamical Systems), AM 129 (Foundations of Scientific Computing for Scientists and Engineers), and AM 147 (Computational Methods and Applications). Note that some of the foundational courses are waived depending on the student's major, or can be substituted by other courses on a case by case basis, with approval from the 4+1 coordinator.

Interested students should schedule a meeting with the SciCAM 4+1 pathway director to discuss their curriculum plan and fill the application form, following the guideline on the 4+1 pathway website. The ultimate deadline for application to the pathway is Dec. 1 of the senior year, although students are encouraged to apply significantly earlier, ideally at the same time as their major declaration.

Students in the pathway who apply to SciCAM through the streamlined application process are not guaranteed admission, although we do expect to admit anyone who has passed all the foundational courses and has maintained a GPA of 3.3 or higher.

Program Requirements

Once accepted into the SciCAM program, students from the pathway will follow the same requirements as students in the regular SciCAM program (please refer to the SciCAM catalog page), but on an accelerated one-year track with anticipated graduation in spring of their M.S. year for Plan II (comprehensive exam track) students, and the end of the summer of their M.S. year for Plan I (thesis track) students.

Relationship of SciCAM Masters program and AM Doctoral Program

Students in the SciCAM M.S. program interested in an academic career will be strongly encouraged to apply to the AM Ph.D. program upon completion of their SciCAM M.S. degree. Applications are reviewed in the standard academic cycle. Students interested in applying to the AM Ph.D. program are encouraged to discuss this option with the graduate director in the fall of each year.

Transfer of Credit

Up to three UC Santa Cruz courses (15 credits) fulfilling the degree requirements of the SciCAM degree may be taken before beginning the graduate program. Note that this 15-credit limit does not apply to the requirements of the five foundational courses (AM 100, AM 112, AM 114, AM 129, and AM 147), which may all be taken prior to the start of the SciCAM program without penalty. However, students will still need to take courses totaling 35 credits while being graduate students to satisfy the university requirements.

Up to one course from other institutions may be applied to the M.S. degree course requirements. Petitions should be submitted along with the transcript from the other institution or UC Santa Cruz Extension. For courses taken at other institutions, copies of the syllabi, exams, and other course work should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UC Santa Cruz.

Review of Academic Progress

Each year, the faculty reviews the progress of every student in the graduate programs. Students not making adequate progress toward completion of degree requirements are subject to dismissal from the program (see the UC Santa Cruz Graduate Handbook and the AM Graduate Handbook for the policy on satisfactory academic progress). Also, please refer to the Graduate Division's specific guidelines on annual student reviews.

APPLIED MATHEMATICS M.S.

Introduction

Graduate studies in applied mathematics (AM) at UC Santa Cruz focus on developing skill sets in mathematical modeling, analysis, and scientific computation applied to a broad range of science and engineering disciplines, including fluid mechanics, high-performance computing, mathematical biology, dynamical systems, stochastic processes, control, optimization, and scientific machine learning. The overarching goal of the AM graduate programs at UC Santa Cruz is to underscore the application of mathematics in solving real-life problems. In particular, the master of science (M.S.) program in applied mathematics prepares the students with the foundational analytical and numerical tools of applied mathematics, enabling them to perform research that transcends the disciplinary boundaries in science and engineering.

Requirements

Course Requirements

Students in the AM M.S. program must demonstrate mastery in the foundations of scientific computing and applied mathematics, either by submitting evidence of undergraduate transcripts to the AM graduate director for approval or by taking all of the following foundational courses upon entry to the M.S. program, or a combination of the two, by the end of their first year. These foundational courses can be taken for letter grade, or the Satisfactory/Unsatisfactory (S/U) grade scale option.

All of the following five courses:

AM 100	Mathematical Methods for Engineers	5
AM 112	Introduction to Partial Differential Equations	5
AM 114	Introduction to Dynamical Systems	5
AM 129	Foundations of Scientific Computing for Scientists and Engineers	5
AM 147	Computational Methods and Applications	5

Core Courses

All AM M.S. students must complete the following core courses: four regular courses (AM 212, AM 213A, AM 213B, AM 224), as well as one quarter of seminar course AM 280B, and at least one quarter of AM 297A, during which they work on their M.S. project. All four non-seminar courses must be taken for letter grades.

AM 212	Advanced Methods of Applied Mathematics	5
AM 213A	Numerical Linear Algebra	5
AM 213B	Numerical Methods for the Solution of Differential Equations	5
AM 224	Applied Dynamical Systems	5
AM 280B	Seminar in Applied Mathematical Modeling	2
AM 297A	Independent Study or Research	5

Elective Courses

In addition to the 27 core course credits, M.S. students must complete three additional regular 5-credit elective courses for a total requirement of 42 credits. As part of the three elective courses, students are required to take (at least) one elective course during their first year (called first-year elective). First-year electives are designed to prepare students for their ultimate research emphasis within applied mathematics. Possible first-year electives can be found in (but are not limited to) the following list:

AM 107	Introduction to Fluid Dynamics	5
AM 115	Stochastic Modeling in Biology	5
AM 148	GPU Programming for Scientific Computations	5
AM 160	Introduction to Scientific Machine Learning	5
AM 215	Stochastic Modeling in Biology	5
AM 217	Introduction to Fluid Dynamics	5
AM 229	Convex Optimization	5
AM 230	Numerical Optimization	5
AM 231	Nonlinear Control Theory	5

AM 232	Applied Optimal Control	5
AM 238	Fundamentals of Uncertainty Quantification in Computational Science and Engineering	5
AM 250	An Introduction to High Performance Computing	5

M.S. Project Requirements

Students must also conduct a capstone research master's project (AM 297A) to satisfy the Master's Plan II university requirement. Students in the AM M.S. program should identify a project advisor and research topic. The project will involve the solution of a problem or problems from the selected area of application. When the project is completed, students must submit an M.S. project report to their project reading committee for the committee's approval. The M.S. report must consist of at least 30 pages and no more than 60 pages of printed written work and accompanying pertinent figures, consisting of a coherent introduction and presentation of the current state of the field, a clear presentation of the questions raised, of the methodology used to solve them, and a discussion of the results obtained. The report will be read by the M.S. project reading committee to assess the quality of both written work for awarding the M.S. degree to the student.

The M.S. project reading committee must include two ladder-rank faculty members, consisting of the faculty advisor and one additional reader. At least one of these core two readers must be from within the Applied Mathematics Department. Additional readers will be chosen appropriately from within the Applied Mathematics Department or outside of it. Either the advisor or the additional reader must be from within the Applied Mathematics Department.

Relationship of AM Master's Program and AM Doctoral Program

The M.S. and Ph.D. programs are freestanding and independent, so that students can be admitted to either program. Students completing the M.S. program may request to transfer into the Ph.D. program. However, transfer from the M.S. to the Ph.D. program is considered an exceptional circumstance, and requires a sponsoring faculty (usually the faculty advisor) and approval by the graduate director and the Applied Mathematics Department.

Transfer of Credit

Up to three UC Santa Cruz courses (15 credits) fulfilling the degree requirements of the M.S. degree may be taken during students' undergraduate study at UC Santa Cruz. Courses from other institutions may not be applied to the M.S. degree course requirements. However, students will still need to take courses totaling 35 credits as graduate students to satisfy the university requirements.

Petitions should be submitted along with the transcript from their UC Santa Cruz undergraduate study. Such petitions are not considered until the completion of at least one quarter at UC Santa Cruz. At most, a total of three courses may be transferred.

Students who complete the M.S. degree in AM at UC Santa Cruz and continue on to the Ph.D. program in AM at UC Santa Cruz can transfer all applicable courses taken during the M.S. to the Ph.D. program, provided that such students meet the minimum residency requirement for Ph.D. programs, as specified by SR 686 and the UC Santa Cruz Graduate Division.

Foreign Language Requirements

Review of Academic Progress

Each year, the faculty reviews the progress of every student in all programs and tracks. Students not making adequate progress toward completion of degree requirements are subject to dismissal from the program (see the UC Santa Cruz Graduate Handbook and the AM Graduate Handbook for the policy on satisfactory academic progress). Also, please refer to the Graduate Division's specific guidelines on annual student reviews. In addition, students will work with their faculty sponsors to fill out an AM advising form at least once a year to discuss the overall academic progress, research relationship, and students' welfare.

Applying for Graduation

All candidates for a degree must submit an application for the M.S. degree to the Baskin Engineering Graduate Student Affairs Office by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. The deadline for degree applications is typically in the second week of the quarter. A student is required to be registered or on Filing Fee Status during the quarter in which the degree is conferred. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

APPLIED MATHEMATICS PH.D.

Introduction

Graduate studies in applied mathematics (AM) at UC Santa Cruz focus on developing skill sets in mathematical modeling, analysis, and scientific computation applied to a broad range of science and engineering disciplines, including fluid mechanics, high-performance computing, mathematical biology, dynamical systems, stochastic processes, control, optimization, and scientific machine learning. The overarching goal of the AM graduate programs at UC Santa Cruz is to underscore the application of mathematics in solving real-life problems. In particular, the doctor of philosophy (Ph.D.) program prepares the students with the foundational analytical and numerical tools of applied mathematics, enabling them to perform independent research that transcends the disciplinary boundaries in science and engineering.

Advancement to Candidacy

Course Requirements

Foundational Courses

Students in the AM Ph.D. program must demonstrate mastery in the foundations of scientific computing and applied mathematics, either by submitting evidence of undergraduate transcripts to the AM graduate director for approval or by taking all of the following foundational courses upon entry to the Ph.D. program, or a combination of the two, by the end of their first year:

All of the following five foundational courses

AM 100	Mathematical Methods for Engineers	5
AM 112	Introduction to Partial Differential Equations	5
AM 114	Introduction to Dynamical Systems	5
AM 129	Foundations of Scientific Computing for Scientists and Engineers	5
AM 147	Computational Methods and Applications	5

Core Courses

All AM Ph.D. students must complete the following core courses. All five non-seminar core courses (i.e., AM 212, AM 213A, AM 213B, AM 224 and AM 160) must be taken for letter grades. Students must also take at least six credits from a combination of three courses in the AM 280 seminar series (i.e., AM 280A, AM 280B, and AM 280C). The combination must include at least one quarter of AM 280B.

AM 160	Introduction to Scientific Machine Learning	5
AM 212	Advanced Methods of Applied Mathematics	5
AM 213A	Numerical Linear Algebra	5
AM 213B	Numerical Methods for the Solution of Differential Equations	5
AM 224	Applied Dynamical Systems	5
AM 280A	Seminar in Mathematical and Computational Biology	2
AM 280B	Seminar in Applied Mathematical Modeling	2
AM 280C	Seminar in Geophysical and Astrophysical Fluid Dynamics	2

Elective Courses

In addition to these 31 credits, Ph.D. students must complete five additional 5-credit elective courses for a total requirement of 56 credits. As part of the five additional courses, students are required to take (at least) one elective course during their first year (called first-year elective) to help them engage in research as early as possible. First-year electives are designed to prepare students for their ultimate research emphasis within applied mathematics. These electives can be selected from any non-core regular 5-credit AM graduate courses (between course numbers 201 and 279).

Ph.D. students will be allowed to substitute up to two elective courses with corresponding numbers of credits of independent study (i.e., 5 or 10), during which they conduct research with their advisor toward their advancement to candidacy.

All elective courses, including the AM courses and non-AM courses, must be approved by the graduate director. Elective courses can be taken for the Satisfactory/Unsatisfactory grading option or the letter grade option.

Transfer of Credit

Up to three UC Santa Cruz courses (15 credits) fulfilling the degree requirements of the Ph.D. degree may be taken during students' undergraduate study at UC Santa Cruz. Note that this 15-credit limit does not apply to the requirements of the five foundational courses (AM 100, AM 112, AM 114, AM 129, and AM 147), which may all be taken prior to the start of the Ph.D. program without penalty. Ph.D. students who have previously earned an M.S. degree in a related field at another institution may substitute courses from their previous university with the approval of the student’s official advisor and the graduate committee.

Petitions should be submitted along with the transcript from the other institution or from their UC Santa Cruz undergraduate study. For courses taken at other institutions, copies of the syllabi, exams, and other coursework should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UC Santa Cruz. At most, a total of three courses may be transferred.

Students who complete at UC Santa Cruz the M.S. degree in AM or the M.S. degree in Scientific Computing and Applied Mathematics (SciCAM) and continue on to the Ph.D. program in AM at UC Santa Cruz can transfer all applicable courses taken during the M.S. to the Ph.D. program, provided that such students meet the minimum residency requirement for Ph.D. programs, as specified by the UC Santa Cruz Graduate Division.

Teaching Requirement

Ph.D. students will be required to serve as teaching assistants for at least two quarters during their graduate study. Certain exceptions may be permitted for those with extensive prior teaching experience, for those who are not allowed to be employed due to visa regulations, or for other reasons approved by the graduate director.

Pre-Qualifying Requirements

Under normal progress, Ph.D. students are expected to find a Ph.D. advisor and complete their core course requirements by the end of their second year. Soon after identifying an advisor, they are expected to prepare for a pre-candidacy exam under the guidance of their advisor(s) to demonstrate their suitability and commitment to research. Students are expected to pass the pre-candidacy exam after completing all core courses and no later than by the end of the summer quarter of their second year, or they will be put on academic notice. The pre-candidacy exam has two parts (written and oral), in which students are expected to review the literature and present a research proposal relevant to the subject area of their intended

Ph.D. The written report must not exceed 10 pages and must be submitted to their committee at least one week prior to the planned oral exam date. The oral examination must cover, in no more than 30 minutes, both literature review and planned work. This will be followed by a question-and-answer session between the student and the committee during which the committee members can ask questions on core courses, literature review, and proposed research. The committee will assess the student's suitability for future research in the Ph.D. program based on both written and oral performance on the exam.

The committee, which must be formed at least one month prior to the planned pre-candidacy exam date, is approved by the graduate director, and must include:

(i) the student's primary Ph.D. advisor (a ladder-rank faculty member in or outside of AM);

(ii) another ladder-rank AM faculty member; and

(iii) another ladder-rank UCSC faculty member who is recognized as an expert in the student's research interest area with credentials equivalent to a ladder-rank UCSC faculty member as judged by the graduate director.

Students who do not pass the exam in their first attempt will be allowed to retake it once, and must do so at the very latest before the end of the fall quarter of their third year. If they fail the second examination they will not be allowed to continue in the Ph.D. program but will have the option to continue into the M.S. program and exit with the M.S. as the terminal degree.

Qualifying Examination

Under normal progress Ph.D. students are expected to advance to candidacy anytime between the quarter they pass the pre-candidacy exam and the spring quarter of their third year. A student who has not advanced to candidacy by the start of the fourth year will be subject to academic notice.

Ph.D. students must form a Qualifying Exam (QE) committee in preparation of the exam. This committee must consist of at least four members as follows (for continuity, the members of this committee are ideally the same as those of the pre-candidacy exam committee, augmented with an external member):

- QE Chair: This person must be a tenured AM faculty and cannot be the student's Ph.D. advisor(s).
- Member 1: Ladder-rank AM faculty member
- Member 2: Ladder-rank UCSC faculty member (any department).
- External Member: This person must be tenured UCSC faculty from outside AM or tenured faculty in the same discipline at another institution or a recognized non-faculty expert in the student's research area with credentials equivalent to a ladder-rank UCSC faculty member as judged by the graduate director and the dean of Graduate Studies. The external member cannot be the student's faculty advisor(s).

The candidacy exam also has two parts (written and oral), in which students are expected to review the literature, present a substantially completed research project that is appropriate for submission to an international journal or conference, and present a plan to complete further research projects in pursuit of their Ph.D. The written report, that should not exceed 60 pages, must be submitted to their committee at least two weeks prior to the planned oral exam date. The oral examination must cover, in no more than 45 minutes, both literature review, and existing and planned research. This will be followed by a question-and-answer session between the student and the committee during which the committee members can ask questions on the literature review, and current and proposed research. The committee will assess the student's suitability for advancement to candidacy based on both written and oral performance on the exam.

Students can only advance to candidacy after they have completed all course requirements (including removal of all incomplete grades), passed both pre-candidacy and candidacy examinations, nominated their dissertation reading committee, and paid the advancement to candidacy fee.

Dissertation Committee

Upon successful completion of the qualifying examination, a dissertation reading committee must be formed consisting of the dissertation supervisor and at least two additional readers appointed by the graduate director upon recommendation of the dissertation supervisor. Students should consult their advisor(s) about the membership of their committee.

The committee must include the following:

- Committee Chair: This person should be an AM faculty member (usually the student’s Ph.D. advisor).
- Member 1: Ladder-rank AM faculty member who is not the student's primary Ph.D. advisor.
- Member 2: Ladder-rank UCSC faculty (may be the student’s Ph.D. advisor) **or** a recognized expert in the student's research area with credentials equivalent to a ladder-rank UCSC faculty member as judged by the graduate director and the dean of Graduate Studies.

At least two members of the committee must be AM faculty. If a student has two co-advisors, they should both be listed as co-chairs and a fourth committee member must then be added. Additional members may be added to the committee. The committee is subject to the approval of the Graduate Division.

Post-Qualifying Requirements

After the advancement, Ph.D. students shall consult with their dissertation committee at least once every year to present and discuss progress made and receive comments and suggestions from their committee members.

Relationship of AM Master's Program and AM

Doctoral Program

The M.S. and Ph.D. programs are freestanding and independent, so that students can be admitted to either program. Students completing the M.S. program may request to transfer into the Ph.D. program (provided they pass the pre-qualifying examination). Students in the Ph.D. program can receive a non-terminal M.S. degree upon completion of the M.S. requirements, including the capstone research project. Each Ph.D. student will be required to have knowledge of applied mathematics equivalent to that required for the M.S. degree. In addition, Ph.D. candidates will be required to complete coursework beyond the M.S. level.

Optional Catchall

Dissertation

Dissertation

A dissertation is required for the Ph.D. degree. The dissertation will consist of a minimum of three chapters composed of material suitable for submission and publication in major professional journals in applied mathematics (or related subject areas of application), in addition to an introductory chapter that thoroughly reviews the literature, and a conclusion chapter that provides a broad perspective of the results in the context of the existing literature, and describes future work.

Dissertation Defense

The completed dissertation will be submitted to the reading committee at least one month before the dissertation defense. The defense consists of a public presentation (open session) of the research lasting between 45 and 55 minutes followed by a private examination (closed session) by the reading committee. Successful completion of the dissertation defense is the final requirement for the Ph.D. degree.

Review of Academic Progress

Each year, the faculty reviews the progress of every student in the graduate programs. Students who do not make adequate progress toward completion of degree requirements are subject to dismissal from the program (see the UC Santa Cruz Graduate Handbook and the AM Graduate Handbook for the policy on satisfactory academic progress). Also, please refer to the Graduate Division's specific guidelines on annual student reviews. In addition, students will work with their academic advisors (e.g., first-year advisor or official Ph.D. advisor) and their dissertation reading committee to fill out an AM advising form at least once a year to discuss the overall academic progress, research relationship, and students' welfare.

Applying for Graduation

All candidates for a degree must submit an application for the Ph.D. degree to the Baskin Engineering Graduate Advising Office by the date stated in the Academic and Administrative Calendar for the quarter you wish to receive the degree. The deadline for degree applications is typically in the second week of the quarter.

A student is required to be registered or on Filing Fee Status, whichever is applicable, during the quarter in which the degree is conferred. Students should consult the department staff advisor to determine which option fits their situation. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

SCIENTIFIC COMPUTING AND APPLIED MATHEMATICS M.S.

Introduction

The Department of Applied Mathematics (AM) offers an M.S. program in Scientific Computing and Applied Mathematics (SciCAM). SciCAM students learn a combination of applied mathematical modeling and cutting-edge computational methods for modern high-performance computing and scientific machine learning. The SciCAM M.S. degree is ideal for meeting the increasing need for graduates in the rapidly growing markets of machine learning and high-performance computing. Such computationally knowledgeable and experienced modelers are highly sought after in industry and government agencies.

Requirements

Course Requirements

Foundational Courses

Students in the SciCAM program must demonstrate mastery in the foundations of scientific computing and applied mathematics, either by submitting evidence through undergraduate transcripts to the AM graduate director for approval or by taking some or all of the following foundational courses upon entry to the M.S. program, or a combination of the two, by the end of their first year:

All of the following five courses:

AM 100	Mathematical Methods for Engineers	5
AM 112	Introduction to Partial Differential Equations	5
AM 114	Introduction to Dynamical Systems	5
AM 129	Foundations of Scientific Computing for Scientists and Engineers	5
AM 147	Computational Methods and Applications	5

Core Courses

All SciCAM M.S. students are required to take the four core courses listed below. These courses must be taken for letter grades.

AM 213A	Numerical Linear Algebra	5
AM 213B	Numerical Methods for the Solution of Differential Equations	5
AM 250	An Introduction to High Performance Computing	5

AM 160	Introduction to Scientific Machine Learning	5

Elective Courses

Any regular 5-credit AM graduate courses (between course numbers 201 and 279) not already listed as a core course can be counted as electives with approval from the graduate director. Elective courses outside of AM must be approved by the graduate director. Elective courses can be taken for the Satisfactory/Unsatisfactory grading option or the letter grade option.

Note that some upper-division electives are allowed, bearing in mind that no more than a total of 15 credits of upper-division courses may be used to satisfy the degree requirements. The foundational courses (AM 100, AM 112, AM 114, AM 129, and AM 147) cannot be used toward the elective degree requirements, but do not count toward the 15 transfer credits limit either.

Other Requirements

The SciCAM program offers two capstone options: Plan I thesis track and Plan II capstone exam track. Students in the SciCAM program pursue either a **Plan I thesis** or **Plan II capstone (comprehensive examination)** curriculum.

- **Candidates for a Plan I thesis** must complete one graduate-level five-credit elective course (between course numbers 200 and 279) and take a minimum of 10 credits of independent study to write a thesis (i.e., at least two five-credit independent studies over two quarters or one 10-credit independent study over one quarter). The thesis requirements are as follows. Students should identify a thesis advisor and a research topic as soon as possible upon joining the M.S. (before completing all core courses), ideally during the first or second quarter, and begin working on their research. They must ultimately write a thesis, which must consist of at least 30 pages and no more than 60 pages of printed written work and accompanying pertinent figures, consisting of a coherent introduction and presentation of the current state of the field, a clear presentation of the questions raised, of the methodology used to solve them, and a discussion of the results obtained. The quality and novelty of the thesis must be appropriate for potential publication in an international journal. The thesis will be read by a committee of three ladder-rank faculty members, consisting of the faculty advisor and two additional readers. Additional readers will be chosen appropriately from within the Applied Mathematics Department or outside of it. At least two members of the reading committee must be from within the Applied Mathematics Department. The student will then be required to give a public oral presentation of their thesis (between 30 minutes and 45 minutes), which will be evaluated by the reading committee. The reading committee will assess the quality of both written work and oral presentation in making their recommendation for awarding the SciCAM M.S. degree to the student.
- **Candidates for a Plan II capstone (comprehensive examination)** must complete three regular 5-credit elective courses from an approved list, at least one of which should be a graduate-level course, and pass the SciCAM comprehensive examination. The exam takes place in the spring quarter each year, and is a take-home exam covering the core and foundational courses. Passing the comprehensive examination fulfills the capstone requirement. A student has two attempts to pass the exam. If a student does not pass the exam in spring, they are allowed to retake it in late summer (late September before the fall quarter starts).

Accelerated One-Year Program Plan

The expected time to completion of the SciCAM M.S. degree program is two years. However, AM offers a one-year accelerated track for interested students who can demonstrate sufficient proficiency in the foundational subjects. The minimum requirements to join the accelerated track are:

1. having completed at least three calculus courses, including multivariate differential and integral calculus,
2. having completed a course on ordinary differential equations, a course on linear algebra, and a course on programming, and
3. having completed at least four of the five foundational requirement courses of the SciCAM program or their equivalents.

Note that this is a separate accelerated track from that of the SciCAM 4+1 Contiguous Bachelor's/Master's Pathway.

Requests to join the accelerated track must be made to the graduate director via email no later than Aug. 31 of each year, prior to the student's first quarter in the program.

Transfer of Credit

Up to three UC Santa Cruz courses (15 credits) fulfilling the degree requirements of the SciCAM M.S. degree may be taken during students' undergraduate study at UC Santa Cruz. Note that this 15-credit limit does not apply to the requirements of the foundational courses (AM 100, AM 112, AM 114, AM 129, and AM 147), which may all be taken prior to the start of the SciCAM program without penalty. However, students still need to take courses totaling 35 credits as graduate students to satisfy the university requirements.

Up to one course from other institutions may be applied to the SciCAM M.S. degree course requirements. Petitions should be submitted along with the transcript from the other institution or UC Santa Cruz Extension. For courses taken at other institutions, copies of the syllabi, exams, and other course work should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UC Santa Cruz.

Relationship of SciCAM Master's Program and AM

Doctoral Program

Students in the SciCAM M.S. program interested in an academic career are strongly encouraged to apply to the AM Ph.D. program upon completion of their SciCAM M.S. degree. Applications are reviewed in the standard academic cycle. Students interested in applying to the AM Ph.D. program are encouraged to discuss this option with the graduate director in the fall of each year. Transfer from the SciCAM M.S. program to the Ph.D. program is considered an exceptional circumstance, and requires a sponsoring faculty (usually the faculty advisor) and approval by the graduate director and the Applied Mathematics Department.

Review of Academic Progress

Each year, the faculty reviews the progress of every student in the graduate programs. Students not making adequate progress toward completion of degree requirements are subject to dismissal from the program (see the UC Santa Cruz Graduate Handbook and the AM Graduate Handbook for the policy on satisfactory academic progress). Also, please refer to the Graduate Division's specific guidelines on annual student reviews. In addition, students will work with their faculty sponsors to fill out an AM advising form at least once a year to discuss the overall academic progress, research relationship, and students' welfare.

Foreign Language Requirements

Applying for Graduation

All candidates for a degree must submit an application for the M.S. degree to the Baskin Engineering Graduate Student Affairs Office by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. The deadline for degree applications is typically in the second week of the quarter.

A student is required to be registered or on Filing Fee Status (thesis track only) during the quarter in which the degree is conferred. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

SCIENTIFIC COMPUTING DESIGNATED EMPHASIS

Introduction

Students from another degree program who meet certain requirements can have the designated emphasis (DE) of "Scientific Computing" annotated to their degree title. For example, an M.S. or Ph.D. student in physics who meets the requirements would get a certification that reads "M.S. in Physics with an emphasis in Scientific Computing" or "Ph.D. in Physics with an emphasis in Scientific Computing".

The designated emphasis is open to Ph.D. students, as well as M.S. students in either a Plan I (thesis) or Plan II (exam/project) capstone.

Requirements

Committee Composition and Departmental Approvals

Upon electing to pursue a designated emphasis in scientific computing, students must choose a DE faculty advisor within the Department of Applied Mathematics. This should be done at least one quarter before the student's Qualifying Examination (for Ph.D. students) or their planned graduation date (for M.S. students).

A list of eligible DE advisors is maintained online. The student must organize a preliminary meeting with the DE advisor, and agree on a plan for completion of the DE requirements. Once this plan has been designed, the student and the advisor must complete the DE application form available online. The completed application form must then be signed by the student's home department faculty advisor, by the DE advisor, and by the Applied Mathematics graduate director, and then submitted to the Baskin Engineering Graduate Student Affairs Office.

Course Requirements

Students declaring a designated emphasis in Scientific Computing must complete the courses listed below.

All of the following courses:

AM 213A	Numerical Linear Algebra	5
AM 213B	Numerical Methods for the Solution of Differential Equations	5

Plus one of the following courses (note that the other one can be used as an elective):

AM 160	Introduction to Scientific Machine Learning	5
AM 250	An Introduction to High Performance Computing	5

Plus one of the following approved elective courses:

AM 160	Introduction to Scientific Machine Learning	5
AM 230	Numerical Optimization	5
AM 250	An Introduction to High Performance Computing	5
AM 260	Computational Fluid Dynamics	5
CSE 201	Analysis of Algorithms	5
CSE 242	Machine Learning	5

Writing, Research and/or Teaching Requirements

- **Writing requirements:** a substantial and original written body of work related to scientific computing, associated with substantial code development or substantial modification of existing code, or development of significant computational tools for data analysis. The write-up could take the form of a paper (at least submitted), or an M.S., M.A., or Ph.D. thesis chapter, for instance.
- **Oral presentation requirement:** a presentation of no less than 30 minutes during which the student must

demonstrate mastery of the scientific computing component of the submitted written piece of work. This presentation could be the student's qualifying exam, or the Ph.D. defense, or a separate presentation. The DE advisor must be invited to attend this presentation.

Review of Progress

Applying for Graduation

All candidates for a degree must submit an application for the master's degree or an application for the doctorate in philosophy degree to the appropriate office in their primary department by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. Students who have completed a designated emphasis should be sure to note the designated emphasis on the degree application. The deadline for degree applications is typically in the second week of the quarter. A student is required to be registered or on filing fee during the quarter in which the degree is conferred.

Biomolecular Engineering

Baskin Engineering
335 Baskin Engineering Building
(831) 459-2158
engineering.ucsc.edu

PROGRAMS OFFERED

Biomolecular Engineering and Bioinformatics B.S. (p. 527)

Biotechnology B.A. (p. 538)

Bioinformatics Minor (p. 542)

Biomolecular Engineering Contiguous Bachelor's/Master's Pathway (p. 542)

Biomolecular Engineering and Bioinformatics M.S. (p. 544)

Biomolecular Engineering and Bioinformatics Ph.D. (p. 545)

The Department of Biomolecular Engineering (BME) is an interdisciplinary department that combines expertise from biology, mathematics, chemistry, computer science, and engineering to train students and develop technologies to address major problems at the forefront of biomedical and bio-industrial research. Students trained in the Department of Biomolecular Engineering can look forward to careers in academia, the information and biotechnology industries, public health, or medical sciences.

The department offers a bachelor of science (B.S.) degree in biomolecular engineering and bioinformatics, a minor in bioinformatics, a contiguous B.S./M.S. pathway for well-prepared undergraduate students, a graduate master of science (M.S.) and a doctor of philosophy (Ph.D.) degrees in biomolecular engineering and bioinformatics. The department co-sponsors the Program in Biomedical Science and Engineering (PBSE), a doctoral training program, with the departments of MCD Biology, Chemistry and Biochemistry, and Microbiology and Environmental Toxicology.

Departmental faculty advise undergraduate and graduate researchers enrolled in the bioinformatics, bioengineering, and related degree programs. Members of the Department of Biomolecular Engineering actively collaborate with faculty from other Baskin School of Engineering departments, such as Applied Mathematics, Computer Science and Engineering, and Electrical and Computer Engineering; and with the Physical and Biological Sciences departments of MCD Biology, Chemistry and Biochemistry, Microbiology and Environmental Toxicology, and Ecology and Evolutionary Biology.

UNDERGRADUATE PROGRAM

The Department of Biomolecular Engineering offers a Bachelor of Science in Biomolecular Engineering and Bioinformatics (BMEB), a Bachelor of Arts in Biotechnology, and a minor in Bioinformatics. The BMEB B.S. program has two distinct tracks: one in biomolecular engineering which provides undergraduate training in experimental engineering, and a second with a computational focus in bioinformatics. The Biotechnology B.A. program provides an overview of the field and is suitable for those students intending to double major in humanities or social sciences.

Courses for All Majors and Minor

BME 80G, Bioethics in the Twenty-First Century: Science, Business, and Society, is particularly appropriate to all students interested in the societal issues surrounding the revolutions in bioinformatics and biotechnology.

BME 105, Genetics in the Genomics Era, teaches the principles of genetics and genomics, focusing on how sequencing technologies enable us to understand gene function, genotype to phenotype relationships, and genetic inheritance.

BME 110, Computational Biology Tools, provides an introduction to the tools and techniques of bioinformatics from a user's view. It is intended for biologists and biochemists who need to use bioinformatics tools, but are not primarily interested in building new bioinformatics tools.

BME 160, Programming for Biologists and Biochemists, provides an introductory programming class using Python to analyze, transform, and publish biological data.

BME 163, Applied Visualization and Analysis of Scientific Data, extends this life-science data focus with an emphasis on understanding and presenting that data.

GRADUATE PROGRAM

The Department of Biomolecular Engineering offers interdisciplinary M.S. and Ph.D. degrees in biomolecular engineering and bioinformatics and accepts students from a wide-variety of backgrounds. A typical cohort includes incoming students from molecular biology, genetics, computer science, engineering, and mathematics. The unifying theme of our research training program is using quantitative approaches to addressing fundamental questions

in biology and biomedical science. The Ph.D. program prepares students to lead independent research programs in academic or industry settings. The M.S. program is designed to prepare students for careers in contemporary biomedical research settings in the biotechnology industry.

Program coursework is designed to provide the technical skills in programming and other technical skills required for independent and advanced scientific discovery. Incoming students undertake rigorous core coursework, conduct laboratory rotations (Ph.D. only), and are exposed to a rich environment of regular seminars and group meetings. Students interact closely with biomolecular engineering and bioinformatics faculty members while undertaking their dissertation research (Ph.D.) or capstone projects (M.S.), and have first-hand access to state-of-the-art computation tools and laboratory facilities throughout their training, including cluster computing and high-throughput sequencing facilities.

BIOMOLECULAR ENGINEERING AND BIOINFORMATICS B.S.

Information and Policies

Introduction

The Biomolecular Engineering and Bioinformatics (BMEB) Bachelor of Science includes the biomolecular engineering (BME) and bioinformatics (BINF) concentrations.

The BME concentration is designed for students interested in protein engineering, stem cell engineering, and synthetic biology. The emphasis is on designing biomolecules (DNA, RNA, proteins) and cells for particular functions, and the underlying sciences are biochemistry and cell biology.

The BINF concentration combines mathematics, science, and engineering to explore and understand biological data from high-throughput experiments, such as genome sequencing, gene-expression chips, and proteomics experiments.

The BMEB major builds upon the research and academic strengths of the faculty in the Biomolecular Engineering Department.

The BMEB B.S. has course requirements in mathematics, science, and engineering. Students interested in Biomolecular Engineering and Bioinformatics as a major should contact the Baskin Engineering advising office (bsoeadvising@ucsc.edu) before enrolling in any courses at UCSC. Early advising is particularly important before choosing calculus and physics courses.

In both concentrations, students participate in a capstone experience. Options for the senior capstone experience include:

Capstone option 1: Series of project-based engineering design courses taken in the **senior year** where students propose and execute a design project, and then present their work through presentations and a capstone report. Two series are available:

(1) Advanced bioinformatics individual capstone project: Series of three courses taken in the senior year: BME 205 (fall), BME 230A (winter), and BME 129C (spring). Note: students are expected to present their work and complete a capstone report in BME 129C based on the project they started in BME 205 and BME 230A.

or

(2) Biomolecular engineering team design project: Series of three courses taken in the senior year: BME 129A (fall), BME 129B (winter), and BME 129C (spring). Ideal for students interested in working in industry. **Note:** students are expected to present their work and complete a capstone report in BME 129C based on the project they started in BME 129A and BME 129B. Presentations and capstone report are completed as a team.

Capstone option 2: Individual senior thesis.

Timeline: Students should identify a faculty to serve as their capstone mentor and begin working in the research lab **before the student's senior year**. **Note:** many faculty expect students to work in the lab prior to senior year, including the summer before senior year. Students must submit a project proposal in late summer or in the first two weeks of fall quarter of their senior year to the Undergraduate Program Director Dr. Dianne Hendricks.

Senior thesis research consists of 15 credits of Senior Thesis Research (BME 195). Students pursuing the senior thesis option must write a two-page thesis proposal and seek approval of their project from the undergraduate director in the quarter preceding the first quarter of BME 195, typically summer quarter before senior year. Students typically complete 15 credits of BME 195 during their senior year as follows: 5 credits per quarter fall/winter/spring.

Capstone option 3: iGEM (international Genetically Engineered Machines)

Students complete a team-oriented, student-led synthetic biology project based on the international iGEM competition. Students interested in the UCSC iGEM team should contact the iGEM faculty mentor (contact information can be obtained from the undergraduate program director.) This capstone option is available only to BMEB B.S. majors in the Biomolecular concentration.

Timeline: Students interested in iGEM complete a written application and interview in **fall of their junior year.** Students selected for the team enroll in **two courses in junior year**: BME 180 (winter) and BME 188A (spring) and **two course in summer before senior year**: BME 188B and BME 188C. **Note:** students are expected to work on the iGEM project full-time in summer before senior year in preparation for the iGEM Grand Jamboree in October.

More information on BME research:

All BME capstone options involve working closely with faculty and other researchers at UCSC, analyzing ideas, developing technologies, and discovering new approaches. Application areas include biomolecular sensors and systems, vaccine development, stem cell engineering, nano-electronic implants, assistive technologies, bioinformatics, microfluidics, nanoscale biotechnology, environmental monitoring, and other areas at the junction between engineering and the life sciences.

More information about BME research and undergraduate research opportunities can be found at Undergraduate Research Opportunities, the Genomics Institute, the Program in Biomedical Sciences and Engineering, and the STEM diversity programs.

Biomolecular engineering and bioinformatics students may continue their research and studies at UCSC in BME or a variety of graduate programs including biology, chemistry, biochemistry, and engineering programs such as computer science and engineering. Information may be found at the Division of Graduate Studies website.

The immense growth of biological information stored in computerized databases has led to a critical need for people who can understand the languages, tools, and techniques of statistics, science, and engineering. A classically trained scientist may be unfamiliar with the statistical and algorithmic knowledge required in this field. A classically trained engineer may be unfamiliar with the chemistry and biology required in the field. Thus, this major strives for a balance of the two: an engineer focused on the problems of the underlying science or, conversely, a scientist focused on the use of engineering tools for analysis and discovery.

Program Learning Outcomes

A biomolecular engineering and bioinformatics student completing the program should:

- have a broad knowledge of science and engineering disciplines including biology, chemistry, mathematics, statistics, and computer science; those completing the BINF concentration will also have a detailed knowledge of mathematics, statistics, and computer science; and, those completing the BME concentration will have broader knowledge in biology and chemistry;
- be able to apply their knowledge to identify, formulate, and solve engineering design problems;
- be able to write programs in Python;
- be able to find and use information from a variety of sources, including books, journal articles, online encyclopedias, and manufacturer data sheets;
- be able to design and conduct experiments, as well as to analyze and interpret data;
- be able to work effectively with partners and on teams;
- be able to communicate problems, experiments, and design solutions in writing, orally, and as posters; and
- be able to apply ethical reasoning to make decisions about engineering methods and solutions in a global, economic, environmental, and societal context.

Academic Advising for the Program

The Baskin Engineering Undergraduate Advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at the University of California, Santa Cruz. Timely completion of the degree will require completion of a general Chemistry series (CHEM 3, or CHEM 4) and Engineering Calculus (MATH19) during the first year. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer Admission Screening Policy

Transfer students need to complete the equivalent of eight courses from the following list with a GPA in those courses of 2.8 or better. Transfer students are not required to take additional coursework at UCSC to declare. This applies to all transfer students who complete eight courses, even if they didn't reach the 45 credits required to declare.

We calculate GPA from the eight courses from the list below using the UCSC grade points guidelines. If students take more than eight courses, **all courses taken that apply toward transfer admissions screening requirements** will be counted toward the GPA. For transfer courses from community colleges that do not include "+" or "-" we use the following: A=4.0, B=3.0, C=2.0, D=1.0.

BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
BIOL 20A	Cell and Molecular Biology	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5
	Either one of these courses	
AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5
	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Transferring to Biomolecular Engineering

Students transferring into the biomolecular engineering concentration may also count any of the following:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
BME 21L	Introduction to Basic Laboratory Techniques	3

Transferring to Bioinformatics

The following courses are recommended to be taken before transfer, and will count toward transfer screening:

CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7

Transfer students may use courses articulated to PHIL 22, PHIL 24, or PHIL 28 in place of BME 80G, if these courses are taken prior to registering at UC Santa Cruz.

Getting Started in the Major: Transfer Students

Successful transition to UC Santa Cruz happens with early advisor contact, preparing and submitting course descriptions for articulation purposes, and taking summer session courses prior to their first fall quarter. Specific information for transfer students can be found at the Baskin Engineering Transfer webpage. Transfer students should declare their major during their first quarter at UCSC; instructions for declaring a major at Baskin Engineering are on the major declaration webpage.

Major Qualification Policy and Declaration Process

Major Qualification

In order to be admitted into the biomolecular engineering and bioinformatics major students must be listed as a proposed major within Baskin Engineering. Please refer to Baskin Engineering's "Prospective Students", "Admitted Students" and its "Current Students" sections in the catalog and the Undergraduate Affairs website for more information.

In addition to being listed as a proposed Baskin Engineering major, students must have completed at least 45 credits with a GPA of 2.8 or better in courses required for the major. Students with more than 7 credits of grades of NP, C-, D+, D, D-, or F in these courses are not qualified for the major.

Declaration of the major can happen no sooner than the student's second quarter, and must precede class enrollment for the student's third year (see below: How to Declare a Major). Students wishing to declare the biomolecular engineering and bioinformatics major after the sixth quarter must appeal, must already have a declared major in which they have completed at least one major requirement course and be making reasonable progress, and must have completed 10 more credits of required courses in the biomolecular engineering and bioinformatics major for each additional quarter.

Transfer students should refer to the Transfer Information and Policy section.

Appeal Process

Students may appeal a major qualification decision by filing a petition with Baskin Engineering Advising. The appeal process is described at the Baskin Engineering Undergraduate Affairs website.

If you have further questions concerning the appeal process, please contact the Undergraduate Advising office at (831) 459-5840 or email bsoeadvising@ucsc.edu.

How to Declare a Major

Instructions for declaring a major in Baskin Engineering are on the division's website here.

Letter Grade Policy

Baskin Engineering requires letter grades for all courses in an engineering major.

[Optional Catchall]

Course Substitution Policy

Please refer to the Undergraduate Affairs Policies, Forms and Petitions website for Baskin Engineering policies about substitutions and taking courses at other institutions after enrolling at UC Santa Cruz.

Double Majors and Major/Minor Combinations Policy

Due to course overlap between the biomolecular engineering and bioinformatics (BMEB) B.S., the biotechnology B.A., and the bioinformatics minor, none of these double major or major/minor combinations will be considered. Other major/minor combinations are permitted and encouraged. Double majors with the biotechnology B.A. and majors in the Humanities, Social Sciences or Arts Divisions are specifically encouraged.

Study Abroad

Students are encouraged to investigate studying for short periods of time (a summer or a quarter) at other institutions, to broaden their education. Proposed plans of study should still be cleared with the undergraduate director.

Honors

Biomolecular engineering and bioinformatics majors are considered for "Honors in the Major" and "Highest Honors in the Major" based on their GPA and on results of undergraduate research. Students with a GPA of 3.7 or higher receive "Highest Honors in the Major." Students with a GPA of 3.3 or higher, but lower than 3.7, receive "Honors in the Major." Students with particularly significant accomplishments in undergraduate research may receive honors or highest honors with a lower GPA. Students who have been found guilty of academic misconduct are not eligible for either honors or highest honors.

Because of the enormous breadth of requirements, biomolecular engineering and bioinformatics majors are urged to take honors courses or sections to get as much as possible out of the courses they take in each field.

[Optional Catchall]

Biomolecular Engineering Concentration

The biomolecular engineering concentration focuses on wet-lab work, but with a modern appreciation for the statistics and computational tools needed for high-throughput experimentation. Due to course overlap, the biomolecular engineering and bioinformatics major (BMEB) B.S. cannot be combined with the biotechnology B.A. or the bioinformatics minor.

Course Requirements

Biomolecular engineering concentration majors must complete the following courses. Some courses may be satisfied via exam credit.

Lower-Division Courses

Biology

BIOL 20A	Cell and Molecular Biology	5

Bioethics

BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5

General Chemistry

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, 1B, 1M, 1C, and 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Organic Chemistry

All of the following courses:

CHEM 8A	Organic Chemistry	5
CHEM 8B	Organic Chemistry	5

CHEM 8B is a prerequisite for BIOC 100A, BIOL 100, and CHEM 103.

Both CHEM 8A and CHEM 8B are required for all biomolecular concentration students.

Laboratory Training

All of the following courses:

BME 21L	Introduction to Basic Laboratory Techniques	3
BME 22L	Foundations of Design and Experimentation in Molecular Biology	2

Mathematics

One of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Plus one of the following:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Physics

	Either one of these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 15A	Honors Introduction to Physics I	5
	AND	
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1

Upper-Division Courses

Biochemistry and Molecular Biology

Choose one of the following options:

	Either these courses	
BIOC 100A	Biochemistry and Molecular Biology	5
BIOC 100B	Biochemistry and Molecular Biology	5
	or these courses	
BME 101	Molecular Biology for Biomolecular Engineers	5
CHEM 103	Biochemistry	5
	or these courses	
BME 101	Molecular Biology for Biomolecular Engineers	5
BIOL 100	Biochemistry	5

CHEM 8B is a prerequisite for BIOC 100A, BIOL 100, and CHEM 103.

BIOE 20B is a prerequisite for BIOL 100.

BIOC 100A and BIOC 100B are strongly preferred for students who plan to pursue research in protein engineering, genetics, molecular biology, or biochemistry-related fields.

Biomolecular Engineering

Choose one of the following courses:

BME 105	Genetics in the Genomics Era	5
BIOL 105	Genetics	5

BME 105 is strongly recommended.

Plus all of the following courses:

BME 110	Computational Biology Tools	5
BME 160	Research Programming in the Life Sciences	6
BME 163	Applied Visualization and Analysis of Scientific Data	5

Plus one of the following Modeling/Design sequences:

	Either these courses	
BME 128	Protein Engineering	5
BME 128L	Protein Engineering Laboratory	2
	or these courses	
BME 177	Engineering Stem Cells	5
BME 177L	Engineering Stem Cell Laboratory	2
	or these courses	
BME 130	Genomes	5
BME 123L	Long Read Sequencing	2

Statistics

STAT 131	Introduction to Probability Theory	5

Technical Writing

BME 185	Technical Writing for Biomolecular Engineers	5

This also satisfies the Disciplinary Communication (DC) requirement.

Elective

One of the following:

AM 115	Stochastic Modeling in Biology	5
METX 100	Introduction to Microbiology	5
METX 140	Molecular Biology and Microbial Genetics	5
BIOC 100C	Biochemistry and Molecular Biology	5
BIOL 115	Eukaryotic Molecular Biology	5
BME 118	Mathematics of the Mind	5
BME 122H	Extreme Environmental Virology	5
BME 123L	Long Read Sequencing	2
AM 147	Computational Methods and Applications	5
BME 128	Protein Engineering	5
BME 128L	Protein Engineering Laboratory	2
BME 130	Genomes	5
BME 132	Evolutionary Genomics	5
BME 140	Bioinstrumentation	5
BME 175	Entrepreneurship in Biotechnology	5
BME 177	Engineering Stem Cells	5
BME 177L	Engineering Stem Cell Laboratory	2
BME 178	Stem Cell Biology	5
ECE 104	Bioelectronics	5
	or any 5-credit biomolecular engineering graduate course	

Graduate courses must be numbered BME 201-279.

This course cannot satisfy other requirements of the major.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. Biomolecular engineering and bioinformatics majors satisfy the DC requirement by completing the following course:

BME 185	Technical Writing for Biomolecular Engineers	5

Comprehensive Requirement

All biomolecular engineering concentration students must complete a senior capstone project as a group project, as a series of Advanced Bioinformatics courses, or as an individual senior thesis doing research in a faculty laboratory.

Note that the Technical Writing requirement is a prerequisite for all the capstone options, including the senior thesis. Students pursuing the senior thesis option must write a two-page thesis proposal and seek approval of their project from the undergraduate director in the quarter preceding the independent study courses, typically spring quarter of the third year. Students are responsible for ensuring that they meet the prerequisites for whichever capstone they choose.

To complete the senior capstone requirement, Biomolecular Engineering concentration students must complete one of the following options:

Option 1: BME Team Design

BME 129A	Project Design and Implementation in Biomolecular Engineering I	5
BME 129B	Project Design and Implementation in Biomolecular Engineering II	5
BME 129C	Project Design and Implementation in Biomolecular Engineering III	5

Option 2: iGEM

BME 180	Professional Practice in Bioengineering	2
BME 188A	Synthetic Biology--Mentored Research A	2
BME 188B	Synthetic Biology--Mentored Research B	5
BME 188C	Synthetic Biology Mentored Research C	5

Permission code required for enrollment in BME 188A, BME 188B, and BME 188C. Only students who have interviewed and been selected for the iGEM team in fall of their junior year may register for these courses.

Option 3: Bioinformatics Capstone

BME 205	Bioinformatics Models and Algorithms	5
BME 230A	Introduction to Computational Genomics and Systems Biology	5
BME 129C	Project Design and Implementation in Biomolecular Engineering III	5

Option 4: Senior Thesis

The thesis option consists of three quarters of BME 195, where students conduct research in biomolecular engineering or related field such as chemistry, biology, or biochemistry. Students pursuing the senior thesis option must write a two-page thesis proposal and seek approval of their project from the undergraduate director in the quarter preceding the first quarter of BME 195. Students typically complete 15 credits of BME 195 during their senior year as follows: 5 credits per quarter fall/winter/spring.

BME 195	Senior Thesis Research	5

Permission code required for enrollment in BME 195. Permission code will be provided after student submits proposal (prior to first quarter of BME 195) or progress report (prior to second and third quarters of BME 195).

Exit Requirements

Students are required to submit a portfolio, exit survey, and attend an exit interview.

The portfolios must be turned in electronically as PDF files by the last day of the quarter of graduation, and will be reviewed quarterly by the undergraduate director.

Portfolios must contain the following:

- A substantial written report on a modeling/design project. This is typically satisfied by a senior thesis, or a written capstone project report.
- Slides from a substantial verbal presentation. This is typically satisfied by a capstone design presentation, Stem Cell Engineering, or other design courses.
- A research poster. This is typically satisfied by a senior thesis poster or a capstone design project poster, presented at the undergraduate poster symposium.

The three parts of the portfolio should represent at least two different design projects. If a senior thesis is completed, it must be provided as the written report. If a capstone project is completed, it must be provided as one (or more) of the three submissions.

Exit interviews are scheduled during the last week of the quarter by Baskin Engineering advising office, generally as small group interviews.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Every biomolecular engineering and bioinformatics major must have a faculty advisor, assigned by Baskin Engineering's undergraduate advising office, and with that advisor must formulate a program of proposed coursework that meets the major requirements. The choice of capstone and electives should be made early, so that the plan can be tailored to fit in the chosen courses.

As in all engineering and science programs, it is recommended that students spread their general education requirements out over all 12 quarters. Delaying a general education requirement is safer than delaying a major requirement.

It is recommended that students reserve the summer after the junior year for undergraduate research.

Curriculum charts for the major are available on the BSOE website.

Sample Plan: Biomolecular Engineering Concentration

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 19A	MATH 19B	AM 10	
	CHEM 3A	CHEM 3B CHEM 3BL WRIT 1/WRIT 1E (if needed)	CHEM 3C CHEM 3CL	
2nd (soph)	BME 21L	BME 22L	BME 105	
	BIOL 20A	PHYS 5A PHYS 5L	PHYS 5B PHYS 5M	
	CHEM 8A	CHEM 8B	STAT 131	
	WRIT 2*			
3rd (junior)	BIOC 100A	BIOC 100B	BME 163	
	BME 110	BME 160	BME 177**	
	BME 185		BME 177L**	
4th (senior)	BME 129A	BME 129B	BME 129C	
		Elective	BME 80G	

* WRIT 2 should be taken in or before spring quarter of the second year.

** BME 177, BME 177L is one option for modeling/design sequence. Other options are offered in other quarters.

Students who can take Organic Chemistry (CHEM 8A and CHEM 8B, or transferable equivalents) in summer after their first year can take BIOC 100A in their second year and be ready to join a research lab a year earlier. Here is an alternative plan for students who do organic chemistry in summer.

Sample Plan: Biomolecular Engineering Concentration (CHEM 8A CHEM 8B In summer after first year)

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	CHEM 3A	MATH 19B	BIOL 20A	CHEM 8A
	MATH 19A	CHEM 3B CHEM 3BL WRIT 1/WRIT 1E	CHEM 3C CHEM 3CL	CHEM 8B

		(if needed)	
2nd (soph)	BME 21L	BME 22L	BME 105
	BIOC 100A	BIOC 100B	BME 80G
	WRIT 2*	PHYS 5A PHYS 5L	PHYS 5B PHYS 5M
3rd (junior)	BME 110	BME 160	BME 163
	AM 10	BME 128**	BME 185
		BME 128L**	
4th (senior)	BME 129A	BME 129B	BME 129C
	STAT 131		Elective

* WRIT 2 should be taken in or before spring quarter of the second year.

** BME 128, BME 128L is one option for modeling/design sequence. Other options are offered in other quarters.

General education requirements:

CC, ER are not met by any courses in the program.

IM, MF, PE-T, SI, and SR are met by required courses.

TA can be met by several electives: BME 122H, BME 132, BME 177, or BME 178.

PR-E can be met by some capstone options: BME 129C or BME 180.

C is not met by courses in the program, but is a prerequisite for the required BME 185 course.

Transfer planner

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	BIOC 100A	BIOC 100B	BME 105	
	BME 110	BME 160	BME 80G	
	BME 185	BME 22L	BME 163	
	BME 21L			
2nd(senior)	BME 129A	BME 129B	BME 129C	
	BME 130**	STAT 131	PHYS 5B PHYS 5M	
	BME 123L**	Elective		

** BME 130, BME 123L is one option for modeling/design sequence. Other options are offered in other quarters.

This transfer planner assumes that a student has completed the equivalent of CHEM 3A, CHEM 3B, CHEM 3BL, CHEM 3C, CHEM 3CL, CHEM 8A, CHEM 8B, MATH 19A, MATH 19B, PHYS 5A, PHYS 5L, BIOL 20A, AM 10, a molecular biology lab, and all general education courses before coming to UC Santa Cruz. Students are also expected to have completed all the general education requirements, except those covered by the required courses. This planner is only a proof-of-concept that the major can be completed in another two years; each student will need to work with an advisor to tailor their own schedule.

Bioinformatics Concentration

The bioinformatics concentration focuses on dry-lab (computational) techniques. Due to course overlap, the biomolecular engineering and bioinformatics major (BMEB) B.S. cannot be combined with the biotechnology B.A. or the bioinformatics minor.

Course Requirements

Bioinformatics concentration majors must complete the following courses. Some courses may be satisfied via exam credit.

Lower-Division Courses

Biology

BIOL 20A	Cell and Molecular Biology	5

Bioethics

BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5

General Chemistry

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, 1B, 1M, 1C, and 1N or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Organic Chemistry

CHEM 8A	Organic Chemistry	5

Computer Science and Engineering

All of the following courses:

CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7

Mathematics

One of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Plus one of the following:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following:

AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5

Statistics

One of the following:

CSE 40	Machine Learning Basics: Data Analysis and Empirical Methods	5
STAT 132	Classical and Bayesian Inference	5

CSE 40 has a test-out option which can satisfy this requirement.

Upper-Division Courses

Data Structures and Algorithms

One of the following courses:

CSE 101	Introduction to Data Structures and Algorithms	5
CSE 101P	Introduction to Data Structures and Algorithms in Python	5

CSE 101 has an additional prerequisite of CSE 13S.

Biochemistry and Molecular Biology

One of the following courses:

BIOC 100A	Biochemistry and Molecular Biology	5
BIOL 100	Biochemistry	5
BME 101	Molecular Biology for Biomolecular Engineers	5
CHEM 103	Biochemistry	5

CHEM 8B is a prerequisite for BIOC 100A, BIOL 100, and CHEM 103.

BIOE 20B is a prerequisite for BIOL 100.

BME 101 is preferred.

Biomolecular Engineering

One of the following courses:

BME 105	Genetics in the Genomics Era	5
BIOL 105	Genetics	5

BME 105 is strongly recommended.

Plus all of the following courses:

BME 110	Computational Biology Tools	5
BME 160	Research Programming in the Life Sciences	6
BME 163	Applied Visualization and Analysis of Scientific Data	5

Bioinformatics concentration students may substitute CSE 20 for BME 160, although BME 160 is strongly recommended. CSE 20 has a test-out exam that will also be accepted. (**Note:** This substitution is not allowed for biomolecular concentration students.)

Statistics

STAT 131	Introduction to Probability Theory	5

Modeling and Design

One of the following:

CSE 142	Machine Learning	5
CSE 144	Applied Machine Learning: Deep Learning	5

Technical Writing

BME 185	Technical Writing for Biomolecular Engineers	5

Also satisfies the Disciplinary Communication (DC) requirement.

Elective

One of the following:

AM 115	Stochastic Modeling in Biology	5
AM 147	Computational Methods and Applications	5
BME 118	Mathematics of the Mind	5
BME 122H	Extreme Environmental Virology	5
BME 123L	Long Read Sequencing	2
BME 128	Protein Engineering	5
BME 128L	Protein Engineering Laboratory	2
BME 130	Genomes	5
BME 132	Evolutionary Genomics	5
BME 140	Bioinstrumentation	5
BME 175	Entrepreneurship in Biotechnology	5
BME 177	Engineering Stem Cells	5
BME 177L	Engineering Stem Cell Laboratory	2
BME 178	Stem Cell Biology	5
BIOC 100B	Biochemistry and Molecular Biology	5
CSE 142	Machine Learning	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 182	Introduction to Database Management Systems	5
METX 100	Introduction to Microbiology	5
METX 140	Molecular Biology and Microbial Genetics	5
	or any 5-credit biomolecular engineering graduate course	

Graduate courses must be numbered BME 201-279.

Courses satisfying an elective cannot be used to satisfy other requirements of the major.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. BMEB majors satisfy the DC requirement by completing the following course.

BME 185	Technical Writing for Biomolecular Engineers	5

Comprehensive Requirement

All bioinformatics concentration students must complete a senior capstone project through one of the following options.

Note that the Technical Writing requirement BME 185 is a prerequisite for all capstone options. Students are responsible for ensuring that they meet the prerequisites for whichever capstone they choose.

Option 1: Bioinformatics Capstone

BME 205	Bioinformatics Models and Algorithms	5
BME 230A	Introduction to Computational Genomics and Systems Biology	5
BME 129C	Project Design and Implementation in Biomolecular Engineering III	5

Option 2: Senior Thesis

The thesis option consists of three quarters of BME 195, where students conduct research in biomolecular engineering or related field such as chemistry, biology, or biochemistry. Students pursuing the senior thesis option must write a two-page thesis proposal and seek approval of their project from

the undergraduate director in the quarter preceding the first quarter of BME 195. Students typically complete 15 credits of BME 195 during their senior year as follows: 5 credits per quarter fall/winter/spring.

BME 195	Senior Thesis Research	5

Permission code required for enrollment in BME 195. Permission code will be provided after student submits proposal (prior to first quarter of BME 195) or progress report (prior to second and third quarters of BME 195).

Exit Requirements

Students are required to submit a portfolio, exit survey, and attend an exit interview.

The portfolios must be turned in electronically as PDF files by the last day of the quarter of graduation, and will be reviewed quarterly by the undergraduate director.

Portfolios must contain the following:

- A substantial written report on a modeling/design project. This is typically satisfied by a written capstone project report.
- Slides from a substantial verbal presentation. This is typically satisfied by a capstone design presentation, Stem Cell Engineering, or other design courses.
- A research poster. This is typically satisfied by a capstone design project poster, presented at the undergraduate poster symposium.

The three parts of the portfolio should represent at least two different design projects. If a senior thesis is completed, it must be provided as the written report. If a capstone project is completed, it must be provided as one (or more) of the three submissions.

Exit interviews are scheduled during the last week of the quarter by the Baskin Engineering advising office, generally as small group interviews.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Every biomolecular engineering and bioinformatics major must have a faculty advisor, assigned by the Baskin Engineering undergraduate advising office, and with that advisor must formulate a program of proposed coursework that meets the major requirements. The choice of capstone and electives should be made early, so that the plan can be tailored to fit in the chosen courses.

As in all engineering and science programs, it is recommended that students spread their general education requirements out over all 12 quarters. Delaying a general education requirement is safer than delaying a major requirement.

It is recommended that students reserve the summer after the junior year for undergraduate research.

Curriculum charts for the major are available on the BSOE website.

Sample Plan: Bioinformatics Concentration

Year	Fall	Winter	Spring	**Summer**
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	CHEM 3A	CHEM 3B CHEM 3BL	CHEM 3C CHEM 3CL	
	MATH 19A	MATH 19B	BIOL 20A	
	College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	CHEM 8A	CHEM 8B	BME 105	
	AM 10	CSE 16	BME 80G	
	WRIT 2*	BME 160	AM 30	
3rd (junior)	BME 110	BME 101	BME 163	
	STAT 131	STAT 132	BME 185	
	CSE 30		CSE 101P	
4th (senior)	BME 205	BME 230A	BME 129C	
	Elective		CSE 142 or	

		CSE 144		

* WRIT 2 should be taken in or before spring quarter of the second year.

General education requirements:

CC, ER, and PR-E are not met by any courses in the program.

IM, MF, PE-T, SI, and SR are met by required courses.

TA can be met by several electives: BME 122H, BME 132, BME 177, or BME 178.

C is not met by courses in the program, but is a prerequisite for the required BME 185 course.

Transfer planner

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	AM 10	BME 101	BME 105	
	STAT 131	BME 160	BME 163	
	AM 30	STAT 132	CSE 101P	
4th (senior)	BME 205	BME 230A	BME 129C	
	BME 110	CSE 142 or CSE 144	BME 80G	
	BME 185	Elective		

This transfer planner assumes that a student has completed the equivalent of CHEM 3A, CHEM 3B, CHEM 3BL, CHEM 3C, CHEM 3CL, CHEM 8A, CHEM 8B, MATH 19A, MATH 19B, BIOL 20A, CSE 16, and CSE 30 and all general education requirements, except those covered by the required courses. This planner is only a proof-of-concept that the major can be completed in another two years; each student will need to work with an advisor to tailor their own schedule.

BIOTECHNOLOGY B.A.

Information and Policies

Introduction

The Bachelor of Arts in Biotechnology is intended for students who plan to be involved in the biotechnology industry as writers, artists, ethicists, executives, sales force, regulators, lawyers, politicians, and other roles that require an understanding of the technology, but not the intensive training needed for technicians, research scientists, engineers, and bioinformaticians. (For those more technical roles, the biomolecular engineering and bioinformatics major or the molecular, cell, and developmental biology major is recommended.)

The major is deliberately designed to be paired as a double major for students in the humanities, social sciences, or the arts. Due to course overlap, the biotechnology B.A. cannot be combined with the biomolecular engineering and bioinformatics major (BMEB) B.S. or the bioinformatics minor.

Program Learning Outcomes

A biotechnology student completing the program should:

- have familiarity with several different biotechnologies;
- be able to find and use information from a variety of sources, including books, journal articles, and online encyclopedias;
- be able to write programs in Python;
- be able to communicate clearly in writing, orally, and as posters; and
- be able to apply ethical reasoning to make decisions about biotechnology in a global, economic, environmental, and societal context.

Academic Advising for the Program

The Baskin Engineering Undergraduate Advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

Any UC-eligible student with a strong interest in biotechnology is welcome in the program. This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required.

Declaration of the major can happen no sooner than the student's second quarter, and no later than the campus deadline.

Transfer Information and Policy

Transfer Admission Screening Policy

Transfer students need to have completed the following courses:

Both of these courses

BIOL 20A	Cell and Molecular Biology	5
CSE 20	Beginning Programming in Python	5

And

Statistics

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Students with a different introductory programming course can still be accepted. Any course with C-ID COMP 112 or C-ID COMP 122 is acceptable. A course teaching Python is preferred even if it does not match either of these C-IDs. CSE 20 can be waived for students who have already completed an upper-division Python programming course.

Getting Started in the Major: Transfer Students

Successful transition to UC Santa Cruz happens with early advisor contact, preparing and submitting course descriptions for articulation purposes, and taking summer session courses prior to their first fall quarter. Specific information for transfer students is available online. Transfer students should declare their major during their first quarter at UC Santa Cruz; instructions for declaring a major at Baskin Engineering are available here.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the Transfer Information and Policy section.

To qualify for the biotechnology major, students must have completed four of the following lower-division courses:

BIOL 20A	Cell and Molecular Biology	5
BME 5	Introduction to Biotechnology	5
BME 18	Scientific Principles of Life	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
BME 80H	The Human Genome	5
CHEM 3A	General Chemistry	5
CSE 20	Beginning Programming in Python	5
ECE 80B	Engineering Innovations for Medicine and Natural Sciences	5
	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

CSE 20 is waived for students who have already completed an upper-division Python programming course such as BME 160. A different introductory programming course or the CSE 20 Test Out exam are acceptable substitutes for CSE 20. Any course teaching Python will be accepted as meeting this requirement for transfer students.

Appeal Process

Students may appeal a major qualification decision by filing a petition with Baskin Engineering Advising. The appeal process is described at the Baskin Engineering Undergraduate Affairs website.

If you have further questions concerning the appeal process, please contact the Undergraduate Advising office at (831) 459-5840 or email bsoeadvising@ucsc.edu.

How to Declare a Major

Instructions for declaring a major with Baskin Engineering are on the Undergraduate Affairs website.

Students should submit a petition to declare as soon as they complete the

major qualification requirements or reach their declaration deadline
quarter (whichever comes first).

Students petitioning when the campus declaration deadline is imminent (i.e.,
in their sixth quarter, for students admitted as frosh), will either be
approved, denied, or provided with conditions (e.g., completion of some
courses with certain grades) that will be resolved within at most one more
enrolled quarter, even if they have not completed major qualification
courses.

Letter Grade Policy

Baskin Engineering requires letter grades for all courses in a major.

[Optional Catchall]

Course Substitution Policy

Please refer to the Undergraduate Affairs course substitution website for Baskin Engineering course substitution policies and about taking courses at other institutions after enrolling at UCSC. Refer to the course substitution section of the Baskin Engineering page in the catalog for overall substitution policies.

Double Majors and Major/Minor Combinations Policy

Double majoring with humanities, social science, or the arts majors is encouraged. Students considering double majoring with biology-related majors should consider a minor in bioinformatics.

Honors

Students with a GPA of 3.3 or higher in the major courses will receive Honors in the Major, unless they have been found guilty of academic misconduct.

[Optional Catchall]

Requirements and Planners

Course Requirements

Lower-Division Courses

Chemistry

CHEM 3A	General Chemistry	5
	OR	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2

CHEM 3A is recommended.

Note: This requirement may also be satisfied with prior completion of CHEM 1A or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Introductory

BIOL 20A	Cell and Molecular Biology	5
BME 5	Introduction to Biotechnology	5
CSE 20	Beginning Programming in Python	5

CHEM 3A is waived for students transferring in credit for BIOL 20A.

CSE 20 is waived for students who have already completed an upper-division Python programming course such as BME 160. A different introductory programming course or the CSE 20 Test Out exam are acceptable substitutes for CSE 20. Any course teaching Python will be accepted as meeting this requirement for transfer students.

For students intending to migrate from the Molecular, Cell and Developmental Biology Department (MCDB), the program will consider appropriate MCDB courses to substitute for specific biotechnology electives.

Statistics

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or this course	
STAT 5	Statistics	5

STAT 7 and STAT 7L is strongly preferred.

Students may substitute STAT 131 for STAT 7 and STAT 7L, but it has several prerequisites that are not required for the major.

Biotechnology and Society

This course

BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5

And one of these courses

	One of these courses	
B ME 18	Scientific Principles of Life	5

	OR	
BME 80H	The Human Genome	5
	OR	
ECE 80B	Engineering Innovations for Medicine and Natural Sciences	5

Upper-Division Courses

Biotechnology Upper-Division Core

BME 105	Genetics in the Genomics Era	5
BME 110	Computational Biology Tools	5
BME 160	Research Programming in the Life Sciences	6

Electives

Three of the following courses must be taken. We recommend that two or more of the three are BME courses.

BME 122H	Extreme Environmental Virology	5
BME 128	Protein Engineering	5
BME 130	Genomes	5
BME 132	Evolutionary Genomics	5
BME 140	Bioinstrumentation	5
BME 177	Engineering Stem Cells	5
BME 178	Stem Cell Biology	5
ECE 104	Bioelectronics	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 133	Science and the Body	5
METX 100	Introduction to Microbiology	5
SOCY 121	Sociology of Health and Medicine	5
SOCY 123	Global and Transnational Perspectives in Science and Technology Studies	5
SOCY 127P	Sociology of Drugs, Botanicals and Pharmaceuticals	5

BME 128, BME 177, BME 178, ECE 104, FMST 133, and SOCY 127P all have additional prerequisites not covered by the major requirements.

Disciplinary Communication (DC) Requirement

BME 185	Technical Writing for Biomolecular Engineers	5

Comprehensive Requirement

The comprehensive requirement is covered by the project in the entrepreneurship course:

BME 175	Entrepreneurship in Biotechnology	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Plan for Incoming Frosh

Year	Fall	Winter	Spring	**Summer**
Entering				College 1A Summer Edge (optional)
1st (frosh)	BME 18 College 1	CHEM 3A BME 80H WRIT 1/WRIT 1E (if needed)	BIOL 20A	
2nd (soph)	STAT 7 STAT 7L WRIT 2**	BME 5 CSE 20	BME 105	
3rd (junior)	BME 130 BME 185	BME 110 METX 100	BME 160	
4th (senior)	BME 132*	BME 175		

*These are elective courses. Other elective courses may have prerequisites.

** WRIT 2 should be taken in or before spring quarter of the second year.

General education requirements:

C is not met by courses in the program, but is a prerequisite for the required BME 185 course.
CC, ER, and IM are not met by any courses in the program.
SR and PE are met by required courses.
SI can be met by BME 18.
TA can be met by several electives: BME 122H, BME 132, BME 177, or BME 178.

Sample Plan for Transfer Students

year	Fall	Winter	Spring	**Summer**
Entering				KRSG 1T
				Summer Edge (optional)
3rd (junior)	BME 130*			
	BME 80H	BME 160	BME 105	
	BME 5		BME 185	
4th (senior)	BME 132*	BME 175		
	BME 140*	BME 110		

*These are elective courses. Other elective courses may have prerequisites.

BIOINFORMATICS MINOR

The bioinformatics minor is intended primarily for bioinformatics tool users who are majoring in a biological or chemical specialty. The bioinformatics minor is also appropriate for computer science or computer engineering majors who are considering graduate work in bioinformatics. Due to course overlap, the bioinformatics minor cannot be combined with the biomolecular engineering and bioinformatics major (BMEB) B.S. or biotechnology B.A.

Course Requirements

Lower-Division Courses

Biology

BIOL 20A	Cell and Molecular Biology	5

Chemistry

	Either this course	
CHEM 3A	General Chemistry	5
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2

Single-Variable Calculus

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

MATH 19A, MATH 19B: preferred

Bioethics

BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5

Upper-Division Courses

Genetics

Choose one of the following:

	One of these courses	
BME 105	Genetics in the Genomics Era	5
	OR	
BIOL 105	Genetics	5
	OR	
METX 140	Molecular Biology and Microbial Genetics	5

BME 105: strongly recommended

Programming

BME 160	Research Programming in the Life Sciences	6
BME 163	Applied Visualization and Analysis of Scientific Data	5

Statistics

STAT 131	Introduction to Probability Theory	5

Bioinformatics

BME 110	Computational Biology Tools	5

Electives

Choose one of the following:

	One of these courses	
BME 118	Mathematics of the Mind	5
BME 122H	Extreme Environmental Virology	5
BME 130	Genomes	5
BME 132	Evolutionary Genomics	5

BIOMOLECULAR ENGINEERING CONTIGUOUS BACHELOR'S/MASTER'S

PATHWAY

Because the bioinformatics concentration of the Biomolecular Engineering and Bioinformatics (BME) B.S. provides excellent preparation for a graduate program in bioinformatics, we offer a contiguous B.S./M.S. degree pathway that allows those students to complete the M.S. somewhat sooner than students with a less-tailored preparation.

The current B.S. and M.S. requirements have three courses in common:

BME 80G, Bioethics in the 21st Century*
BME 205, Bioinformatics Models and Algorithms*
BME 230A, Intro to Computational Genomics and Systems Biology*

*These courses must be passed with a grade of B- or better to meet the M.S. requirements.

In accordance with UCSC Graduate Council guidelines for contiguous five-year bachelor's/master's programs, students are required to complete 35 credits during the master's phase of the program, which may include graduate and upper-division undergraduate courses, but no more than 15 credits may be upper-division undergraduate courses. Since BME 205 and BME 230A are taken in the undergraduate phase, the credits cannot be counted toward the overall credits required by the M.S. degree.

Students must take biomolecular engineering graduate courses to fulfill the 35-credit requirement. Suitable courses are to be selected in consultation with the Biomolecular Engineering Graduate Advising Committee, the student, and the student's faculty mentor. Alternative electives may be considered with the approval of a student's faculty advisor and the graduate director.

The combined B.S./M.S. degree pathway does not make any changes to the undergraduate program nor the graduate program, except that students must pass the overlapping courses listed above for a grade of B- or better.

To apply for the combined pathway, students apply to the M.S. program through the normal graduate admission process in the fall of their senior year. If admitted into the graduate program, they are automatically included in the combined B.S./M.S. pathway.

Other Course Requirements

Graduate-Level Quantitative Science Course

Students must take one 5-credit graduate-level course focused on quantitative science. Suitable courses are to be selected in consultation with the Biomolecular Engineering Graduate Advising Committee, the student, and the student's faculty mentor.

Seminars

A minimum of three seminar courses (6 credits), including at least one quarter of the 2-credit biomolecular engineering seminar (BME 280B):

BME 280B	Seminar on Bioinformatics and Bioengineering	2

Because the intent of the seminar course requirement is to ensure breadth of knowledge, BME 281-series courses do not count as a seminar, since these are lab group meetings.

Transfer Limitations

Up to two graduate courses may be transferred from other graduate institutions with the approval of the faculty advisor and the graduate director. However, please note that students will still be required to complete 35 credits while in the graduate program at UC Santa Cruz, pursuant to UCSC's rules on minimum units for the master's degree.

Other Requirements

Bootcamp Activity

Entering graduate cohorts are encouraged to participate in the hands-on "bootcamp" just before the start of the fall quarter. Bootcamp activities include program orientation, laboratory safety training, teaching assistant (TA) training, fellowship advice, cohort building activities, practical advice for navigating graduate school, and a hands-on research project.

Further Study Outside the Department

No further courses are required. However, with faculty guidance students often choose to take upper-division undergraduate courses or graduate courses outside the department to make up for deficiencies in background areas of particular importance.

With consent of the graduate director, variations in the composition of the required courses may be approved.

M.S. Capstone Requirement

This is a Plan II capstone. Students must complete an individual project or a group project with a final written report submitted as part of the final evaluation. That project must be proposed by the student or student-group and be approved by BME faculty. Students will usually spend 2-3 quarters on the project and must include a BME faculty member for approval of the final written report. Group projects must describe in the written report a mechanism for evaluating the individual contributions of each member of the group.

Upon admission into the combined B.S./M.S. program, students should immediately seek out a BME faculty member to oversee their individual or group project. A faculty member must be identified by the first quarter of the M.S. phase.

Adequate Progress

Graduate students receiving two or more U (unsatisfactory) grades or grades below B- in courses relevant to the program are not making adequate progress and will be placed on

academic notice for the next three quarters of registered enrollment.

Graduate students who fail (unsatisfactory or lower than B-) a relevant course while on notice may be dismissed from the program. Students may appeal their dismissal. Graduate students who fail a relevant course after being removed from notice are immediately returned to academic notice.

Graduate students experiencing circumstances that may adversely affect their academic performance should consult with their advisor and the graduate director.

Applying for Graduation

All candidates for a degree must submit an Application for Master's Degree to the Graduate Division by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. The deadline for degree applications is typically in the second week of the quarter. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

The combined B.S./M.S. degree pathway does not make any changes to the undergraduate program nor the graduate program, except that students must pass the overlapping courses listed above for a grade of B- or better.

To apply for the combined pathway, students apply to the M.S. program through the normal graduate admission process in the fall of their senior year. If admitted into the graduate program, they are automatically included in the combined B.S./M.S. pathway.

BIOMOLECULAR ENGINEERING AND BIOINFORMATICS M.S.

Introduction

The unifying theme of our research training program is using quantitative approaches to addressing fundamental questions in biology and biomedical science. The master of science (M.S.) program is designed to prepare students for careers in contemporary biomedical research settings in the biotechnology industry.

Program coursework is designed to provide the technical skills in programming and other technical skills required for independent and advanced scientific discovery. Incoming students undertake rigorous core coursework and are exposed to a rich environment of regular seminars and group meetings. Students interact closely with biomolecular engineering and bioinformatics faculty members while undertaking capstone projects (M.S.), and have firsthand access to state-of-the-art computation tools and laboratory facilities throughout their training, including cluster computing and high-throughput sequencing facilities.

Requirements

Course Requirements

M.S. students must complete a total of at least 41 credits, which may include graduate and upper-division undergraduate courses, but no more than 15 credits may be upper-division undergraduate courses.

Core courses

The following course:

BME 205	Bioinformatics Models and Algorithms	5

Plus one of the following courses:

BME 230A	Introduction to Computational Genomics and Systems Biology	5
BME 278	Stem Cell Biology	5
BME 228	Protein Design and Engineering	5

Graduate-Level Quantitative Science Course

Students must take one 5-credit graduate-level course focused on quantitative science. Suitable courses are to be selected in consultation with the Biomolecular Engineering Graduate Advising Committee, the student, and the student’s faculty mentor.

Ethics Course:

Choose one of the following courses:

BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
SOCY 268A	Science and Justice: Experiments in Collaboration	5

BME 80G can be taken to meet the ethics requirement, but the credits will not be counted toward the overall credit requirement for the M.S. since it is a lower-division course. In other words, students who choose to take BME 80G for the ethics requirement must take another 5-credit BME graduate-level course to fulfill their course credits.

Biomolecular Engineering Electives

Students must take bimolecular engineering graduate courses to fulfill the 41-credit requirement. Up to 5 credits of Independent Study or Research (BME 297A) sponsored by an individual faculty member could be used to fulfill the 41-credit requirement. In addition to these graduate courses, up to 15 credits may be upper-division undergraduate courses. Suitable courses are to be selected in consultation with the Biomolecular Engineering Graduate Advising Committee, the student, and the student’s faculty mentor. Upon approval, these courses are selected to address specific interests, cover topics specific for the capstone project, or address specific deficiencies of each student.

Seminars

A minimum of three seminar courses (6 credits total), including at least one quarter of the 2-credit biomolecular engineering seminar (BME 280B):

BME 280B	Seminar on Bioinformatics and Bioengineering	2

Transfer Limitations

Up to two graduate courses may be transferred from other graduate institutions with the approval of the faculty advisor and the graduate director. However, please note that students will still be required to complete 35 credits while in the graduate program at UC Santa Cruz, pursuant to UCSC's rules on minimum units for the master's degree.

Other Requirements

Bootcamp Activity

Entering graduate cohorts are encouraged to participate in the hands-on "bootcamp" just before the start of the fall quarter. Bootcamp activities include program orientation, laboratory safety training, teaching assistant (TA) training, fellowship advice, cohort building activities, practical advice for navigating graduate school, and a hands-on research project.

Further Study Outside the Department

No further courses are required. However, with faculty guidance students often choose to take upper-division undergraduate courses or graduate courses outside the department to make up for deficiencies in background areas of particular importance.

With consent of the graduate director, variations in the composition of the required courses may be approved.

M.S. Capstone Requirement

This is a Plan II capstone. Students must complete an individual project or a group project with a final written report submitted as part of the final evaluation. Students will usually spend two to three quarters on the project and must include a BME faculty member for approval of the final written report. Group projects must describe in the written report a mechanism for evaluating the individual contributions of each member of the group.

Upon admission into the M.S. program, students should immediately seek out a faculty member to oversee their individual or group project. The faculty member must agree to oversee the project. Should the student have difficulty in finding a faculty member, they should seek assistance from the BME graduate advisor by the end of the winter quarter. A faculty advisor must be identified by the end of the first year of the M.S. program.

Adequate Progress

Graduate students receiving two or more U (unsatisfactory) grades or grades below B- in courses relevant to the program are not making adequate progress and will be placed on academic notice for the next three quarters of registered enrollment.

Graduate students who fail (unsatisfactory or lower than B-) a relevant course while on notice may be dismissed from the program. Students may appeal their dismissal. Graduate students who fail a relevant course after being removed from notice are immediately returned to academic notice.

Graduate students experiencing circumstances that may adversely affect their academic performance should consult with their advisor and the graduate director.

Applying for Graduation

All candidates for a degree must submit an Application for Master's Degree to the Graduate Division by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. The deadline for degree applications is typically in the second week of the quarter. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

BIOMOLECULAR ENGINEERING AND BIOINFORMATICS PH.D.

Introduction

Program coursework is designed to provide the technical skills in programming and other technical skills required for independent and advanced scientific discovery. Incoming students undertake rigorous core coursework, conduct laboratory rotations, and are exposed to a rich environment of regular seminars and group meetings. Students interact closely with biomolecular engineering and bioinformatics (BME) faculty members while undertaking their dissertation research, and have firsthand access to state-of-the-art computation tools and laboratory facilities throughout their training, including cluster computing and high-throughput sequencing facilities.

Advancement to Candidacy

Course Requirements

Ph.D. students must complete a total of at least 55 credits as described below.

Core Courses

The following courses:

BME 201	Scientific Writing	3
BME 205	Bioinformatics Models and Algorithms	5

BME 201 is typically taken as a second-year Ph.D. student, in winter quarter.

Plus one of the following courses:

BME 230A	Introduction to Computational Genomics and Systems Biology	5
BME 278	Stem Cell Biology	5

BME 228	Protein Design and Engineering	5

Graduate-Level Quantitative Science Course

Students must take one 5-credit graduate-level course focused on quantitative science. Suitable courses are to be selected in consultation with the Biomolecular Engineering Graduate Advising Committee, the student, and the student's faculty mentor.

Ethics Course:

Choose one of the following courses:

BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
SOCY 268A	Science and Justice: Experiments in Collaboration	5

BME 80G can be taken to meet the ethics requirement, but the credits will not be counted toward the overall credit requirement for the Ph.D. since it is a lower-division course. In other words, students who choose to take BME 80G for the ethics requirement, must take another 5-credit BME graduate-level course to fulfill their course credits.

Graduate-Level Biomolecular Engineering Electives

Students must take at least two 5-credit, graduate-level BME courses. Suitable courses are to be selected in consultation with the Biomolecular Engineering Graduate Advising Committee, the student, and the student's faculty advisor. Alternative electives may be considered with the approval of a student's faculty advisor and the graduate director.

Seminars

BME 280B	Seminar on Bioinformatics and Bioengineering	2

Lab Rotations

Students must take at least two quarters of BME 296, during which students do three research laboratory rotations. Students must enroll in BME 296 during fall and winter quarters of their first year. Laboratory rotations for Ph.D. students are generally completed in the first two quarters (three 7-week rotations).

BME 296	Research in Bioinformatics	5

Bootcamp Activity

Entering graduate cohorts are expected to participate in the hands-on "bootcamp" just before the start of the fall quarter. Bootcamp activities include program orientation, laboratory safety training, teaching assistant (TA) training, fellowship advice, cohort building activities, practical advice for navigating graduate school, and a hands-on research project.

Transfer Limitations

Up to two graduate courses may be transferred from other graduate institutions with the approval of the faculty advisor and the graduate director.

Further Study Outside the Department

No further courses are required. However, with faculty guidance students often choose to take upper-division undergraduate courses or graduate courses outside the department to make up for deficiencies in background areas of particular importance.

With consent of the graduate director, variations in the composition of the required courses may be approved.

Foreign Language Requirements

Optional Catchall

Teaching Requirement

Ph.D. students will be required to serve as teaching assistants for at least one quarter during their graduate study. Certain exceptions may be permitted for those with extensive prior teaching experience, for those who are not allowed to be employed due to visa regulations, or for other reasons approved by the graduate director.

Ph.D. students whose native language is not English must demonstrate English fluency for Teaching Assistantship purposes before serving as a TA. Detailed information about TA eligibility is available at the Baskin Engineering Graduate Affairs website.

Pre-Qualifying Requirements

Qualifying Examination

Ph.D. students must select a faculty research advisor by the end of the first year. A qualifying examination committee is then formed in the second year, which consists of the advisor and three additional members, and which is approved by the graduate director and the campus graduate dean. At least two of the four must be members of the Department of Biomolecular Engineering. The student must submit a written dissertation proposal to all members of the committee and the graduate program advisor one month in advance of the examination. The dissertation proposal is publicly and formally presented in an oral qualifying examination given by the qualifying committee.

Ph.D. students are strongly recommended to pass the qualifying examination and advance to candidacy by the end of their second year. They are required to do so by the end of their third year.

Post-Qualifying Requirements

Dissertation

Dissertation

Ph.D. candidates will submit the completed dissertation to a reading committee at least one month prior to the dissertation defense. The reading committee, formed upon advancement to candidacy, consists of the dissertation supervisor and two readers appointed by the graduate director upon the recommendation of the dissertation supervisor. At least one of

the three must be a member of the Department of Biomolecular Engineering.

Dissertation Defense

The candidate will present their research in a public seminar. The seminar will be followed by a defense of the dissertation to the reading committee and attending faculty, who will then decide whether the dissertation is acceptable or requires revision.

Academic Progress

Graduate students receiving two or more U (unsatisfactory) grades or grades below B- in courses relevant to the program are not making adequate progress and will be placed on academic notice for the next three quarters of registered enrollment.

Graduate students who fail (unsatisfactory or lower than B-) a relevant course while on notice may be dismissed from the program. Students may appeal their dismissal. Graduate students who fail a relevant course after being removed from notice are immediately returned to academic notice.

Graduate students experiencing circumstances that may adversely affect their academic performance should consult with their advisor and the graduate director.

Applying for Graduation

All candidates for a degree must submit an Application for PhD Degree to the Graduate Division by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. The deadline for degree applications is typically in the second week of the quarter. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

[Optional Catchall]

Computational Media

Baskin Engineering
(831) 459-2158
engineering.ucsc.edu

PROGRAMS OFFERED

Computer Science: Computer Game Design B.S. (p. 547)

Computational Media M.S. (p. 554)

Computational Media Ph.D. (p. 557)

Computational Media Designated Emphasis (p. 553)

Games and Playable Media M.S. (p. 563)

Human Computer Interaction M.S. (p. 565)

OTHER PROGRAMS OF INTEREST

Art and Design: Games and Playable Media B.A. (p. 128)

Digital Arts and New Media M.F.A.

Film and Digital Media Ph.D. (p. 70)

The Computational Media Department engages in boundary-pushing research and education that integrates technical, interpretive, and design work to create human-centered media and experiences that address complex problems for societal impact. The department creates media, experiences, and ways of understanding that have an impact in the world we live in. We likewise perform research that embraces diverse ideas, disciplines, approaches, concepts, and methods in our work and community.

The Computational Media (CMPM) Department offers courses on a wide range of topics, many of which integrate technical subject matter with design-oriented, theoretical, and historical topics. The Computational Media Department administers an undergraduate bachelor of science (B.S.) degree in Computer Science: Computer Game Design, a professional master of science (M.S.) degree in Games and Playable Media (**Admissions suspended for AY25-26**), a professional master of science (M.S.) degree in Human Computer Interaction, as well as a master of science (M.S.), a doctor of philosophy (Ph.D.), and a designated emphasis in Computational Media. Besides offering instructional courses, the department engages in a substantial research program in which both advanced undergraduates and graduate students participate.

COMPUTER SCIENCE: COMPUTER GAME DESIGN B.S.

Information and Policies

Introduction

The goal of the B.S. in Computational Media degree is to provide students a deep understanding of the technical aspects of computer game engineering and a broad background in the artistic, systemic, and production elements of game design and development.

The core of the degree program is a strong grounding in computer science and computer engineering, preceded by a foundation in mathematics. Classes also develop skills in areas such as visual communication and team-oriented game production, while developing knowledge of topics such as game history, play experiences, game systems, and social and ethical issues.

In their upper-division courses, students gain depth by taking electives in computational media and computer science and engineering, with options such as Game AI, Game Graphics and Real-Time Rendering, Generative AI (Procedural Content Generation), Mobile Applications, Interactive Storytelling, and Algorithmic Music. A two-course game development sequence (Game Development Experience and Game

Development Patterns) and a two-quarter comprehensive sequence (Rapid Prototyping and Game Design Studio) allow students to develop complex computer games and integrate materials from the rest of the program.

Program Learning Outcomes

Recipients of a B.S. degree in Computer Game Design at University of California, Santa Cruz, are expected to have the following skills and experiences:

1. Demonstrate mastery of computer science in the following core knowledge areas: algorithms, data structures, complexity, and software engineering and development.
2. Apply system-level perspective by thinking at multiple levels of detail and abstraction and by recognizing the context in which a computer system may function, including its interactions with people and the physical world.
3. Apply problem-solving skills and the knowledge of computer science to solve real problems.
4. Recognize and take into account the social, legal, historical, ethical, and cultural issues in the discipline of computer games.
5. Demonstrate written, oral, and graphic design communication skills regarding technical material about computer science and computer games, broadly conceived.
6. Design and build a technical system that achieves an artistic goal for audience experience, employing sound computer science techniques.
7. Demonstrate the ability to collaboratively plan, organize, and execute complex, team-oriented projects, using appropriate communication and coordination techniques.

Academic Advising for the Program

The Baskin School of Engineering (BE) Undergraduate Advising Office is located in the Baskin Engineering Building, Room 225. Staff can be contacted via email at bsoeadvising@ucsc.edu or at the Undergraduate Advising website.

Transfer students to the program should consult the Transfer Students section of the Baskin Engineering Undergraduate Affairs page.

Getting Started in the Major: Frosh

It is recommended that high school students intending to apply to the major have completed four years of mathematics (through advanced algebra and trigonometry) as well as any available courses in computer science, arts, and media (especially interactive media). Comparable college mathematics, arts, and media courses completed at other institutions also serve to properly prepare a student for the major.

Computer Science (CS): Game Design is a course-intensive and sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz. (Please see Plan One and Plan Two in the Planners section for more information.)

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7

and one of the following courses

ECE 13	Computer Systems and C Programming	7
CSE 13S	Computer Systems and C Programming	7
CSE 12	Computer Systems and Assembly Language and Lab	7

Lecture and lab combinations count as one course.

In addition, completing all but one of the following courses prior to transfer is recommended to ensure timely graduation:

CSE 20	Beginning Programming in Python	5
CSE 12	Computer Systems and Assembly Language and Lab	7
	One of these courses	
AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5
	One of these courses	
ECE 13	Computer Systems and C Programming	7
CSE 13S	Computer Systems and C Programming	7

(Lecture-lab combinations count as one course.)

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. Instructions for declaring a major in the Baskin School of Engineering are on the Baskin Engineering undergraduate advising major declaration page.

Please note that most major courses have a strong theoretical component to prepare the student for designing—as opposed to simply using—technical and game systems. Often, other institutions' courses that emphasize applications of current programming languages and authoring tools do not count toward the major at UC Santa Cruz. For specifics on the BE's transfer student policies, please see Baskin Engineering's Transfer Students website.

CS: Game Design is a course-intensive and sequential program, and transfer students that intend to graduate in two years should plan their schedule carefully with Baskin Engineering Advising. (Please see Plan Three in the Planners section for more information.)

Major Qualification Policy and Declaration Process

Major Qualification

In order to be admitted into the Computer Science: Computer Game Design major, students must be listed as a proposed major within the School of Engineering. Please see the Baskin Engineering Major Qualification Requirements page for more information.

Transfers to the program should consult the Transfer Students section of the Baskin Engineering Undergraduate Affairs page.

Students have to complete all the foundation courses to qualify for the major. Some courses may be satisfied via exam credit.

In addition to being listed as a proposed School of Engineering major, admission to the Computer Science: Computer Game Design major is based on the following criteria:

Take the following course:

CSE 16	Applied Discrete Mathematics	5

And one of the following calculus courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

And a core programming sequence to include one of the following group of classes:

	Either these courses	
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 30	Programming Abstractions: Python	7
ECE 13	Computer Systems and C Programming	7
	or these courses	
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 30	Programming Abstractions: Python	7

Students with no prior programming courses will take CSE 20 before CSE 30 and CSE 12. Students with a prior programming course, Advanced Placement (AP) examination credit, or clearing the "Test-out" bar will start with CSE 30 and CSE 12.

Appeal Process

Denials of admission to the major may be appealed by submitting a letter to the School of Engineering Undergraduate Advising office, addressed to the Computational Media undergraduate director, within 15 days from the date the notification was mailed. The appeal letter must describe why the student's prior performance was not an accurate reflection of their potential. Within 15 days of receipt of the appeal, the Undergraduate Advising office will notify the student and their college of the decision.

How to Declare a Major

Students should submit a petition to declare by completing the petition for major/minor declaration form as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

There are four steps to declaring a BE major. For a detailed guide to this process, please consult Baskin Engineering's Declare Your Major website.

Letter Grade Policy

The Baskin School of Engineering requires letter grades for all courses in an engineering major.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Study Abroad

Honors

Students must obtain a GPA of 3.8 or higher in the courses in the major to be considered for the distinction of “Highest Honors in the Major.” Students must obtain a GPA of 3.5 or higher in the courses in the major to be considered for the distinction of “Honors in the Major.” The School of Engineering reserves the right to withhold honors based on other criteria, such as an incident of academic dishonesty.

[Optional Catchall]

Baskin Engineering Policies

Please refer to Admission to Baskin Engineering Majors in the School of Engineering section of the catalog for additional policies that apply to all School of Engineering programs. These policies include admission to the major and the need for students to obtain preapproval before taking courses elsewhere.

Requirements and Planners

Course Requirements

The Computer Science: Computer Game Design curriculum has 24–26 courses (depending on the core programming sequence taken). Thirteen of these courses are upper-division. Several of the required courses and electives are also general education courses. Some courses may be satisfied via exam credit. Please consult with the schedule of classes or the General Catalog for more information.

Course requirements are divided into five conceptual areas and may not be credited in more than one area:

Lower-Division Courses

Upper-Division Courses

Mathematics

Choose one of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Credit for one or both MATH 19A/MATH 19B may be granted with adequate performance on the CEEB calculus AB or BC Advanced Placement examinations.

Plus one of the following courses:

MATH 21	Linear Algebra	5
AM 10	Linear Algebra for Engineers	5

Plus the following course:

CSE 16	Applied Discrete Mathematics	5

Computational Foundations

Choose one of the following options:

	Either this course	
ECE 13	Computer Systems and C Programming	7
	or this course	
CSE 13S	Computer Systems and C Programming	7

CSE 12 is a prerequisite for these courses.

Plus all of the following courses:

CSE 20	Beginning Programming in Python	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 30	Programming Abstractions: Python	7
CSE 101	Introduction to Data Structures and Algorithms	5

Students with no prior programming courses will take CSE 20 before CSE 30 and CSE 12. Students with a prior programming course, AP credit, or clearing the “Test-out” bar will start with CSE 30 and CSE 12.

Games and Playable Media Foundations

Complete all of the following courses:

FILM 80V	Video Games as Visual Culture	5
CMPM 80J	Games as Technical Culture	5

Game Design and Development

Complete all of the following courses:

CMPM 80K	Foundations of Video Game Design	5
CMPM 120	Game Development Experience	5
CMPM 121	Game Development Patterns	5
CMPM 130	User Interface and User Experience Design	5
CMPM 170	Rapid Prototyping	5
CMPM 171	Game Design Studio	7
CMPM 176	Game Systems	5

Computer Game Engineering

Complete **five** courses from the following list. The majority of these computer game engineering electives (CGEs) are technical practice electives that focus on the development and analysis of computational systems (i.e., the “programming” part of game creation).

No more than two of the five can be from CMPM 110, CMPM 122, CMPM 131, CMPM 132, CMPM 150, CMPM 177, CSE 103, CSE 104, or ECON 166A. (These seven courses focus on other skills useful in computer game development, such as design, production, and mathematical analysis.) CMPM 179 and CMPM 180 are repeatable for credit but may only count once each toward the elective requirement.

NOTE: Lecture/lab combinations count as one course. Associated labs are required only when required by the lecture.

CMPM 110	Writing for Game Technologies	5
CMPM 122	Business of Games	5
CMPM 125	Game Technologies	5

CMPM 131	User Experience for Interactive Media	5
CMPM 132	Interaction Design Studio	5
CMPM 146	Game AI	5
CMPM 147	Generative Design	5
CMPM 148	Interactive Storytelling	5
CMPM 150	Creating Digital Audio	5
CMPM 151	Algorithmic Music for Games	5
CMPM 152	Musical Data	5
CMPM 163	Game Graphics and Real-Time Rendering	5
CMPM 164	Game Engines	5
CMPM 169	Creative Coding	5
CMPM 172	Game Production Studio	7
CMPM 123	Advanced Programming	5
CMPM 177	Creative Strategies for Designing Interactive Media	5
CMPM 178	Human-Centered Design Research	5
CMPM 179	Game Design Practicum	5
CMPM 180	Topics in Computational Media	5
CSE 102	Introduction to Analysis of Algorithms	5
CSE 103	Computational Models	5
CSE 104	Computability and Computational Complexity	5
CSE 110A	Fundamentals of Compiler Design I	5
CSE 110B	Fundamentals of Compiler Design II	5
CSE 112	Comparative Programming Languages	5
CSE 113	Parallel and Concurrent Programming	5
CSE 115A	Introduction to Software Engineering	5
CSE 115B	Software Design Project	5
CSE 115C	Software Design Project II	5
CSE 117	Open Source Programming	5
CSE 118	Mobile Applications	5
CSE 119	Software for Society	5
CSE 120	Computer Architecture	5
CSE 130	Principles of Computer Systems Design	5
CSE 132	Computer Security	5
CSE 138	Distributed Systems	5
CSE 140	Artificial Intelligence	5
CSE 142	Machine Learning	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 145	Introduction to Data Mining	5
CSE 146	Ethics and Algorithms	5
CSE 150	Introduction to Computer Networks	7
CSE 156	Network Programming	5
CSE 157	Internet of Things	7
CSE 160	Introduction to Computer Graphics	7
CSE 161	Introduction to Data Visualization	5
CSE 162	Advanced Computer Graphics and Animation	5
CSE 163	Data Programming for Visualization	5
CSE 180	Database Systems I	5
CSE 181	Database Systems II	5
CSE 183	Web Applications	5
CSE 186	Full Stack Web Development I	5
CSE 187	Full Stack Web Development II	5
CSE 184	Data Wrangling and Web Scraping	5
ECON 166A	Game Theory and Applications I	5
ECE 118	Introduction to Mechatronics	10

Note that enrollment restrictions might apply to any of the CSE courses listed here, and it is unlikely Computer Science: Computer Game Design students will be able to enroll in enrollment-restricted courses.

Electives

Disciplinary Communication (DC) Requirement

Students must satisfy the major's upper-division disciplinary communication (DC) requirement by completing the following course:

CMPM 130	User Interface and User Experience Design	5

Comprehensive Requirement

Students satisfy the senior comprehensive requirement by receiving a passing grade in the following courses:

CMPM 170	Rapid Prototyping	5
CMPM 171	Game Design Studio	7

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are three sample academic plans that students can use to plan their sequence of courses in the major. The first two plans are suggested guidelines for students who begin their studies in their frosh year. Such students, if they plan carefully, will have several openings free to take other breadth courses they find interesting.

Plan One is for a student entering UC Santa Cruz in their frosh year who is prepared to go directly into MATH 19A/MATH 20A and CSE 30.

Plan Two is for a student entering UC Santa Cruz their frosh year who needs to take preparatory courses prior to MATH 19A or CSE 30 to ensure a successful outcome in those courses.

Plan Three is for a junior transfer student who has completed their mathematics, computational foundations, and general education requirements.

Plan One

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
Year 1	CSE 30	CSE 12	CSE 16	
	MATH 19A	MATH 19B	CSE 13S	
Year 2	CMPM 80K	FILM 80V	CMPM 120	
	AM 10 / MATH 21	CMPM 80J	CSE 101	
Year 3	CMPM 176	Game Engineering Elective 1	CMPM 130	
	CMPM 121	Game Engineering Elective 2	Game Engineering Elective 3	
Year 4	CMPM 170	CMPM 171		
	Game Engineering Elective 4	Game Engineering Elective 5		

* Writing II should be taken in or before spring quarter of the second year.

Plan Two

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
Year 1	CSE 20	CSE 30	CSE 12	
	MATH 3	MATH 19A	MATH 19B	
	College Core	WRIT 1	WRIT 2*	
Year 2	CMPM 80K	FILM 80V	CMPM 120	
	CSE 13S	MATH 21 or AM 10	CSE 101	
	CSE 16	CMPM 80J		
Year 3	CMPM 176	Game Engineering Elective 1	Game Engineering Elective 3	
	CMPM 121	Game Engineering Elective 2	CMPM 130	
Year 4	CMPM 170	CMPM 171		
	Game Engineering Elective 4	Game Engineering Elective 5		

* WRIT 2 should be taken in or before spring quarter of the second year.

In addition to the specific courses shown in the four-year planner, a student must complete courses satisfying the CC, ER, SR, SI, and TA general education requirements.

Plan Three

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
Year	[OPE	CSE 101	CMPM	

1 (Jr)	N]*		120
	CMPM 80K	FILM 80V	CMPM 130
		CMPM 80J	Game Engineering Elective 1
Year 2 (Sr)	CMPM 170	CMPM 171	Game Engineering Elective 4
	CMPM 121	Game Engineering Elective 2	Game Engineering Elective 5
	CMPM 176	Game Engineering Elective 3	

* This planner assumes that, in addition to the minimum requirements for transfer students to be admitted to UC Santa Cruz, students should also have completed the equivalents of all but one course from CSE 20; AM 10 or MATH 21; ECE 13 or CSE 13S; and CSE 12, as well as all general education requirements if they wish to graduate in two years. This [OPEN] slot in the planner is for any of those courses that the student may not have completed.

COMPUTATIONAL MEDIA DESIGNATED EMPHASIS

Introduction

The graduate designated emphasis (DE) leading to the degree notation “with an emphasis in Computational Media” provides specialization in the theory, principles, and practices of the field of computational media. This DE is administered by the Department of Computational Media. Students wishing to complete an M.F.A. or Ph.D. degree with an emphasis in this area must satisfy the degree requirements of a primary program as well as of the DE. The DE is most suitable for students pursuing degrees in computer science and engineering, digital art and new media, film and digital media, literature, and psychology. However, students from any area may work in this interdisciplinary field as long as they meet all requirements, including progress, within the primary degree program. It is intended for students in terminal degree programs (e.g., Ph.D., M.F.A.) rather than non-terminal master’s or certificate programs.

Requirements

Committee Composition and Departmental Approvals

Upon electing to pursue a designated emphasis (DE) in computational media, students must choose a DE faculty advisor in the Department of Computational Media. A list of eligible DE advisors is maintained online. The student must organize a preliminary meeting with the DE advisor, and agree on a plan for completion of the requirements outlined below. Once this plan has been designed, the student must submit the Computational Media DE Request Form online, which will be signed by the CM DE advisor, the student’s departmental faculty advisor, and the CM graduate director. Once approved, this request will be filed in the Baskin Engineering Graduate Student Affairs Office. This should ideally be done before the student’s advancement to candidacy (for Ph.D. students), and no later than three months before the planned date for the oral presentation completion requirement.

The student’s M.F.A. thesis or capstone, Ph.D. qualifying exam, or Ph.D. dissertation committee must include one member of the Computational Media (CM) Department faculty, typically the student’s DE advisor.

Course Requirements

All students must complete CMPM 201 (Introduction to Computational Media) and two additional 5-credit graduate courses offered or crosslisted by the CM department and/or faculty with (non-zero percentage) appointments in the department. One of the additional courses may be fulfilled through a graduate independent study (of 5 credits or greater) with a CM faculty member, with approval of the CM graduate director.

Writing, Research and/or Teaching Requirements

The student must complete a significant piece of computational media writing. Examples include a student’s M.F.A. thesis (or substantial section of one) or a Ph.D. dissertation chapter—but other pieces of writing are also acceptable, at the discretion of the CM graduate director, including conference and journal publications.

Applying for Graduation

All candidates for a degree must submit an application for the master's degree or an application for the doctorate in philosophy degree to the appropriate office in their primary department by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. Students who have completed a designated emphasis should be sure to note the designated emphasis on the degree application. The deadline for degree applications is typically in the second week of the quarter. A student is required to be registered or on filing fee during the quarter in which the degree is conferred.

When students apply for graduation, they must also submit the Computational Media DE Confirmation Form online to certify that they have met the DE requirements. This form will be signed by the CM DE advisor, the CM graduate advisor,

and the CM graduate director, and then filed in the Baskin Engineering Graduate Student Affairs Office.

COMPUTATIONAL MEDIA M.S.

Introduction

The goal of the M.S. in Computational Media (CM) is to help students build on existing strengths and move into new areas of computational media work. The design of the degree ensures, first, that students have a meaningful foundation in the key areas needed for undertaking interdisciplinary CM work. This may require some additional development in one or more areas (e.g., a sequence of computer programming classes). In addition, the M.S. coursework includes both broad and topical classes that help students understand the different ways that innovative work in CM connects the knowledge and methods of the different disciplines that contribute to it. Finally, the M.S. also includes a student-defined thesis, in which they demonstrate their ability to apply their foundational and integrative knowledge while developing novel work through supervised research. The M.S. is appropriate for students continuing in a variety of directions, including pursuing a terminal degree and performing innovative media creation.

M.S. students must complete a minimum of 35 quarter credits of graduate and upper-division courses, including 15 credits of core courses, 10 credits of topic courses, and between 7 - 10 credits of supervised research (CMPM 299). No more than 15 credits may be upper-division undergraduate courses.

Requirements

Course Requirements

Core Courses (15 Credits)

CMPM 201	Introduction to Computational Media	5
CMPM 202	Computation Media Research	5
CMPM 203	Computational Media Methods	5

Topics Courses (10 Credits)

M.S. students are required to take 10 credits of CM topics courses. This category includes all 5-credit CMPM graduate classes, as long as they are not already counted in another category (e.g., it cannot include core courses), in addition to courses available in other departments. Current topics courses are listed below.

Current Topics Courses

CMPM 230	Data Science in Computational Experiences	5
CMPM 232	Psychology of Play	5
CMPM 235	User Evaluation of Technology	5
CMPM 237	Advanced Topics in Human-Robot Interaction	5
CMPM 243	Social Computing Research: Design, Algorithms, and Incentives	5
CMPM 244	Artificial Intelligence in Games	5
CMPM 248	Interactive Storytelling	5
CMPM 265	Generative Methods	5
CMPM 268	Immersive Analytics	5
CMPM 269	Machine Learning for Creativity and Design	5
CMPM 290A	Topics in Computational Media	5
CMPM 290J	Playable Media	5
CMPM 290K	Social and Emotional Approaches to Human Computer Interaction	5
CMPM 290P	Topics in Computational Cinematography	5
CSE 245	Computational Models of Discourse and Dialogue	5
CSE 260	Computer Graphics	5
CSE 261	Advanced Visualization	5
CSE 263	Data Driven Discovery and Visualization	5
CSE 265	Human-Computer Interaction	5
CSE 290L	Topics in Crowdsourcing and Collaboration	5
DANM 250A	Art and Science	5
DANM 250B	Socially Engaged Art	5
DANM 250C	Performance and Embodiment	5
DANM 250E	Collaborative Research Project Group: Experimental Play	5
FILM 228	Moving Image Archives and the Frontiers of Information	5
FILM 230	Expanded Documentary	5
FILM 234	Toward an Ethics of New Media	5
GAME 232	Advanced Game Technologies	5
GAME 238	Computer Graphics for Games	5
GAME 240	Game Usability	5
GAME 250	Foundations of Serious Games and Gamification	5
GAME 251	Games User Research	5
GAME 290A	Advanced Topics in Games	5
HCI 250	Participatory Design	5

DANM 250A, DANM 250B, DANM 250C, DANM 250E: can be repeated.

Other Requirements

In addition to the above curricular requirements, students are also required to satisfy the three Foundation Areas requirements. There are three additional program requirements, though students may have completed the necessary work for one or more before admission. Students are expected to demonstrate an understanding of the following three Foundation Areas:

- Media Creation in a CM context
- Computer Programming sufficient to carry out CM research
- Interpretive Practices sufficient to carry out CM research

Media Creation: All M.S. students must demonstrate an understanding of media creation in a CM context, and must do so by the end of their second year in the program. This can be completed by any of:

- The Computer Science: Computer Game Design B.S. game studio sequence (CMPM 170, CMPM 171, CMPM 172) before graduate enrollment.
- The Art and Design: Games and Playable Media B.A. game studio sequence (ARTG 170, ARTG 171, ARTG 172) before graduate enrollment.
- A Digital Arts and New Media (DANM) project group sequence (three DANM 250 courses in same area, in sequence) during or before computational media M.S./Ph.D. graduate enrollment.
- The Games and Playable Media M.S. project sequence (GAME 270, GAME 271, GAME 272) before Computational Media M.S./Ph.D. graduate enrollment (due to Professional Degree Supplemental Tuition (PDST) and cohort model, these cannot be taken by students in other programs).
- At least three graduate or upper-division undergraduate courses from a list of offerings at UCSC that require programming knowledge and are focused on defining and developing CM-related projects (e.g., CMPM 148) during or before CM graduate enrollment. See the media creation courses list below.
- Petition to CM graduate director, presenting evidence of equivalent coursework at another institution and/or equivalent CM project experience in another context.

Computer Programming: All M.S. students must demonstrate an understanding of computer programming sufficient to carry out CM research, and must do so by the end of their second year in the program. This can be completed by:

- Taking a series of courses that integrate media and programming knowledge (e.g., GAME 235, GAME 236, and CMPM 120).
- Taking core programming (e.g., CSE 30 and CSE 101) and advanced programming (e.g., CSE 111) at UCSC or another institution.
- Petition to CM graduate director, presenting evidence of programming knowledge developed in another context.

Interpretive Practices: All M.S. students are expected to have an understanding of interpretive and critical methods sufficient to carry out CM research. Students who lack such a background are strongly encouraged to take a series of courses in this area, consulting with their advisor regarding which courses would be most appropriate. The appropriate Interpretive Practices for a given student depends on the specific research area for the student. The key is that the student is able to critique and intervene in their research area from a broader social, cultural, and historical perspective. One recommended sequence (which may or may not be appropriate for a specific student) is:

- HISC 1: Introduction to the History of Consciousness. If this is not possible, take an 80-level course that integrates introductory interpretive content (e.g., FILM 80V: Video Games as Visual Culture).
- Take two more graduate or upper-division undergraduate courses that focus on interpretive practices. The CM department offers courses that integrate this with CM knowledge, such as some offerings of CMPM 290A (e.g., Media Constellations) and CMPM 176: Game Systems. Other programs also offer courses that make this integration, such as DANM 201: Recent Methods and Approaches to Digital Arts and Culture and DANM 202: Dialogues and Questions in Digital Arts and Culture. Courses that do not make this integration, but that are connected to the student's research area, are also acceptable.

Note: In extraordinary circumstances the graduate director can reduce the number of required courses based on a petition presenting past accomplishments, for example, reducing the number of required topics courses by one for each substantial past research publication or system accepted from the petition.

Current Media Creation Courses

CMPM 146	Game AI	5
CMPM 147	Generative Design	5
CMPM 148	Interactive Storytelling	5
CMPM 150	Creating Digital Audio	5
CMPM 151	Algorithmic Music for Games	5
CMPM 163	Game Graphics and Real-Time Rendering	5
CMPM 164	Game Engines	5
CMPM 169	Creative Coding	5
CMPM 179	Game Design Practicum	5
CMPM 244	Artificial Intelligence in Games	5
CMPM 248	Interactive Storytelling	5
CMPM 265	Generative Methods	5
CMPM 290J	Playable Media	5

CSE 160	Introduction to Computer Graphics	7
CSE 161	Introduction to Data Visualization	5
CSE 163	Data Programming for Visualization	5
CSE 183	Web Applications	5
CSE 245	Computational Models of Discourse and Dialogue	5
CSE 260	Computer Graphics	5
CSE 261	Advanced Visualization	5
CSE 263	Data Driven Discovery and Visualization	5
GAME 210	Game Art Intensive	5
GAME 215	Audio Direction	5

M.S. Research Thesis (7-10 credits)

The M.S. follows Plan I which requires a research thesis. It is a substantial undertaking within the CM field, which may emphasize technical, media-creation, or interpretive aspects—or may emphasize more than one area equally. Regardless of which of the above areas the M.S. research emphasizes, a written thesis is required. This written thesis is reviewed by a committee of at least two faculty that must include at least one member of the CM department and draw half or more of its members from the UCSC academic senate. M.S. students are required to take the CMPM 299 (Thesis Research) independent study twice with their faculty advisor for their thesis completion. The courses do not need to be taken consecutively.

CMPM 299	Thesis Research

Lower-Division Courses

Students who are considering enrolling in lower-division courses in order to fulfill additional degree requirements (e.g., CSE 30, HISC 1) may wish to consult with the course instructor and their advisor about instead taking an independent study or directed study (with the course instructor, their advisor, or a third faculty member) that subsumes the work of the course and adds additional content to bring it up to a graduate level. Graduate students must be enrolled in some combination of at least 10 credits of courses or independent studies that are either graduate or upper-division undergraduate courses in order to be considered full-time enrolled.

Transfer Credit

Up to 10 credits transferred from equivalent courses in previous graduate work at UCSC or elsewhere can be applied toward the M.S. course requirements. This can satisfy the topics requirement, but is not to exceed the three-course overall limit on transfers from outside institutions. A Course Substitution/Waiver form can be found on the Baskin Engineering (BE) Graduate Advising website.

Review of Progress

On an ongoing basis, the faculty reviews the progress of every student remaining on track to complete the degree in six consecutive academic quarters. Students not making adequate progress toward completion of degree requirements (see the Graduate Handbook for policy on satisfactory academic progress) are subject to dismissal from the program. Students with academic deficiencies may be required to take additional courses. Full-time students with no academic deficiencies are normally expected to complete the degree requirements, which includes courses and a master's thesis, in two years.

Students receiving two or more unsatisfactory grades (U or grade below B) in School of Engineering (SoE) courses, or who receive an unsatisfactory grade (U or grade below B) in the Computational Media core course sequence (CMPM 201, CMPM 202, CMPM 203), are not making adequate progress and will be placed on academic probation for the following quarter of registered enrollment. Withdrawing or taking a leave of absence does not count as enrollment. Part-time enrollment is counted as a half quarter of enrollment. Students who are on academic probation or are not enrolled full time are no longer guaranteed any previously committed funding. Should students receive an unsatisfactory grade (U or below B) in a School of Engineering course while on probation, the Computational Media Department may request the graduate dean to dismiss that student from the graduate program. If after being removed from probation, the student again receives an unsatisfactory grade (U or below B) in a School of Engineering course, he or she will return immediately to academic probation.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their advisor and the graduate director immediately. Students may appeal their dismissal.

Planners

M.S. in One Year (Student with technical CM B.S. degree)

This is a sample program for a student who has completed a bachelor’s degree with significant technical content and a focus on some form of computational media (such as computer games). The B.S. in Computer Science: Computer Game Design at UCSC is such a degree. Such students will have already satisfied the requirement for understanding media creation in a CM context (e.g., by taking the CMPM 170, CMPM 171, and CMPM 172 sequence at UCSC) and the requirement for demonstrating an understanding of computer programming (e.g., by taking a core programming sequence and CSE 111 at UCSC). This program is for a student who wants to complete the M.S. degree in one year.

Fall	Winter	Spring
CMPM 201	CMPM 202	CMPM 203
Topics course	Topics course	CMPM 299 (5 credits)
CMPM 299 (2 - 5 credits)	Elective/independent study (optional)	Elective/independent study (optional) (M.S. thesis approved)

M.S. in Five Quarters (Student requiring technical and interpretive foundation work)

This is a sample program for a student who has graduated from a digital media program or other undergraduate degree that provides experience in media creation in a CM context, but not an understanding of computer programming or interpretive practices. (CMPM 202 is moved to the second year, to reflect the need for computer programming knowledge before taking this course.)

	Fall	Winter	Spring
Year 1	CMPM 201	HISC 1	CMPM 203
	Topics course	Topics course	Interpretive graduate/upper-division course
	GAME 235	GAME 236	CMPM 120
Year 2	CMPM 299 (2 - 5 credits)	CMPM 202	
	Interpretive graduate/upper-division course	CMPM 299 (5 credits)	
	Elective/Independent Study (optional)	Elective/Independent Study (optional) (M.S. thesis approved)	

Applying for Graduation

Students planning to graduate should refer to the Baskin School of Engineering Graduate Studies website.

Optional Catchall

COMPUTATIONAL MEDIA PH.D.

Introduction

The Ph.D. in computational media (CM) is designed for those who are already actively working in computational media and want to develop new knowledge that will change what is possible and how we understand it. The Ph.D. program includes all the course requirements of the M.S., with the exception of those related to the M.S. thesis. Ph.D. students have a number of additional requirements, as well. First, they must take additional topics courses, building understanding of a broader set of CM approaches. Second, they must pass both a first-year exam and a comprehensive exam, setting clear milestones for the development of expert-level knowledge in CM. Third, they must engage in substantial independent research that contributes to the development of the field, working closely with CM research faculty. Fourth, they must propose, complete, and defend a significant and novel dissertation project. The Ph.D. is appropriate for those who aim to lead future CM research efforts, within the academy, industry, government, non-profit, and other contexts.

Advancement to Candidacy

Course Requirements

Ph.D. students will complete 15 credits of core courses, 20 credits of topics courses, and 10 credits of courses involved in preparation for the comprehensive examination.

Core Courses (15 Credits)

CMPM 201	Introduction to Computational Media	5
CMPM 202	Computation Media Research	5
CMPM 203	Computational Media Methods	5

Topics Courses (20 Credits)

Ph.D. students are required to take 20 credits of CM topics courses. The courses may be any combination of these types (as long as not already counted in another category):

- 5-credit CMPM graduate classes.
- Classes in other subject codes that cover the theory and/or practice of a CM area, as listed in the "topics courses."
- Up to 10 credits transferred from equivalent courses in previous graduate work at UC Santa Cruz or elsewhere (not to exceed three course overall limit on transfers from outside institutions, between this and other requirements).

Current Topics Courses

CMPM 230	Data Science in Computational Experiences	5
CMPM 232	Psychology of Play	5
CMPM 235	User Evaluation of Technology	5
CMPM 237	Advanced Topics in Human-Robot Interaction	5
CMPM 243	Social Computing Research: Design, Algorithms, and Incentives	5
CMPM 244	Artificial Intelligence in Games	5
CMPM 248	Interactive Storytelling	5
CMPM 255	Games for Impact Studio I	5
CMPM 256	Games for Impact Studio II	5
CMPM 265	Generative Methods	5
CMPM 268	Immersive Analytics	5

CMPM 269	Machine Learning for Creativity and Design	5
CMPM 290A	Topics in Computational Media	5
CMPM 290J	Playable Media	5
CMPM 290K	Social and Emotional Approaches to Human Computer Interaction	5
CMPM 290P	Topics in Computational Cinematography	5
CSE 245	Computational Models of Discourse and Dialogue	5
CSE 260	Computer Graphics	5
CSE 261	Advanced Visualization	5
CSE 263	Data Driven Discovery and Visualization	5
CSE 265	Human-Computer Interaction	5
CSE 290L	Topics in Crowdsourcing and Collaboration	5
DANM 250A	Art and Science	5
DANM 250B	Socially Engaged Art	5
DANM 250C	Performance and Embodiment	5
DANM 250E	Collaborative Research Project Group: Experimental Play	5
FILM 228	Moving Image Archives and the Frontiers of Information	5
FILM 230	Expanded Documentary	5
FILM 234	Toward an Ethics of New Media	5
GAME 232	Advanced Game Technologies	5
GAME 238	Computer Graphics for Games	5
GAME 240	Game Usability	5
GAME 250	Foundations of Serious Games and Gamification	5
GAME 251	Games User Research	5
GAME 290A	Advanced Topics in Games	5
HCI 250	Participatory Design	5

DANM 250A, DANM 250B, DANM 250C, and DANM 250E may be repeated.

Exam Courses (20 Credits)

CMPM 205	Bridging the Disciplines: Writing and Synthesis for Computational Media	5
CMPM 206	Computational Media Research Preparation	5
CMPM 297B	Independent Study or Research	10

CMPM 205: Teaches the skills of doing interdisciplinary research and writing and synthesis across disciplines, which are important for doing research in computational media.

CMPM 206: Teaches skills for gathering literature and preparing portfolio for comprehensive exam, taken the same quarter as exam. 5 credits.

CMPM 297B: Research in preparation for the comprehensive exam, usually taken with the student's advisor. Students should enroll in 5 credits of CMPM 297A the quarter prior to their comprehensive exam, and then 5 credits of CMPM 297A alongside CMPM 206 the quarter they plan to take the comprehensive exam.

Additional Requirements

In addition to the above curricular requirements, students are also required to satisfy the three Foundation Areas requirements. The Foundation Areas are evaluated through the completion of the Comprehensive Exam, and must be completed by the end of students' second year in the program (sixth quarter, excluding summer quarter). Individual plans for demonstrating competency in the Foundation Areas will depend on students' previous studies. A student should consult with both their faculty advisor and graduate director to determine the best path for being prepared to demonstrate competency in the Foundation Areas through the Comprehensive Exam. Many students opt to complete the Foundation Areas via graduate coursework, but the requirements can also be met via past projects, undergraduate coursework, or professional experience in the given area.

Students are expected to demonstrate competency in the following three Foundation Areas, which are evaluated through the completion of the Comprehensive Exam:

- Media Creation in a CM context
- Computer Programming sufficient to carry out CM research
- Interpretive Practices sufficient to carry out CM research

Media Creation: Ph.D. students must demonstrate sufficient and appropriate media-focused knowledge to develop a significant CM research contribution. This can be completed by any of:

- The Computer Science: Computer Game Design B.S. game studio sequence (CMPM 170, CMPM 171, CMPM 172) before graduate enrollment.
- The Art and Design: Games and Playable Media B.A. game studio sequence (ARTG 170, ARTG 171, ARTG 172) before graduate enrollment.
- A DANM project group sequence (three DANM 250 courses in same area, in sequence) during or before CM M.S./Ph.D. graduate enrollment.

- Game for Impact studio courses: CMPM 255 and CMPM 256
- At least three graduate or upper-division undergraduate courses from a list of offerings at UC Santa Cruz that require programming knowledge and are focused on defining and developing CM-related projects (e.g., CMPM 148) during or before CM graduate enrollment. See the list of media creation courses.
- Petition to CM graduate director, presenting evidence of equivalent coursework at another institution and/or equivalent CM project experience in another context.

Computer Programming: All Ph.D students must demonstrate sufficient and appropriate technical knowledge, including computer programming, to develop a significant CM research contribution. This can be completed by:

- Taking a series of courses that integrate media and programming knowledge (e.g., GAME 235, GAME 236, and CMPM 120).
- Taking core programming (e.g., CSE 30 and CSE 101) and advanced programming (e.g., CSE 111) at UC Santa Cruz or another institution.
- Petition to CM graduate director, presenting evidence of programming knowledge developed in another context.

Interpretive Practices: All Ph.D. students are expected to demonstrate sufficient and appropriate knowledge of interpretive practices to develop a significant CM research contribution. Students who lack such a background are strongly encouraged to take a series of courses in this area, consulting with their advisor regarding which courses would be most appropriate. The appropriate Interpretive Practices for a given student depends on the specific research area for the student. The key is that the student is able to critique and intervene in their research area from a broader social, cultural and historical perspective. One recommended sequence (which may or may not be appropriate for a specific student) is:

- HISC 1: Introduction to the History of Consciousness. If this is not possible, take an 80-level course that integrates introductory interpretive content (e.g., FILM 80V: Video Games as Visual Culture).
- Take two more graduate or upper-division undergraduate courses that focus on interpretive practices. The CM department offers courses that integrate this with CM knowledge, such as some offerings of CMPM 290A (e.g., Media Constellations) and CMPM 176: Game Systems. Other programs also offer courses that make this integration, such as DANM 201: Recent Methods and Approaches to Digital Arts and Culture and DANM 202: Dialogues and Questions in Digital Arts and Culture. Courses that do not make this integration, but that are connected to the student's research area, are also acceptable.

The final determination that a student has satisfied the media creation, programming, and interpretation requirements is made during the comprehensive exam, including the portfolio review portion of the exam. The coursework suggested above is intended to provide students with the knowledge and skills to successfully pass their comprehensive exam, and to provide appropriate projects for the portfolio portion of the exam. A student should consult with both their advisor and the grad director to determine the best path for being prepared for the comprehensive exam.

Note: In extraordinary circumstances the graduate director can reduce the number of required courses based on a petition presenting past accomplishments. For example, reducing the number of required topics courses by one for each substantial past research publication or system accepted from the petition.

Current Media Creation Courses

CMPM 146	Game AI	5
CMPM 147	Generative Design	5
CMPM 148	Interactive Storytelling	5
CMPM 150	Creating Digital Audio	5
CMPM 151	Algorithmic Music for Games	5
CMPM 163	Game Graphics and Real-Time Rendering	5
CMPM 164	Game Engines	5
CMPM 169	Creative Coding	5
CMPM 179	Game Design Practicum	5
CMPM 244	Artificial Intelligence in Games	5
CMPM 248	Interactive Storytelling	5
CMPM 265	Generative Methods	5
CMPM 290J	Playable Media	5
CSE 160	Introduction to Computer Graphics	7
CSE 260	Computer Graphics	5
CSE 161	Introduction to Data Visualization	5
CSE 163	Data Programming for Visualization	5
CSE 183	Web Applications	5
CSE 245	Computational Models of Discourse and Dialogue	5
CSE 261	Advanced Visualization	5
CSE 263	Data Driven Discovery and Visualization	5
GAME 210	Game Art Intensive	5
GAME 215	Audio Direction	5

Lower-Division Courses

Students who are considering enrolling in lower-division courses in order to fulfill additional degree requirements (e.g., CSE 30, HISC 1) may wish to consult with the course instructor and their advisor about instead taking an independent study or directed study (with the course instructor, their advisor, or a third faculty member) that subsumes the work of the course and adds additional content to bring it up to a graduate level. Graduate students must be enrolled in some combination of at least 10 credits of courses or independent studies that are either graduate or upper-

division undergraduate courses in order to be considered full-time enrolled.

Teaching Requirement

Pre-Qualifying Requirements

Ph.D. students are required to two examinations, the FYE and the comprehensive exam, before they take the qualifying exam.

First-Year Examination

The Ph.D. First-Year Exam measures students' understanding of, and ability to, synthesize and apply core computational media knowledge (history, theory, research approaches, and evaluation methods) in a written format. To fulfill the writing and synthesis requirement students must enroll in CMPM 205, a 5-credit course. Passing the CMPM 205 course at a Ph.D. level will then fulfill the First-Year Exam requirement. CMPM 205 must be taken in the spring of their first year (third quarter, excluding summer quarters) unless students need additional foundation work before taking one of the core courses, in which case it may be the second year (sixth quarter, excluding summer quarters).

CMPM 205 is offered twice a year: in the Spring and Summer quarters. First year students must take CMPM 205 in the Spring quarter. Students who receive a U in the Spring quarter have another chance to retake CMPM 205 in the Summer.

If a student gets a U in the course after taking it twice, then the student has three options:

1.) Transfer to the master's program and complete a terminal M.S. degree.

2.) Withdraw from the Ph.D. program.

3.) Remain in the Ph.D. program and be recommended for disqualification.

Students are recommended for disqualification from the program immediately if they either (a) fail the course twice or (b) fail the course once and elect not to take the course again.

In extraordinary circumstances the graduate director may give a student the option of taking the CMPM 205 course without having taken the core coursework (CMPM 201, CMPM 202, and CMPM 203) during any quarter. Those who pass may complete the degree without taking the core courses.

Ph.D. Comprehensive Examination

The Ph.D. comprehensive exam measures students' preparation to perform independent CM research. It must be taken (for the first time) no later than the end of a student's second year in the program (sixth quarter, excluding summer quarters). Before taking the exam, students must have completed the preparatory coursework for understanding media creation and computer programming, as well as demonstrated an understanding of interpretive practices (Foundation Areas, as outlined above). The quarter prior to taking the comprehensive exam, students enroll in a 5-credit independent study (CMPM 297A) with their advisor to prepare for the exam. During the quarter in which they plan to take the exam, students enroll in CMPM 206 (a 5-credit course, usually offered by the CM graduate director each quarter) and a 5-credit independent study (CMPM 297A, usually with their advisor), and take an exam evaluated by advisor and graduate director (with another faculty member stepping in if advisor is graduate director). The exam itself includes two components, a literature review and portfolio:

- Literature Review: Reading a significant body of material in two or three depth areas of CM—from a list developed by the student, advisor, and course instructor—integrating it, and writing one or more essays about it.
- Portfolio: A portfolio review of CM projects, with (a) a detailed written description of the computational system-building goals and process of at least one project led (in this aspect) by the student and (b) a detailed written description of the media-making goals and process of at least one project led (in this aspect) by the student. The projects may be from during or before enrollment in the program, and the written descriptions may be of the same or different projects.

There are three possible outcomes of the comprehensive exam:

- Pass at Ph.D. level
- Pass at M.S. level
- Fail

As with the first-year exam, students who pass the comprehensive exam at the Ph.D. level are done with the exam. Students who pass at the M.S. level may elect to leave the program with an M.S., upon completion of all M.S. requirements. Both students who pass at the M.S. level and students who fail have the option to take the exam again, in a future quarter, not later than the middle of their third year in the program (eighth quarter, excluding summer quarters). Students who take the exam again may not decrease their outcome (e.g., a student who passes at the M.S. level in spring, then fails or passes at the M.S. level the next time the course is offered, retains the option of completing the M.S.). Students may only take the exam twice. Students are recommended for dismissal from the program immediately if they either (a) fail twice or (b) fail once and elect not to take the exam again.

Qualifying Examination

Qualifying Examination and Advancement to Candidacy

The Ph.D. qualifying examination (QE) measures students' preparation to begin Ph.D. research. It must be taken (for the first time) no later than the end of a student's third year in the program (ninth quarter, excluding summer quarters). It has two parts: first, a detailed written description of a proposed dissertation project, distributed to the committee before the oral examination; second, an oral presentation of the project, followed by questioning from the committee.

The committee policy for the CM Ph.D. follows that of UC Santa Cruz. Specifically: The qualifying examination committee shall consist of at least four examiners, one of whom is not a member of the student's department. The department shall submit to the Office of the Graduate Dean at least one month before the proposed examination a list of four qualified persons who are willing to serve on the examination committee, and who meet the following conditions:

- The chair of the examination committee must be a tenured faculty member.
- The student's thesis advisor cannot chair the examination committee.
- The outside member must be (a) a tenured faculty member from a different discipline on the University of California, Santa Cruz, campus, (b) a tenured faculty member of the same or different discipline from another academic institution involved in research and graduate education, or (c) a qualified person outside of academia with significant research experience (as determined by the Graduate Division).

After passing the qualifying examination, students advance to candidacy. Students who do not pass the examination may take it again, but must do so no later than the end of their fourth year in the program (12th quarter, excluding summer quarters). Students may only take the examination twice. Students are recommended for dismissal from the program immediately if they either (a) fail twice or (b) fail once and elect not to take the examination again.

Post-Qualifying Requirements

Planners

Ph.D., Not Seeking M.S. Degree (Students with Technical CM M.S. Degree)

This is a sample program for a student who has completed a master's degree with significant technical content and a focus on some form of computational media (such as computer games). The M.S. in games and playable media at UC Santa Cruz (offered in Silicon Valley) is such a degree. Such students will have already satisfied the requirement for understanding media creation in a CM context (e.g., by taking the GAME 270, GAME 271, and GAME 272 sequence at UC Santa Cruz) and the requirement for demonstrating an understanding of computer programming (such master's degrees generally only accept students who know how to program). This program is for a student who wants to complete the Ph.D. without getting a second M.S. in the process.

	Fall	Winter	Spring
Year 1	CMPM 201	CMPM 202	CMPM 203
	Topics course	Topics course	Topics course
	Topics course	CMPM 297	CMPM 297A (5 credits) (First-Year Exam)
Year 2	CMPM 206 (2 credits)	CMPM 297C (15 credits)	CMPM 297B (10 credits)
	CMPM 297B (10 credits) (Passes Comprehensive Exam)		CMPM 297A (5 credits) (Passes Qualifying Exam/Advances to Candidacy)
Year 3	CMPM 299 (15 credits)	CMPM 299 (15 credits)	CMPM 299 (15 credits)
Year 4	CMPM 299 (15 credits)	CMPM 299 (15 credits)	CMPM 299 (15 credits) (Dissertation Defense)

Ph.D., Seeking M.S. Degree (Students with Non-technical Master's Degree)

This is a sample program for a student who has completed a master's degree with significant arts content and a focus on some form of computational media (such as digital art). The M.F.A. in digital art and new media at UC Santa Cruz is such a degree. Such students will have already satisfied the requirement for understanding media creation in a CM context (e.g., by taking one of the DANM 250 sequences at UC Santa Cruz) but not necessarily the requirement for demonstrating an understanding of computer programming (such master's degrees generally focus on the strength of the student's arts portfolio, rather than technical skills). This program is for a student who wants to complete the Ph.D. while getting an M.S. in the process.

	Fall	Winter	Spring
Year 1	CMPM 201	Topics course	CMPM 203
	Topics course	GAME 236	Topics course
	GAME 235		CMPM 120

Year 2	CMPM 297B (10 credits)	CMPM 202	CMPM 297C (15 credits)
	Topics course	CMPM 297B (10 credits)	(First-Year Exam)
Year 3	CMPM 206	CMPM 297C (15 credits)	CMPM 297B (10 credits)
	CMPM 297B (10 credits)		CMPM 297A (5 credits)
	(Passes Comprehensive Exam)		(Passes Qualifying Exam/Advances to Candidacy)
Year 4	CMPM 299 (15 credits)	CMPM 299 (15 credits)	CMPM 299 (15 credits)
Year 5	CMPM 299 (15 credits)	CMPM 299 (15 credits)	CMPM 299 (15 credits)
			(Dissertation Defense)

Ph.D., Also Seeking M.S. Degree (Students with Technical Non-CM B.S.)

This is a sample program for a student who has completed a bachelor's degree with significant technical content but little focus on any form of computational media. The B.S. in computer science at UC Santa Cruz is such a degree. Such students will have already satisfied the requirement for demonstrating an understanding of computer programming (e.g., by taking a core programming sequence and CSE 111 at UC Santa Cruz) though students strongly focused on theoretical computer science may need to take an advanced programming course. This program is for a student who wants to complete the M.S. degree on the way to the Ph.D.

	Fall	Winter	Spring
Year 1	CMPM 201	CMPM 202	CMPM 203
	Topics course	Topics course	Topics course
	CMPM 179	CMPM 148	CMPM 290J (First-Year Exam)
Year 2	CMPM 204	CMPM 297B (10 credits)	CMPM 297C (15 credits)
	Topics course	CMPM 299 (2 credits)	
	CMPM 297	(M.S. Thesis Approved)	
Year 3	CMPM 206	CMPM 297C (15 credits)	CMPM 297B (10 credits)
	CMPM 297B (10 credits)		CMPM 297A (5 credits)
	(Passes Comprehensive Exam)		(Passes Qualifying Exam/Advances to Candidacy)
Year 4	CMPM 299 (15 credits)	CMPM 299 (15 credits)	CMPM 299 (15 credits)
Year 5	CMPM 299 (15 credits)	CMPM 299 (15 credits)	CMPM 299 (15 credits)
			(Dissertation Defense)

Transfer Credit

Up to 10 credits transferred from equivalent courses in previous graduate work at UC Santa Cruz or elsewhere can be applied toward the Ph.D. course requirements. This can partially satisfy the topics requirement, but is not to exceed the three-course overall limit on transfers from outside institutions. A Course Substitution/Waiver form can be found on the BE Graduate Advising webpage.

[Optional Catchall]

Dissertation

Dissertation

The Ph.D. dissertation is a significant contribution to the CM field. It may emphasize technical, media-creation, or interpretive aspects, but must have a significant secondary contribution from at least one of the other areas—and may also emphasize areas equally. It requires an oral defense before a faculty committee, as well as a final dissertation document reviewed by that committee (distributed to the committee before the defense, and revised after the defense in response to committee comments). The committee must include at least two members of the CM Department.

Dissertation Defense

Academic Progress

As noted above, in order to remain in good academic standing, students must:

- Take the first-year exam (for the first time) the spring of the year they finish the core coursework. This should be spring quarter of their first year (third quarter, excluding summer quarters) unless students need additional foundation work before taking one of the core courses, in which case it may be the second year (sixth quarter, excluding summer quarters). Students who fail have the option to take the exam again, in the immediately following summer offering (unless granted an exception to take it the following academic year). Students may only take the exam twice. Students are recommended for dismissal from the program immediately if they either (a) fail twice or (b) fail once and elect not to take the exam again.
- Take the comprehensive exam (for the first time) no later than the end of a student’s second year in the program (sixth quarter, excluding summer quarters). Students who fail have the option to take the exam again, in a future quarter, not later than the middle of their fourth year in the program (eighth quarter, excluding summer quarters). Students may only take the exam twice. Students are recommended for dismissal from the program immediately if they either (a) fail twice or (b) fail once and elect not to take the exam again.
- Take the qualifying exam (for the first time) no later than the end of a student’s third year in the program (ninth quarter, excluding summer quarters). Students who do not pass the examination may take it again, but must do so no later than the end of their fourth year in the program (12th quarter, excluding summer quarters). Students may only take the examination twice. Students are recommended for dismissal from the program immediately if they either (a) fail twice or (b) fail once and elect not to take the examination again.

In addition, because the primary work in the Ph.D. is independent research under the supervision of a faculty advisor, students are expected to be working with a research advisor at all times. This advisor must either be a voting member of the Computational Media Department faculty or another UC Santa Cruz faculty member granted advisor status by the department in the student's case (either at the time of the student's admission or at a later point). Any student who ends a term without a faculty advisor will be issued a warning. If a student ends two academic quarters without an advisor they will be recommended for dismissal from the program immediately, unless granted an exception. Students interested in transferring faculty advisors should discuss this with their current and proposed faculty advisors and submit the Petition to Transfer Advisors once a transfer is agreed.

Applying for Graduation

Students planning to graduate should refer to the Baskin School of Engineering Graduate Studies website.

[Optional Catchall]

GAMES AND PLAYABLE MEDIA M.S.

Introduction

The M.S. in Games and Playable Media program has suspended admissions for the 2025-26 year.

The M.S. in Games and Playable Media (GPM) prepares students to make professional contributions to the creation of games and other forms of media that invite and structure play. The degree is offered at the UC Santa Cruz Silicon Valley Campus in Santa Clara, enabling connection and collaboration with local industry. The curriculum includes deep engagement with game creation as well as a focus on professional development. Students can also take advantage of course offerings in games and related technologies on the Santa Cruz campus, and the potential for collaborations with the department’s field-leading research groups.

The curriculum covers four core competencies: (1) game design and development, which includes working in a group to design, develop software experiences, elicit user input and test the user experience; (2) game development technologies, including gameplay programming techniques and knowledge of game engines and middleware; (3) knowledge and working practice in industry-standard tools for collaboration and project management, source code management, and content creation; and (4) specialized concentrations in areas such as development of alternative input devices, level design, game audio, game narrative, and others.

The M.S. in Games and Playable Media is a five-quarter program that spans one and two-thirds academic years. Students are expected to complete coursework in five academic quarters, without leaves of absence.

Requirements

Course Requirements

All students are required to take 60 credits to complete the M.S.. (Any electives not found on the list below must be approved by the Games and Playable Media vice chair on a case-by-case basis.) Required courses are as follows:

All of the following courses:

GAME 200	Game Design Systems	5
GAME 221	Professional Development for Game Makers	5
GAME 231	Game Technologies	5
GAME 270	Games and Playable Media Studio I	5
GAME 271	Games and Playable Media Studio II	5
GAME 272	Games and Playable Media Studio III	5
GAME 280A	Games Proseminar	2

GAME 280A must be taken a minimum of two times.

Plus one of the following options:

	Either this course	
GAME 230	Fundamentals of Game Engineering	5
	or these courses	
GAME 235	Game Development I	5
GAME 236	Game Development II	5

Students who lack sufficient technical preparation to enter course Games and Playable Media GAME 230, Fundamentals of Game Engineering, must take both GAME 235, Game Development I, and GAME 236, Game Development II. Assessment of technical preparation will be performed based on completed coursework prior to entry into the program, discussion with the student, and, at the program's discretion, use of a technical assessment examination.

Three courses from the electives list below, 15 credits (5 credits each)

CMPM 230	Data Science in Computational Experiences	5
CMPM 232	Psychology of Play	5
CMPM 235	User Evaluation of Technology	5
CMPM 244	Artificial Intelligence in Games	5
CMPM 248	Interactive Storytelling	5
CMPM 265	Generative Methods	5
CMPM 290J	Playable Media	5
CMPM 297A	Independent Study or Research	5
GAME 201	Level Design	5
GAME 202	Introduction to Build (Advanced): Physical Computing	5
GAME 210	Game Art Intensive	5
GAME 215	Audio Direction	5
GAME 232	Advanced Game Technologies	5
GAME 240	Game Usability	5
GAME 251	Games User Research	5
GAME 252	Modeling and Simulation	5
GAME 290A	Advanced Topics in Games	5
HCI 250	Participatory Design	5
MUSC 206B	Computer-Assisted Composition	5

Credit for various CMPM 297A options varies. A maximum of five credits of Computational Media 297A (Independent Study or Research) can be used to meet degree requirements.

Other Requirements

Master's Capstone Project

Completion of a Master's Capstone Project (Plan II) is required for the master's degree. These are collaborative projects, created together with other students in the Games and Playable Media (GPM) M.S. program. Projects are typically completed by students during GAME 272, Games and Playable Media Studio III. Students are evaluated based both on their individual contributions to the project and on the overall success of the project as a whole. Each project will be demonstrated via a public presentation, and this demonstration comprises part of the final project evaluation.

Evaluation of projects is overseen by a minimum of three people, which must include the GPM vice chair along with other members of the GPM program faculty, GPM program advisory committee, and/or other instructors in the GPM program. A majority of the committee's voting members are members of the UC Santa Cruz academic senate.

Planners

There are two primary paths through the first year of the degree. Students with less technical background take GAME 235 and GAME 236 in their first year, while those with more technical background take GAME 230 in their first year. All students, regardless of whether they do GAME 235 and GAME 236 or GAME 230, are required to complete at least 60 credits.

The sample programs include summer internships or sponsored projects. These are not required, and do not bear academic credit. They are, however, strongly suggested.

Sample program for students with more technical background

Fall Quarter 1	GAME 230, Fundamentals of Game Engineering (5 credits)
	GAME 200, Game Design Systems (5 credits)
	GAME 280A, Games Proseminar (2 credits)
Winter Quarter 2	Elective 1 (5 credits)
	Elective 2 (5 credits)
	GAME 280A, Games Proseminar (2 credits)
Spring Quarter 3	GAME 231, Game Technologies (5 credits)
	GAME 270, Games and Playable Media Studio 1 (5 credits)
	GAME 221, Professional Development for Game Makers I (2 credits)

Summer	Internship or Sponsored Project
Fall Quarter 4	GAME 271, Games and Playable Media Studio II
	Elective 3 (5 credits)
	GAME 280A, Games Proseminar (2 credits)
Winter Quarter 5	GAME 272, Games and Playable Media Studio III (5 credits)
	Elective 4 (5 credits)
	GAME 280A, Games Proseminar (2 credits)

Sample program for students with less technical background

Fall Quarter 1	GAME 235, Development I (5 credits)
	GAME 200, Game Design Systems (5 credits)
	GAME 280A, Games Proseminar (2 credits)
Winter Quarter 2	GAME 236, Game Development II (5 credits)
	Elective 1 (5 credits)
	GAME 280A, Games Proseminar (2 credits)
Spring Quarter 3	GAME 231, Game Technologies (5 credits)
	GAME 270, Games and Playable Media Studio 1 (5 credits)
	GAME 221, Professional Development for Game Makers (5 credits)
Summer	Internship or Sponsored Project
Fall Quarter 4	GAME 271, Games and Playable Media Studio II
	Elective 2 (5 credits)
	GAME 280A, Games Proseminar (2 credits)
Winter Quarter 5	GAME 272, Games and Playable Media Studio III (5 credits)
	Elective 3 (5 credits)
	GAME 280A, Games Proseminar (2 credits)

Transfer Credit

Up to three School of Engineering courses fulfilling the degree requirements of the M.S. degree may be taken before beginning the graduate program through the concurrent enrollment program. The game art, game writing, and game sound requirements of the M.S. program may also be satisfied through courses from other institutions or prior UCSC coursework. Petitions should be submitted along with the transcript from the other institution. For courses taken at other institutions, copies of the syllabi, examinations, and other coursework should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UCSC.

At most, a total of three courses may be transferred from concurrent enrollment and other institutions.

Review of Progress

On an ongoing basis, the faculty reviews the progress of every student remaining on track to complete the degree in five consecutive academic quarters. Students not making adequate progress toward completion of degree requirements (see the Graduate Handbook for policy on satisfactory academic progress) are subject to dismissal from the program. Students with academic deficiencies may be required to take additional courses. Full-time students with no academic deficiencies are normally expected to complete the degree requirements at the rate of at least two courses per quarter, and move forward through the course sequences together with their cohort, remaining on track to complete the degree in five academic quarters.

Students receiving one unsatisfactory grade (U or grade below B) in a Baskin Engineering (BE) course are not making adequate progress and will be placed on academic probation for the following quarter of registered enrollment. Withdrawing or taking a leave of absence does not count as enrollment. Part-time enrollment is counted as a half quarter of enrollment. Students who are on academic probation or are not enrolled full time are no longer guaranteed any previously committed funding. Should students receive an unsatisfactory grade (U or below B) in a Baskin Engineering course while on probation, the Computational Media Department may request the graduate dean to dismiss that student from the graduate program. If after being removed from probation, the student again receives an unsatisfactory grade (U or below B) in a Baskin Engineering course, they will return immediately to academic probation.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their graduate advisor and the program vice chair immediately. Students may appeal their dismissal.

Applying for Graduation

Students planning to graduate should refer to the Baskin School of Engineering Graduate Studies website.

Optional Catchall

HUMAN COMPUTER INTERACTION M.S.

Introduction

The Master's of Science (M.S.) in Human Computer Interaction (HCI) aims to train students in core skills for human-computer interaction professionals: design methodologies, ethical and inclusive practices, prototyping and technical build skills, eliciting and integrating subject matter knowledge, user research methods, effective teamwork, professional communication, and career planning—all within the context of user experience (UX) and interaction. The curriculum is designed to accommodate students who have expertise in the social sciences, technical skills, and/or subject matter knowledge. Students with varying knowledge will be intentionally mixed together in coursework, in order to maximize peer learning and collaboration across strengths. The degree is offered in Santa Clara, California at the Silicon Valley Campus of UCSC, alongside the Games and Playable Media, and Natural Language Processing M.S. degrees, to enable students to connect and collaborate across programs and with local industry leaders.

The M.S. in Human Computer Interaction is a four-quarter program that begins in fall quarter, includes career planning courses and activities, and encourages student internships during summer. The HCI M.S. program is a Plan II master's program, which has a capstone requirement. Students are expected to complete coursework in four academic quarters, without leaves of absence.

Requirements

Course Requirements

All students are required to complete at least 53 credits for the M.S. in Human Computer Interaction. The HCI MS program is a Plan II Masters program, which has a capstone requirement fulfilled via the HCI 271 and HCI 272 course sequence. The required courses are as follows:

All of the following courses:

HCI 200	Introduction to HCI	5
HCI 201	Introduction to HCI Methods	5
HCI 220	Ethics and Activism in Tech and Design	5
HCI 271	HCI Capstone 1	5
HCI 272	HCI Capstone 2	10

Plus one of the following courses:

HCI 202A	Introduction to Build: Bootcamp	5
HCI 202B	Introduction to Build (Advanced): Physical Computing	5

Students with a less technical background should enroll in HCI 202A, while students with a more technical background (e.g., comfortable with programming basics) should enroll in the advanced course HCI 202B. The courses are generally offered during the same quarter.

Plus this two-credit course which must be taken every academic quarter:

HCI 290	HCI Seminar	2

HCI 290 must be taken every quarter for a total of four times (8 credits).

None of the above core HCI classes may count toward the elective requirement below.

Two courses from the elective list below:

All students are required to enroll and pass (letter grade "B-" or better or an "S" grade) in a minimum of two elective courses chosen from the list in the catalog.

ART 184	3D Art and Design I	5
ART 185	3D Art and Design II	5
CMPM 201	Introduction to Computational Media	5
CMPM 203	Computational Media Methods	5
CMPM 230	Data Science in Computational Experiences	5
CMPM 232	Psychology of Play	5
CMPM 235	User Evaluation of Technology	5
CMPM 237	Advanced Topics in Human-Robot Interaction	5
CMPM 243	Social Computing Research: Design, Algorithms, and Incentives	5
CMPM 248	Interactive Storytelling	5
CMPM 290J	Playable Media	5
CMPM 290A	Topics in Computational Media	5
CMPM 297A	Independent Study or Research	5
FILM 225	Software Studies	5
FILM 232	Audiovisual Ethnography	5
FILM 283	New Media Art and Digital Culture	5
GAME 200	Game Design Systems	5
GAME 201	Level Design	5
GAME 210	Game Art Intensive	5
GAME 215	Audio Direction	5
GAME 231	Game Technologies	5
GAME 232	Advanced Game Technologies	5
GAME 240	Game Usability	5
GAME 250	Foundations of Serious Games and Gamification	5
GAME 251	Games User Research	5
GAME 290A	Advanced Topics in Games	5
HCI 250	Participatory Design	5

*A maximum of five credits of CMPM 297A, Independent Study or Research, can be used to meet degree requirements.

Other Requirements

Master's Capstone Project

Completion of a master's capstone project is required for the M.S. degree. All students are required to take the capstone sequence (HCI 271 and HCI 272), in which they work in teams with industry, community, or faculty sponsors. The capstone is the culmination of the degree where student teams will cover the end-to-end design process of a product lifecycle using the skills they have developed throughout the M.S. degree. HCI 271 involves discovery, exploration, and research of the design space. HCI 272 involves prototyping, evaluation, and iteration. Both courses require students to develop and hone inclusive design practices, documentation and communication of design decisions to multiple stakeholders, and team professionalism.

During HCI 271, Capstone I, students form project teams with capstone sponsors (e.g., industry sponsors or faculty), develop a UX strategy, design and execute user research, analyze user data, and deliver polished user research deliverables to stakeholders. HCI 272, Capstone II, is a double-weighted course (10 credits) in which the same student teams produce a polished, high quality capstone project (e.g., high fidelity prototype, including design components) through extensive building of prototypes, user evaluations, and iterations of designs. The quarter culminates in a showcase where students communicate their work to stakeholders in multiple mediums.

Capstone sponsors are chosen at the discretion of the HCI vice chair, HCI executive director, and the HCI 271/HCI 272 instructors. Students may be provided the option to propose a sponsor which must be approved by instructors, by a deadline determined by instructors. Capstone student teams will ultimately be decided by instructors and will remain constant throughout the capstone sequence. In the case sponsors no longer can participate in either capstone class, instructors will reassign student teams to other sponsors as appropriate.

In the summer between HCI 271 and HCI 272 there may be opportunities to work independently with capstone sponsors or non-capstone related projects. The student is responsible for any agreement to do work with sponsors over the summer; the HCI M.S. program has no oversight nor role with such arrangements. Capstone-related work cannot be carried out during the summer without prior approval from capstone instructors.

Planners

There are two primary paths through the first year of the degree that require the same number of courses. Students with less technical background take HCI 202A, while those with more technical background take HCI 202B. Some electives are only offered in particular quarters/years; students should carefully plan for such electives before the first fall quarter. Students can refer to the Baskin Engineering Schedule of Classes and can contact the graduate advisor with questions. The sample programs include summer internships or sponsored projects. These are not required, and do not bear academic credit. They are, however, strongly recommended.

Sample program for students with less technical background

Fall Quarter 1	HCI 200, Introduction to HCI (5 credits)
	HCI 201, Introduction to Design Methods in HCI (5 credits)
	HCI 290, HCI Seminar (2 credits)
Winter Quarter 2	HCI 202A, Introduction to Build: Bootcamp (5 credits)
	HCI 220, Ethics and Activism in Tech and Design (5 credits)
	Elective (5 credits)
	HCI 290, HCI Seminar (2 credits)
Spring Quarter 3	HCI 271, Capstone I (5 credits)
	Elective (5 credits)
	HCI 290, HCI Seminar (2 credits)
Summer	Internship, Independent Studies, self-directed learning, etc. Sponsored Project
Fall Quarter 4	HCI 272, Capstone II (10 credits)
	HCI 290, HCI Seminar (2 credits)

Sample program for students with more technical background

Fall Quarter 1	HCI 200, Introduction to HCI (5 credits)
	HCI 201, Introduction to Design Methods in HCI (5 credits)
	HCI 290, HCI Seminar (2 credits)
Winter Quarter 2	HCI 202B, Introduction to Build (Advanced): Physical Computing (5 credits)
	HCI 220, Ethics and Activism in Tech and Design (5 credits)
	Elective (5 credits)
	HCI 290, HCI Seminar (2 credits)
Spring Quarter 3	HCI 271, Capstone I (5 credits)
	Elective (5 credits)
	HCI 290, HCI Seminar (2 credits)
Summer	Internship, Independent Studies, self-directed learning, etc.
Fall Quarter 4	HCI 272, Capstone II (10 credits)
	HCI 290, HCI Seminar (2 credits)

Transfer Credit

Up to three School of Engineering courses fulfilling the degree requirements of the M.S. degree may be taken before beginning the graduate program through the concurrent enrollment program. One of the two core introduction classes (Intro to Build, Intro to HCI Methods) may also be satisfied through courses from other institutions or prior UC Santa Cruz coursework. Petitions should be submitted along with the transcript from the other institution. For courses taken at other institutions, copies of the syllabi, examinations, and other coursework should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UC Santa Cruz.

At most, a total of three courses may be transferred from concurrent enrollment and other institutions.

Review of Progress

On an ongoing basis, the faculty reviews the progress of every student so they remain on track to complete the degree in four consecutive academic quarters. Students not making adequate progress toward completion of degree requirements (see the Graduate Handbook for policy on satisfactory academic progress) are subject to dismissal from the program. Students with academic deficiencies may be required to take additional courses. Full-time students with no academic deficiencies are normally expected to complete the degree requirements at the rate of at least two courses per quarter, and move forward through the course sequences together with their cohort, remaining on track to complete the degree in a single four-quarter year.

Students receiving one unsatisfactory grades (U or grade below B) in a Baskin Engineering course are not making adequate progress and will be placed on academic probation for the following quarter of registered enrollment. Withdrawing or taking a leave of absence does not count as enrollment. Students who are on academic probation or are not enrolled full time are no longer guaranteed any previously committed funding. Should students receive an unsatisfactory grade (U or below B) in a Baskin Engineering course while on probation, the Computational Media Department may request the graduate dean to dismiss that student from the graduate program. If after being removed from probation, the student again receives an unsatisfactory grade (U or below B) in a Baskin Engineering course, he or she will return immediately to academic probation.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their graduate advisor, the program vice chair, or the executive director immediately. Students may appeal their dismissal.

Optional Catchall

Applying for Graduation

Students planning to graduate should refer to the Baskin Engineering Graduate Studies website.

SERIOUS GAMES M.S. (DISCONTINUED)

As of the 2023-2024 academic year, the Serious Games Master of Science (M.S.) program has been discontinued. For continuing students who entered the program prior to 2023-2024, please refer to the degree requirements published at the time of entering UCSC or subsequent catalog(s).

Computer Science and Engineering

Baskin Engineering
(831) 459-2158
engineering.ucsc.edu

PROGRAMS OFFERED

Computer Engineering B.S. (p. 570)

Computer Science B.S. (p. 577)

Computer Science B.A. (p. 583)

Network and Digital Technology B.A. (p. 589)

Computer Engineering Minor (p. 595)

Computer Science Minor (p. 595)

Computer Science and Engineering Bachelor's/Master's Contiguous Pathway (p. 596)

Computer Science and Engineering M.S. (p. 597)

Natural Language Processing M.S. (p. 603)

Computer Science and Engineering Ph.D. (p. 600)

Human Language Media and Modeling Designated Emphasis (p. 605)

OTHER PROGRAMS OF INTEREST

Computer Science: Computer Game Design B.S. (p. 547)

Robotics Engineering B.S. (p. 617)

Technology and Information Management B.S. (p. 648)

Technology and Information Management Minor (p. 654)

Computer scientists and engineers study the design and architecture of digital systems, their properties, and their application. The science and engineering of computing systems includes a variety of disciplines from the mathematical study of computation to the design of architectures leveraging advanced technologies, as well as expertise in the many different levels of abstraction in between, and the realization of a vast array of applications and information technologies. These systems are now present in almost every human endeavor, in the form of embedded systems to cloud-scale computation, from personal devices to society-scale networks and systems, from artificial intelligence (AI) to the everyday systems they automate.

Computing is the field that is most strongly influencing the societal, industrial, and technological advances of this century, bringing a revolution spanning from what humans can do (via information technology, artificial intelligence, data science, e-commerce, and more) to how they communicate (the web, social networks, generative AI, mobile devices, and virtual/augmented reality). Indeed, as of 2023, six of the seven largest companies worldwide by market capitalization are all information technology companies. The rapid and targeted communication afforded by these systems has affected our culture and politics. Computing, from hardware to AI, algorithms and networking, is responsible for an increasing share of the value even of products that once were purely mechanical systems, such as automobiles.

Computing spans multiple areas that are continually evolving, spurred by both technological and theoretical advances; the current areas can be roughly categorized as follows:

- Design and architecture, or how computing systems are built: from transistors to architectures and parallel systems.
- Systems, or how the architectures can be organized: operating systems, storage, networking, and databases, the languages used to program them, and the techniques used to ensure their secure operation.
- Theory, concerning the abstract properties of computing systems, spanning from the theory of computation to algorithms, from the foundations of programming languages and concurrency to the theory of databases and distributed systems.
- Artificial Intelligence, or how to computationally understand information about the world, including data science, generative AI, machine learning, natural language processing and vision.
- Applications, or how computing systems can be used and what the implications of their use are, from web to mobile systems, from vision to assistive technologies, from fairness and privacy issues to the societal implications of computing, to the incentive structures that make collaboration and communication possible.

Computing at UC Santa Cruz has already attained a very high level of international recognition. The Computer Science and Engineering Department's organization, as a single cohesive department, facilitates new projects and courses that span multiple areas. As a broad department, it benefits from a wider and more prepared graduate student cohort, and the close coordination of degrees with course offerings that provide engineering majors with more streamlined and cutting-edge degree programs. With its proximity to Silicon Valley and its outstanding research, UCSC is a leader in computing research and education.

The Computer Science and Engineering Department offers five undergraduate degree programs, three undergraduate minors, and graduate master's and doctoral degree programs.

Two additional programs in Baskin Engineering share the same introductory programming courses as the Computer Science and Engineering Department's computing majors. The Computational Media Department offers a degree that focuses on computer game design by providing students with artistic, systems, and management perspectives for developing computer games. The Electrical and Computer Engineering Department offers a degree in robotics that builds on courses in computer engineering and electrical engineering, combined with mechanical engineering, that focuses on constructing and controlling robotic devices.

UNDERGRADUATE PROGRAM

The Computer Science and Engineering Department at UC Santa Cruz offers five undergraduate degrees and three related minors:

The **bachelor of science (B.S.) in computer engineering** prepares graduates for a rewarding career in engineering. UCSC computer engineering graduates will gain a thorough grounding in the principles and practices of computer engineering and the scientific and mathematical principles upon which they are built; they will be prepared for further education (both formal and informal) and for productive employment in industry. Because computer engineering is so broad, the B.S. in computer engineering offers four specialized concentrations for completing the program: systems programming, computer systems, networks, and digital hardware.

The **bachelor of science (B.S.) in computer science** is appropriate for students desiring a strong concentration in the core areas of computer science—algorithms, programming languages, and systems—with more courses in computer science, computer engineering, and computational media; this program also allows for a few electives outside of science and engineering.

The **bachelor of arts (B.A.) in computer science** is designed to give students a solid grounding in both theoretical and practical topics in computer science, computer engineering, and mathematics while leaving flexibility for a broad program of study, including some courses outside of science and engineering, or even for a double major in another discipline.

The **bachelor of arts (B.A.) in network and digital technology** provides students with in-depth knowledge of the underlying structure and function of network and computer technology and the design processes that make those technologies function. The program is tailored to students who wish to combine technology with other fields or have a general focus on digital-computer networks. The B.A. in network and digital technology is not an engineering degree, but B.A. graduates will be prepared to work with technology development in other capacities, or join the computer network workforce.

At UC Santa Cruz, students in computing majors are first introduced to programming using the Python programming language in CSE 20, Beginning Programming in Python. CSE 30, Programming Abstractions: Python, exposes students to more advanced concepts. CSE 30 assumes some Python experience. Students with a prior programming course, AP credit, or clearing the "Test-out" bar will start with CSE 30.

Students trained in a different language should self-study Python to prepare for CSE 30. See the CSE 20 Testout Exam website for resources and further information. CSE40 is also required for all to learn the basics of artificial intelligence for bachelor of science (B.S.) in computer science and bachelor of arts (B.A.) in computer science.

The bachelor of science (B.S.) in computer science, the bachelor of science (B.S.) in computer engineering, and bachelor of arts (B.A.) in network and digital technology also require mastering C and computer organization. CSE 12, Computer Systems and Assembly Language & Laboratory, provides the underpinnings of computer organization necessary for mastering the C programming language. C programming is introduced in CSE 13S, which depends on CSE 12.

Many computer engineering and computer science students continue their education through the M.S. degree. The Department of Computer Science and Engineering offers a **combined B.S./M.S. pathway** in computer science and engineering that enables eligible undergraduates to move without interruption to the graduate program. Interested students should contact their adviser for more details.

COURSES FOR NON-MAJORS

The Department of Computer Science and Engineering offers course CSE 3, Personal Computer Concepts: Software and Hardware, providing students an introductory course on the design and use of computers from an engineering viewpoint. Other courses of interest to non-majors include CSE 20, Beginning Programming in Python and CSE 12, Computing Systems and Assembly Language & Laboratory an introductory course on computer systems, system software, and machine-level programming; CSE 80N, Introduction to Networking and the Internet, an introduction to technological services of the Internet; and CSE 80A, Universal Access: Disability, Technology, and Society.

GRADUATE PROGRAM

The Department of Computer Science and Engineering offers a doctorate (Ph.D.) and a master of science (M.S.) degree program. Graduate students in these programs establish a solid foundation in algorithms, architectures, programming languages, and then proceed to a thorough study of recent developments in their selected area of specialization. The department offers the M.S. in the Natural Language Processing professional degree program.

The normative time for the CSE Ph.D. program is five years for a full-time student.

Students admitted to the CSE Ph.D. program are generally supported in the form of a combination of fellowships, teaching assistantships, and/or graduate research assistantships.

The normative time for CSE M.S. thesis track programs is two years for a full-time student and from one year to four quarters for the M.S. project track programs.

The CSE M.S. thesis track is for students interested in advanced studies and carrying out independent research as well as those contemplating pursuit of a Ph.D. degree.

The M.S. in Natural Language Processing program is a five-quarter program offered through the UCSC campus location in Silicon Valley.

COMPUTER ENGINEERING B.S.

Information and Policies

Introduction

The bachelor of science (B.S.) in computer engineering prepares graduates for a rewarding career in engineering. UC Santa Cruz computer engineering graduates will gain a thorough grounding in the principles and practices of computer engineering and the scientific and mathematical principles upon which they are built; they will be prepared for further education (both formal and informal) and for productive employment in industry. Because computer engineering is so broad, the B.S. in computer engineering offers four specialized concentrations for completing the program: systems programming, computer systems, networks, and digital hardware

Systems Programming Concentration

The systems programming concentration focuses on software systems: courses include operating systems, compilers, software engineering, and advanced programming. Students finishing this concentration are very well prepared for building large software systems of all types. This concentration is the closest one to a computer science major- the main differences are that it does not require computer science theory courses, but because of the core computer engineering requirements, includes more hardware and electronics than a computer science bachelor's degree.

Computer Systems Concentration

The computer systems concentration provides a balance between software and hardware design. Students are prepared for a large variety of different design tasks, especially those requiring the integration of hardware and software systems, but may need further training for any particular specialization.

Networks Concentration

The networks concentration focuses on communication between computers, covering both network hardware and protocols. Students finishing this concentration are well prepared for the design of wired and wireless network systems.

Digital Hardware Concentration

The digital hardware concentration focuses on hardware design and includes more electronics than the other concentrations. Students finishing this concentration are well prepared for building hardware systems. This concentration is the closest one to an electronics major; the main differences are that it does not require as much electronics theory or

analog electronic design, but because of the core computer engineering requirements, requires more software skills.

Program Learning Outcomes

For the Computer Engineering B.S. degree, the program learning outcomes are:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design a system, component, or process to meet desired needs within realistic constraints;
- an ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty;
- an ability to communicate effectively; and
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Academic Advising for the Program

The Baskin Engineering undergraduate advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at the University of California, Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer students who want to pursue the computer engineering major, must have applied and been admitted to UC Santa Cruz as a proposed computer engineering major.

Transfer Admission Screening Policy

Students should complete at least six of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5
AM 20	Ordinary Differential Equations for Engineers	5
AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7
ECE 13	Computer Systems and C Programming	7
PHYS 5A	Introduction to Physics I	5
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1

Lecture-lab combinations count as one course.

CSE 13S and ECE 13 are alternatives; only one or the other, whichever is completed first, can count toward the six courses.

AM 10 and MATH 21 are alternatives; only one or the other, whichever is completed first, can count toward the six courses.

AM 30 and MATH 23A are alternatives; only one or the other, whichever is completed first, can count toward the six courses.

To earn their degree within two years after transferring, it is recommended that transfer students have completed courses transferable as PHYS 5A/PHYS 5L, PHYS 5C/PHYS 5N, MATH 19A, MATH 19B, and one of the following: MATH 23A, AM 10, MATH 21, or AM 20. In addition, completion of at least one programming course is recommended.

Cumulative GPA

Their cumulative GPA should be at least 2.8 in all of the courses attempted.

Transfer students who wish to graduate in two years are strongly recommended to complete all lower division major requirements and most General Education requirements before coming to UC Santa Cruz. Please note that while AP courses satisfy screening requirements they do

not count toward the minimum GPA. If you satisfy the transfer admissions

screening requirements, you are not required to take additional coursework in order to declare.

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. Instructions for declaring a major in

Baskin Engineering are on the Baskin Engineering undergraduate advising website.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the Transfer Admission Screening requirements.

In order to declare the computer engineering major students must be listed as a proposed major within Baskin Engineering. Please refer to the Baskin Engineering "Proposed Major Retention" and its "Declaring a Baskin Engineering Major" sections in the catalog for more information.

In addition to being listed as a proposed Baskin Engineering major, declaration of the computer engineering major in the first six quarters of enrollment at UC Santa Cruz is based on performance in the following lower-division courses required for the major:

CE Major Qualification Courses

Both of these:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

And one of these (whichever is completed first):

AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5

And one of these (whichever is completed first):

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

And one of these:

CSE 13S	Computer Systems and C Programming	7
ECE 13	Computer Systems and C Programming	7

And all of these:

AM 20	Ordinary Differential Equations for Engineers	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7
PHYS 5A	Introduction to Physics I	5
PHYS 5L	Introduction to Physics I Laboratory	1
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1

Appeal Process

Students who are informed that they are not qualified for the major may appeal this decision by submitting a letter to the undergraduate director through the Baskin Engineering undergraduate advising office within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision.

How to Declare a Major

There are four steps to declaring a Baskin Engineering major. For a detailed guide to this process, please consult the Baskin Engineering Declare Your Major website.

Students should start the declaration of major process by completing Step One on the Baskin Engineering Declare Your Major website as soon as they complete 36 credits in the computer engineering major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed enough courses.

Letter Grade Policy

All students admitted to a Baskin Engineering major, or seeking admission to a major, must take all courses required for that major for a letter grade. This policy includes courses required for these degrees that are sponsored by other departments.

[Optional Catchall]

Course Substitution Policy

Undergraduate engineering students who wish to substitute a major course with a course from another department at UC Santa Cruz, or from another academic institution, must first seek approval through the Baskin Engineering Undergraduate Advising Office. The advising office requires a Petition for Course Substitution be approved before credit for an alternate course can be applied to any Baskin Engineering major requirement.

Petition forms are available at the Undergraduate Advising Office and online.

Petitions and procedures for approval must be obtained from and submitted to the Undergraduate Advising Office.

Community Colleges courses once enrolled at UCSC

Once enrolled in Baskin Engineering students who wish to take a course at a California community college must first check Assist.org to see if the course is equivalent at UC Santa Cruz. If the course is not listed on Assist.org, students must submit a course substitution petition to the BE Undergraduate Advising Office to have it reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course

description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

If the course is approved for equivalency or was on Assist.org, then students with declared majors must also receive approval by their major department to take the class at the community college **PRIOR** to taking it. Undeclared students must receive prior approval

from the CSE Department to substitute a course for CSE 13S. Undeclared students do not require prior approval for other courses listed on Assist.org. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Four-Year Institutions and the UC Education Abroad Program (UCEAP)

Students who intend to take a course at a four-year institution or UC Education Abroad, must submit a Course Substitution Petition to the BE Undergraduate Advising Office to have the course reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

Double Majors and Major/Minor Combinations Policy

Students completing the computer engineering major cannot also receive the computer engineering minor or the Network and Digital Technology B.A. degree.

Study Abroad

Honors

Majors are considered for “Honors in the Major” and “Highest Honors in the Major” based on their GPA and on results of undergraduate research and other significant contributions to Baskin Engineering. Students with a GPA of 3.70, in most cases, receive highest honors. Students with a GPA of 3.30, in most cases, receive honors. Students with particularly significant accomplishments in undergraduate research or contributions to Baskin Engineering may be considered with a lower GPA. Computer engineering juniors and seniors may also be eligible for election to the UC Santa Cruz chapter of Tau Beta Pi, the national engineering honor society founded in 1885.

Materials Fee and Miscellaneous Fees

Please see the section on fees under Baskin Engineering.

Requirements and Planners

Course Requirements (all concentrations)

All students in the computer engineering major take the same core courses, which give the fundamentals of programming and hardware design, supported by the physics and mathematics necessary to understand them. Students must complete all of the courses listed within their selected concentration, and they must complete the capstone sequence. The comprehensive requirement for computer engineering majors is satisfied by completion of the capstone course. Some courses may be satisfied via exam credit.

Lower-Division Courses

All of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following

AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5

Plus one of the following

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus all of the following

AM 20	Ordinary Differential Equations for Engineers	5
CSE 12	Computer Systems and Assembly Language and Lab	7

Plus one of the following

CSE 13S	Computer Systems and C Programming	7
ECE 13	Computer Systems and C Programming	7

Plus all of the following

CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
PHYS 5A	Introduction to Physics I	5
PHYS 5L	Introduction to Physics I Laboratory	1
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1

Students with no prior programming will take CSE 20 before CSE 30 and CSE 12. Students with a prior programming course, AP credit, or clearing the “Test-out” bar will start with CSE 30, and CSE 12.

Plus one of the following options

	Either these courses	
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
	or this course	
ECE 9	Statics and Mechanics of Materials	5

Upper-Division Courses

Core requirements:

(In addition to the core requirements students must complete the courses for one of the concentrations.)

CSE 100	Logic Design	5
CSE 100L	Logic Design Laboratory	2
CSE 101	Introduction to Data Structures and Algorithms	5
CSE 120	Computer Architecture	5
CSE 121	Embedded System Design	7
CSE 185E	Technical Writing for Computer Science and Engineering	5
ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 103	Signals and Systems	5
ECE 103L	Signals and Systems Laboratory	2

Plus one of the following

CSE 107	Probability and Statistics for Engineers	5
STAT 131	Introduction to Probability Theory	5

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in computer engineering is satisfied by one of the following:

CSE 185E	Technical Writing for Computer Science and Engineering	5
CSE 195	Senior Thesis Research	5

Comprehensive Requirement

Capstone Requirement

All computer engineering students complete one of the following capstone sequences:

Both of the following courses

CSE 123A	Engineering Design Project I	5
CSE 123B	Engineering Design Project II	7

Or all of the following courses

CSE 129A	Capstone Project I	2
CSE 129B	Capstone Project II	5
CSE 129C	Capstone Project III	5

Or the following course

CSE 195	Senior Thesis Research	5

CSE 195 also requires the submission of an approved senior thesis.

Or the following course

ECE 118	Introduction to Mechatronics	10

May not also be used as a concentration elective.

Concentration Courses

All students complete the core courses, disciplinary communication (DC), and comprehensive requirements listed above, In addition to these courses, students must complete all courses listed within their selected concentration below.

Computer Systems Concentration Requirements

One of the following courses

CSE 125	Logic Design with Verilog	7
CSE 122	Introduction to VLSI Digital System Design	5

CSE 222A, Advanced VLSI Digital System Design, may be substituted for CSE 122 with department approval.
CSE 225, Introduction to ASIC Systems Design, may be substituted for CSE 125 with department approval. Petition forms for course substitution are available at the undergraduate advising office and on the Undergraduate Advising website.

Plus the following course

CSE 130	Principles of Computer Systems Design	5

Plus one of the following courses

CSE 111	Advanced Programming	5
CSE 134	Embedded Operating Systems	5

Plus one upper-division or graduate elective

From the approved elective list for the computer engineering major.

Digital Hardware Concentration Requirements

The following course

CSE 125	Logic Design with Verilog	7

CSE 225, Introduction to ASIC Systems Design, may be substituted for CSE 125 with department approval. Petition forms for course substitution are available at the undergraduate advising office and on the Undergraduate Advising website.

Plus one of the following options

	Either these courses	
ECE 171	Analog Electronics	5
ECE 171L	Analog Electronics Laboratory	2

	or this course	
CSE 122	Introduction to VLSI Digital System Design	5

CSE 222A, Advanced VLSI Digital System Design, may be substituted for CSE 122 with department approval. Petition forms for course substitution are available at the undergraduate advising office and on the Undergraduate Advising website.

Plus one of the following courses

CSE 122	Introduction to VLSI Digital System Design	5
CSE 220	Computer Architecture	5
CSE 228A	Agile Hardware Design	5
ECE 171	Analog Electronics	5
ECE 171L	Analog Electronics Laboratory	2
ECE 173	High-Speed Digital Design	7

Lecture-lab combinations count as one course.

Note that CSE 122 or ECE 171 and ECE 171L cannot be used again here.

Plus one upper-division or graduate elective

From the approved elective list for the computer engineering major or the Computer Engineering B.S. Digital Hardware Concentration Grad-Level Course List.

Networks Concentration Requirements

All of the following courses

CSE 150	Introduction to Computer Networks	7
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 130	Principles of Computer Systems Design	5

Plus one of the following options

Either the lecture-lab combination of CSE 151 and CSE 151L, or one upper-division or graduate elective from the approved elective list for the computer engineering major.

System Programming Concentration Requirements

The following course

CSE 130	Principles of Computer Systems Design	5

Plus one of the following courses

CSE 111	Advanced Programming	5
CSE 134	Embedded Operating Systems	5

Plus the following course

CSE 150	Introduction to Computer Networks	7

Plus one of the following options

Either the lecture-lab combination of CSE 151 and CSE 151L, or one upper-division or graduate elective from the approved elective list for the computer engineering major.

Plus one of the following courses

CSE 113	Parallel and Concurrent Programming	5
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 110A	Fundamentals of Compiler Design I	5

CSE 156 and CSE 156L lecture-lab combination count as one course.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Below are two sample academic plans for students majoring in computer engineering. Since the plans for the third and fourth years will vary according to the concentration and capstone selected, placeholders for these courses have been indicated with “concentration course” and “capstone course.” As part of the major declaration process students prepare a four-year plan based on a concentration and this may affect the placement of other courses as well. Careful planning at the time of declaration is required to complete the degree within four years. Entering frosh who have little programming experience, are strongly advised to take a programming course in the fall quarter. Students completing the courses in the four-year planners will have satisfied the MF, PR-E, SI, and SR general education requirements.

Plan One for Entering Frosh
This plan is for students with programming experience who are prepared for MATH 19A.

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 19A CSE 30 COLL 1	MATH 19B CSE 12 WRIT 1/WRIT	AM 30 CSE 13S	

		1E (if needed)	
2nd (soph)	AM 10	AM 20	CSE 101
	PHYS 5A PHYS 5L	PHYS 5C PHYS 5N	PHYS 5B PHYS 5M
	CSE 16		
	WRIT 2*		
3rd (junior)	ECE 101 ECE 101L	CSE 107	CSE 121
	CSE 120	CSE 100. CSE 100L	Concentration course
4th (senior)	Concentration course	Capstone course	Capstone course
	ECE 103 ECE 103L	Concentration course	Concentration course
	CSE 185E		

* WRIT 2 should be taken in or before spring quarter of the second year.

Plan Two for Entering Frosh

This plan is for students with no programming experience who are placed into MATH 3.

	Fall	**Winter**	**Spring**	**Summer**
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	MATH 3	MATH 19A	MATH 19B	
	CSE 20	CSE 30	CSE 12	
		WRIT 1/WRIT 1E (if needed)		
2nd (soph)	PHYS 5A PHYS 5L	PHYS 5C PHYS 5N	PHYS 5B PHYS 5M	
	CSE 16	CSE 13S	CSE 101	
	AM 30	AM 10		
	WRIT 2*			
3rd (junior)	CSE 100 CSE 100L	ECE 101 ECE 101L	CSE 185E	
	CSE 120	AM 20	ECE 103 ECE 103L	
		STAT 131	Concentration course	
4th (senior)	CSE 121	Capstone course	Capstone course	
	Concentration course	Concentration course	Concentration course	

* WRIT 2 should be taken in or before spring quarter of the second year.

Plan for Junior Transfers

Below is a sample academic plan for students transferring to UC Santa Cruz in computer engineering for their junior year. It assumes that all but one lower-division and all general education course requirements have been satisfied. Since the plans for the third and fourth years vary according to the concentration and capstone selected, placeholders for these courses have been indicated with “concentration course” and “capstone course.” As part of the major declaration process students prepare a plan based on a concentration and this may affect the placement of other courses as well. Careful planning at the time of declaration is required to complete the degree within two years.

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T
				Summer Edge (optional)
3rd	ECE 101	CSE 101	CSE 100	

(junior)	ECE 101L		CSE 100L
	CSE 13S	CSE 107	Concentration course
		CSE 120	
4th (senior)	CS 121	Capstone course	Capstone course
	Concentration course	Concentration course	ECE 103 ECE 103L
	CSE 185E	Concentration course	

Curriculum charts for all Baskin Engineering majors are available on the department's website.

COMPUTER SCIENCE B.S.

Information and Policies

Introduction

The bachelor of science (B.S.) program is appropriate for students desiring a strong concentration in the core areas of computer science—algorithms, programming languages, and systems—with more courses in computer science, computer engineering, and computational media; this program also allows for a few electives outside of science and engineering.

Applications of computer science are found in many other areas of study, from art, music, and linguistics to social sciences, economics, business, digital, and social media, environmental and life sciences, and sciences. Thus, interdisciplinary activities are encouraged. For those students whose primary interest is in another area, a minor in computer science is offered.

Program Learning Outcomes

Recipients of a Bachelor of Science degree in Computer Science at the University of California, Santa Cruz, are expected to have the following skills and experiences:

1. Demonstrate mastery of computer science in the following core knowledge areas:
    - Algorithms, data structures, and complexity
    - Programming languages
    - Software engineering and development
    - Computer systems
2. Apply system-level perspective by thinking at multiple levels of detail and abstraction and by recognizing the context in which a computer system may function, including its interactions with people and the physical world.
3. Apply problem-solving skills and the knowledge of computer science to solve real problems.
4. Understand how technological advances impact society and the social, legal, ethical and cultural ramifications of computer technology and their usage.
5. Write about and orally communicate technical material about computer science and computer systems, broadly conceived.

Academic Advising for the Program

The Baskin Engineering undergraduate advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

It is recommended that high school students intending to apply to the computer science major have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Comparable college mathematics and science courses completed at other institutions also serve to properly prepare a student for the computer science major.

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer students who want to pursue the computer science major, must have applied and been admitted to UC Santa Cruz as a proposed computer science major.

Transfer Admission Screening Policy

The following Transfer Screening policy takes effect in fall 2024 and will be mandatory for all transfer students entering UC Santa Cruz fall 2026 and later. Transfer students entering UCSC prior to fall 2026 are encouraged to complete these requirements, but will still be considered for admission if they fulfill the 2023-2024 admissions screening requirements.

Prior to admission, transfer students must have completed the following five courses or their articulated equivalents with a combined minimum GPA of 3.0.

Lecture-lab combinations count as one course. Please note that while AP courses satisfy screening requirements they do not count toward the minimum GPA. If you satisfy the transfer admissions screening requirements, you are not required to take additional coursework in order to declare.

All of the following

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7

Plus one of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Minimum GPA

The combined GPA in the five courses above must be at least a 3.0.

Furthermore, transfer students entering in the fall must have completed at least three of these courses by the end of the fall term of the previous academic year and have a minimum 3.0 GPA over all completed CS major qualification courses at that time.

Transfer students are strongly recommended to complete one course out of MATH 21, AM 10, MATH 23A or AM 30, and most general education requirements prior to arriving at UC Santa Cruz.

Most courses in the computer science program at UC Santa Cruz have a strong theoretical component to prepare the student for designing, as opposed to simply using, computer systems. Often, courses taken at other institutions which emphasize applications of current languages and computers do not count toward the computer science major at UCSC.

At UCSC, computer science students are first introduced to programming using the programming language Python. The core programming sequence—courses CSE 30 and CSE 13S—exposes students to both Python and C. Many upper-division courses that involve programming use the C and C++ programming languages.

Transfer students who are not familiar with both an object-oriented language may need to take a remedial course. Students familiar with C++ and Unix should find the transition to Python and C relatively simple.

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. Instructions for declaring a major in the Baskin School of Engineering are on the Baskin Engineering undergraduate advising major declaration page.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the Transfer Admission Screening requirements.

For all students, it is necessary to be listed as a proposed computer science major within Baskin Engineering before being able to declare the major. Additionally, students must satisfy the following three criteria to qualify for the CS B.S. major:

Declare

Students must declare CS (Computer Science B.S. or Computer Science B.A.) as their major between student's second to sixth quarter.

CS B.S. Major Qualification courses

Students must have completed the following CS major qualification courses to qualify for the CS B.S. major:

Complete these three courses

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 30	Programming Abstractions: Python	7

Plus one of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Cumulative GPA

Students must also have a cumulative GPA of at least 3.0 in the CS major qualification courses attempted at UC Santa Cruz, with at most one unsuccessful attempt (grade C-, D+, D, D-, F, or NP) permitted in a CS major qualification course. Courses satisfied via exam credit are not counted in the GPA calculation.

Appeal Process

Students who are informed that they do not qualify for the major may appeal this decision by submitting a letter to the undergraduate director through the Baskin Engineering

undergraduate advising office within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision.

How to Declare a Major

Students interested in pursuing computer science must indicate computer science as a proposed major on their application for admission to UC Santa Cruz. Students admitted to UCSC in fall 2018 or later will be able to declare a computer science major only if they have been admitted to UCSC as proposed computer science majors.

There are four steps to declaring a Baskin Engineering major. For a detailed guide to this process, please consult Baskin Engineering's Declare Your Major website.

Students should start the declaration of major process by completing Step One on the Baskin Engineering Declare Your Major website as soon as they complete the CS major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed all CS major qualification courses.

Letter Grade Policy

All students admitted to a Baskin Engineering major, or seeking admission to a major, must take all courses required for that major for a letter grade. This policy includes courses required for these degrees that are sponsored by other departments.

[Optional Catchall]

Course Substitution Policy

Undergraduate engineering students who wish to substitute a major course with a course from another department at UC Santa Cruz, or from another academic institution, must first seek approval through the Baskin Engineering Undergraduate Advising Office. The advising office requires a Petition for Course Substitution be approved before credit for an alternate course can be applied to any Baskin Engineering major requirement.

Petition forms are available at the Undergraduate Advising Office and online.

Petitions and procedures for approval must be obtained from and submitted to the Undergraduate Advising Office.

Community Colleges courses once enrolled at UCSC

Once enrolled in Baskin Engineering students who wish to take a course at a California community college must first check Assist.org to see if the course is equivalent at UC Santa Cruz. If the course is not listed on Assist.org, students must submit a course substitution petition to the BE Undergraduate Advising Office to have it reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

If the course is approved for equivalency or was on Assist.org, then students with declared majors must also receive approval by their major department to take the class at the community college PRIOR to taking it. Undeclared students must receive prior approval from the CSE Department to substitute a course for CSE 13S. Undeclared students do not require prior approval for other courses listed on Assist.org. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Four-Year Institutions and the UC Education Abroad Program (UCEAP)

Students who intend to take a course at a four-year institution or UC Education Abroad, must submit a Course Substitution Petition to the BE Undergraduate Advising Office to have the course reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

Double Majors and Major/Minor Combinations Policy

Students may not receive both the Computer Science B.A. and Computer Science B.S. degrees.

Students may not receive both the Network and Digital Technology B.A. and the Computer Science B.S. degrees.

Study Abroad

Honors

Students must obtain a GPA of 3.8 or higher in the courses in the major to be considered for the distinction of "Highest Honors in the Major." Students must obtain a GPA of 3.5 or higher in the courses in the major to be considered for the distinction of "Honors in the Major." Baskin Engineering reserves the right to withhold honors based on other criteria, such as an incident of academic dishonesty.

[Optional Catchall]

Requirements and Planners

Course Requirements

This program is designed for students who wish to maximize exposure to computer science concepts and methods by taking a large selection of upper-division computer science courses,

as well as courses in the sciences and mathematics. A minimum of 21 courses must be completed for the B.S. in computer science. Some courses may be satisfied via exam credit.

Lower-Division Courses

Computer Science and Engineering

All of the following

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
CSE 40	Machine Learning Basics: Data Analysis and Empirical Methods	5

Students with no prior programming will take CSE 20 before CSE 30, and CSE 12. Students with a prior programming course, AP credit, or clearing the CSE 20 “Test-out” bar will start with CSE 30, and CSE 12.

CSE 40 has a test-out option which can satisfy this requirement.

Plus the following

CSE 13S	Computer Systems and C Programming	7

Mathematics

Plus one of the following options:

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Applied Mathematics

One of these courses

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of these courses

AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5

Engineering Science

ECE 30	Engineering Principles of Electronics	5

Upper-Division Courses

Computer Science and Engineering

Take the following courses:

CSE 101	Introduction to Data Structures and Algorithms	5
CSE 101M	Mathematical Thinking for Computer Science	5
CSE 120	Computer Architecture	5
CSE 130	Principles of Computer Systems Design	5

Plus one of the following

CSE 102	Introduction to Analysis of Algorithms	5
CSE 103	Computational Models	5

Plus one of the following

CSE 112	Comparative Programming Languages	5
CSE 114A	Foundations of Programming Languages	5

Statistics

Take one of the following:

STAT 131	Introduction to Probability Theory	5
CSE 107	Probability and Statistics for Engineers	5

Electives

Four courses must be completed from the list below . At least one course must be a computer science and engineering course. At most two courses can be from applied mathematics, statistics or mathematics, of which at most one may be substituted with two physics classes, chosen from the following list of class pairs: PHYS 6A and PHYS 6C, PHYS 6A and PHYS 6B, PHYS 5A and PHYS 5C, PHYS 5A and PHYS 5B. Any laboratories required or recommended by the Physics Department associated with these classes are not part of the computer science B.S. major requirements.

List of B.S. electives:

1. Any 5-credit or more CSE course with a number between 100 and 189, **except** for the DC courses CSE 115A and CSE 185E/CSE 185S.

2. Any 5-credit or more CSE course with a number between 201 and 279. Approval for courses with numbers 290 and above may be requested by submitting a course substitution petition to the BE Undergraduate Advising Office. Courses with numbers 280-289 are not eligible. Undergraduate students require permission from the instructor to enroll in graduate courses.

3. CSE 195 (if not used to satisfy the DC requirement).

4. Any course from the following list:

AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5
AM 148	GPU Programming for Scientific Computations	5
AM 160	Introduction to Scientific Machine Learning	5
CMPM 120	Game Development Experience	5
CMPM 131	User Experience for Interactive Media	5
CMPM 146	Game AI	5
CMPM 163	Game Graphics and Real-Time Rendering	5
CMPM 164	Game Engines	5
CMPM 164L	Game Engines Lab	2
CMPM 171	Game Design Studio	7
CMPM 172	Game Production Studio	7
MATH 110	Introduction to Number Theory	5
MATH 115	Graph Theory	5
MATH 116	Combinatorics	5
MATH 117	Advanced Linear Algebra	5
MATH 118	Advanced Number Theory	5
MATH 134	Cryptography	5
MATH 145	Introductory Chaos Theory	5
MATH 145L	Introductory Chaos Laboratory	1
MATH 148	Numerical Analysis	5
MATH 160	Mathematical Logic I	5
MATH 161	Mathematical Logic II	5
MATH 162	Introduction to Computably Enumerable Functions and Sets and their Degrees	5
STAT 132	Classical and Bayesian Inference	5

Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement.

The DC requirement in computer science B.S. is satisfied by completing an additional course from the following options.

	Either one of these courses	
CSE 115A	Introduction to Software Engineering	5
CSE 185E	Technical Writing for Computer Science and Engineering	5
CSE 195	Senior Thesis Research	5

Course CSE 195 may be used either as an elective, or to satisfy the DC requirement, but not for both.

Comprehensive Requirement

In addition to the above requirements, students must satisfy one of the following two exit requirements: pass one of the capstone courses (see Capstone Courses below); or successfully complete a senior thesis. A passed capstone course also counts toward satisfying the minimum number of upper-division electives requirement.

Capstone Courses

Students may choose from one of the following capstone courses to satisfy their exit requirement (lecture-lab combinations count as one course):

CSE 110B	Fundamentals of Compiler Design II	5
CSE 115C	Software Design Project II	5
CSE 115D	Software Design Project - Accelerated	5
CSE 121	Embedded System Design	7
CSE 134	Embedded Operating Systems	5
CSE 138	Distributed Systems	5
CSE 140	Artificial Intelligence	5
CSE 143	Introduction to Natural Language Processing	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 145	Introduction to Data Mining	5
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 157	Internet of Things	7
CSE 160	Introduction to Computer Graphics	7
CSE 161	Introduction to Data Visualization	5
CSE 161L	Data Visualization Laboratory	2
CSE 162	Advanced Computer Graphics and Animation	5
CSE 162L	Advanced Computer Graphics and Animation Laboratory	2
CSE 163	Data Programming for Visualization	5
CSE 168	Introduction to Augmented Reality and Virtual Reality	7
CSE 181	Database Systems II	5
CSE 183	Web Applications	5
CSE 184	Data Wrangling and Web Scraping	5
CSE 187	Full Stack Web Development II	5
CMPM 172	Game Production Studio	7

Senior Thesis

The senior thesis consists of a self-contained project within the broad scope of computer science, but one that is not available in the regular course offerings. A student wishing to complete a senior thesis must successfully complete a

minimum of 5 credits in CSE 195, Senior Thesis Research. The supervision of a senior thesis student is always at the discretion of the faculty member.

The student first submits a written thesis proposal and obtains approval of a faculty sponsor. Then the student submits a written draft and makes an oral presentation to a faculty examining committee. After receiving feedback from the examining committee, the student submits one or more additional drafts, until the final draft is approved by the examining committee. The total amount of writing shall be consistent with the campus Disciplinary Communication requirement. A passing grade in CSE 195 is earned when the final thesis is approved.

CSE 195	Senior Thesis Research	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are three sample academic plans: (1) a four-year plan for the B.S. major for first-year students with programming experience; (2) an alternative first-year plan for students without programming experience; and (3) a two-year plan for the B.S. major for transfer students that have completed all general education requirements.

Students completing the courses in the planners will have satisfied the MF and SR general education requirement.

Four-Year Plan for Students with Programming Experience

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	CSE 30 MATH 19A College 1	CSE 12 MATH 19B WRIT 1/WRIT 1E (if needed)	CSE 16 AM 10	
2nd (soph)	CSE 13S AM 30 WRIT 2*	CSE 101 CSE 107	CSE 101M CSE 40	
3rd (junior)	CSE 102 CSE 120	CSE 130 Elective	Elective ECE 30	
4th (senior)	Elective DC elective	CSE 114A	Capstone elective	

* WRIT 2 should be taken in or before spring quarter of the second year.

First-Year Plan for Students Without Programming Experience

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	CSE 20 MATH 3	CSE 30 MATH 19A WRIT 1/WRIT 1E (if needed)	CSE 12 MATH 19B	
2nd (soph)	CSE 13S WRIT 2* CSE 16	AM 10 CSE 101	AM 30 CSE 101M	
3rd (junior)	CSE 120	CSE 40	CSE 103	

	CSE 114A	CSE 107	ECE 30
4th (senior)	CSE 130	Elective	Capstone elective
	DC Elective	Elective	Elective

* WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Degree Planner for Transfer Students

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	CSE 13S	CSE 101	CSE 101M	
	AM 30	CSE 120	CSE 40	
	STAT 131	ECE 30		
2nd (senior)	CSE 130	CSE 102	Elective	
	CSE 114A	Elective	Capstone elective	
	DC Elective	Elective		

Note: One elective must be drawn from the DC course list and one from the capstone course list. Also, the above plan assumes having taken one of MATH 21, MATH 23A, or AMS 10 and most general education requirements prior to arriving at UC Santa Cruz as well as courses equivalent to CSE 16 and CSE 30 and CSE 12).

Curriculum charts for all Baskin Engineering majors are available on the Baskin Engineering Advising Major Curriculum Charts page.

COMPUTER SCIENCE B.A.

Information and Policies

Introduction

The bachelor of arts (B.A.) program at University of California, Santa Cruz, is designed to give students a grounding in both theoretical and practical topics in computer science, computer engineering, and mathematics while leaving flexibility for a broad program of study, including some courses outside of science and engineering, or even for a double major in another discipline.

Program Learning Outcomes

Recipients of a Bachelor of Science or a Bachelor of Arts degree in Computer Science at UC Santa Cruz are expected to have the following skills and experiences:

1. Demonstrate mastery of computer science in the following core knowledge areas:
   - Algorithms, data structures, and complexity
   - Programming languages
   - Software engineering and development
2. Apply system-level perspective by thinking at multiple levels of detail and abstraction and by recognizing the context in which a computer system may function, including its interactions with people and the physical world.
3. Apply problem-solving skills and the knowledge of computer science to solve real problems.
4. Understand how technological advances impact society and the social, legal, ethical and cultural ramifications of computer technology and their usage.
5. Write about and orally communicate technical material about computer science and computer systems, broadly conceived.

Academic Advising for the Program

The Baskin Engineering undergraduate advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

It is recommended that high school students intending to apply to the computer science major have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Comparable college mathematics and science courses completed at other institutions also serve to properly prepare a student for the computer science major.

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer students who want to pursue the computer science major, must have applied and been admitted to UC Santa Cruz as a proposed computer science major.

Transfer Admission Screening Policy

The following Transfer Screening policy takes effect in fall 2024 and will be mandatory for all transfer students entering UC Santa Cruz fall 2026 and later. Transfer students entering UCSC prior to fall 2026 are encouraged to complete these requirements, but will still be considered for admission if they fulfill the 2023-2024 admissions screening requirements.

Prior to admission, transfer students must have completed the following five courses or their articulated equivalents with a combined minimum GPA of 2.8.

Lecture/lab combinations count as one course. Please note that while AP courses satisfy screening requirements they do not count toward the minimum GPA. If you satisfy the transfer admissions screening requirements, you are not required to take additional coursework in order to declare.

These courses

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7

Plus one of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Minimum GPA

The combined GPA in the five courses above must be at least of 2.8.

Furthermore, transfer students entering in the fall must have completed at least three of these courses by the end of the fall term of the previous academic year and have a minimum 2.80 GPA over all completed CS major qualification courses at that time.

Most courses in the computer science program at UC Santa Cruz have a strong theoretical component to prepare the student for designing, as opposed to simply using, computer systems. Often, courses taken at other institutions which emphasize applications of current languages and computers do not count toward the computer science major at UCSC.

At UCSC, computer science students are first introduced to programming using the programming language Python. The core programming sequence—courses CSE 30 and CSE 13S —exposes students to both Python and C. Many upper-division courses that involve programming use the C and C++ programming languages.

Transfer students who are not familiar with Python may need to take a remedial course. Students familiar with C++ and Unix should find the transition to Python and C relatively simple.

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UCSC. Instructions for declaring a major in Baskin Engineering are on the Baskin Engineering undergraduate advising major declaration page.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the Transfer Admission Screening requirements.

For all students, it is necessary to be listed as proposed computer science majors within the School of Engineering before being able to declare the major. Additionally, students admitted as frosh must satisfy the following three criteria to qualify for the CS B.A. major

Declare

Students must declare CS (Computer Science B.S. or Computer Science B.A.) as their major between student's second to sixth quarter.

CS BA Major Qualification courses

Students must have completed the following CS major qualification courses to qualify for the major:

Complete these two courses

CSE 12	Computer Systems and Assembly Language and Lab	7

CSE 30	Programming Abstractions: Python	7

Plus one of the following

CSE 13S	Computer Systems and C Programming	7
CSE 40	Machine Learning Basics: Data Analysis and Empirical Methods	5

CSE 40 has a test-out option that can satisfy this requirement.

CSE 13S is not required for the CS B.A., but either CSE 101P or CSE 101 is required, and CSE 101 will require CSE 13S. Several upper division CSE courses require CSE 101.

Plus one of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Plus one of the following

MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Cumulative GPA

Students must also have a cumulative GPA of at least 2.80 in the CS major qualification courses attempted at UC Santa Cruz, with at most one unsuccessful attempt (grade C-, D+, D, D-, F, or NP) permitted in a CS major qualification course. Courses satisfied via exam credit are not included in the GPA calculation.

Appeal Process

Students who are informed that they do not qualify for the major may appeal this decision by submitting a letter to the undergraduate director through the Baskin Engineering undergraduate advising office within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision.

How to Declare a Major

Students interested in pursuing computer science must indicate computer science as a proposed major on their application for admission to UC Santa Cruz. Students admitted to UCSC in fall 2018 or later will be able to declare a computer science major only if they have been admitted to UCSC as a proposed computer science major.

There are four steps to declaring a Baskin Engineering major. For a detailed guide to this process, please consult Baskin Engineering's Declare Your Major website.

Students should start the declaration of major process by completing Step One on the Baskin Engineering Declare Your Major website as soon as they complete the CS major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed all CS major qualification courses.

Letter Grade Policy

All students admitted to a Baskin Engineering major, or seeking admission to a major, must take all courses required for that major for a letter grade. This policy includes courses required for these degrees that are sponsored by other departments.

[Optional Catchall]

Course Substitution Policy

Undergraduate engineering students who wish to substitute a major course with a course from another department at UC Santa Cruz, or from another academic institution, must first seek approval through the Baskin Engineering Undergraduate Advising Office. The advising office requires a Petition for Course Substitution be approved before credit for an alternate course can be applied to any Baskin Engineering major requirement.

Petition forms are available at the Undergraduate Advising Office and online.

Petitions and procedures for approval must be obtained from and submitted to the Undergraduate Advising Office.

Community Colleges courses once enrolled at UCSC

Once enrolled in Baskin Engineering students who wish to take a course at a California community college must first check Assist.org to see if the course is equivalent at UC Santa Cruz. If the course is not listed on Assist.org, students must submit a course substitution petition to the BE Undergraduate Advising Office to have it reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

If the course is approved for equivalency or was on Assist.org, then students with declared majors must also receive approval by their major department to take the class at the community college PRIOR to taking it. Undeclared students must receive prior approval from the CSE Department to substitute a course for CSE 13S. Undeclared students do not require prior approval for other courses listed on Assist.org. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Four-Year Institutions and the UC Education Abroad Program (UCEAP)

Students who intend to take a course at a four-year institution or UC Education Abroad, must submit a Course Substitution Petition to the BE Undergraduate Advising Office to have the course reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

Double Majors and Major/Minor Combinations Policy

Students may not receive both the computer science B.A. and computer science B.S. degrees.

Students may not receive both the Network and Digital Technology B.A. and the Computer Science B.A. degrees.

Study Abroad

Honors

Students must obtain a GPA of 3.8 or higher in the courses in the major to be considered for the distinction of "Highest Honors in the Major." Students must obtain a GPA of 3.5 or higher in the courses in the major to be considered for the distinction of "Honors in the Major." Baskin Engineering reserves the right to withhold honors based on other criteria, such as an incident of academic dishonesty.

[Optional Catchall]

Requirements and Planners

Course Requirements

The aim of this program is to expose students to a rigorous curriculum in computer science while maintaining sufficient flexibility so that students can take courses outside computer science, pursue a minor in another discipline, or complete a double major. Every student must complete a minimum of 16 courses—eight lower-division and eight upper-division. Out of these, the eight lower-division courses and the first upper-division course are required preparatory courses for every student. Once these preparatory courses are completed, students tailor their own program by choosing seven upper-division elective courses. Some courses may be satisfied via exam credit.

Lower-Division Courses

Computer Science and Engineering

All of the following

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
CSE 40	Machine Learning Basics: Data Analysis and Empirical Methods	5

Students with no prior programming will take CSE 20 before CSE 30, and CSE 12. Students with a prior programming course, AP credit, or clearing the CSE 20 “Test-out” bar will start with CSE 30, and CSE 12.

CSE 40 has a test-out option that can satisfy this requirement.

Plus one of the following options

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Plus one of the following

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Upper-Division Courses

One of the following courses

CSE 101P	Introduction to Data Structures and Algorithms in Python	5
CSE 101	Introduction to Data Structures and Algorithms	5

Breadth Courses

Three courses from either Breadth List below.
Courses in the second Breadth List require CSE 101.

Breadth courses not requiring CSE 101

CSE 101M	Mathematical Thinking for Computer Science	5
CSE 102	Introduction to Analysis of Algorithms	5
CSE 103	Computational Models	5
CSE 112	Comparative Programming Languages	5
CSE 114A	Foundations of Programming Languages	5
CSE 118	Mobile Applications	5
CSE 120	Computer Architecture	5
CSE 140	Artificial Intelligence	5
CSE 142	Machine Learning	5
CSE 143	Introduction to Natural Language Processing	5
CSE 144	Applied Machine Learning: Deep Learning	5

CSE 150	Introduction to Computer Networks	7
CSE 183	Web Applications	5
CSE 184	Data Wrangling and Web Scraping	5

Breadth courses requiring CSE 101

CSE 110A	Fundamentals of Compiler Design I	5
CSE 130	Principles of Computer Systems Design	5
CSE 132	Computer Security	5
CSE 134	Embedded Operating Systems	5
CSE 138	Distributed Systems	5
CSE 160	Introduction to Computer Graphics	7
CSE 180	Database Systems I	5
CSE 186	Full Stack Web Development I	5

Electives

Three courses from the list of B.A. electives below, including at least one upper-division CSE course(s) numbered between 100 and 189, or CSE 195.

For other courses, computational media, and applied mathematics and statistics courses are strongly recommended.

List of BA electives

1. Any 5-credit or more upper-division course with a number between 100 and 189 offered by Baskin Engineering, except for the DC courses CSE 115A and CSE 185E/CSE 185S.

2. Any 5-credit or more CSE course with a number between 201 and 279. Approval for courses with numbers 290 and above may be requested by submitting a course substitution petition to the BE Undergraduate Advising Office. Courses with numbers 280-289 are not eligible. Undergraduate students require permission from the instructor to enroll in graduate courses.

3. CSE 195 (if not used to satisfy the DC requirement).

4. Any course from the following list:

ARTG 118	Character Creation for Video Games	5
EART 124	Modeling Earth's Climate	5
EART 125	Statistics and Data Analysis in the Geosciences	5
EART 172	Geophysical Fluid Dynamics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5
ECON 101	Managerial Economics	5
ENVS 115A	Geographic Information Systems and Environmental Applications	5
ENVS 115L	Exercises in Geographic Information Systems	2
FILM 170A	Fundamentals of Digital Media Production	5
LING 112	Syntax I	5
LING 113	Syntax II	5
LING 118	Semantics III	5
LING 125	Foundations of Linguistic Theory	5
MATH 110	Introduction to Number Theory	5
MATH 115	Graph Theory	5
MATH 116	Combinatorics	5
MATH 117	Advanced Linear Algebra	5
MATH 118	Advanced Number Theory	5
MATH 134	Cryptography	5
MATH 140	Industrial Mathematics	5
MATH 145	Introductory Chaos Theory	5
MATH 145L	Introductory Chaos Laboratory	1
MATH 148	Numerical Analysis	5
MATH 160	Mathematical Logic I	5
MATH 161	Mathematical Logic II	5
MUSC 123A	Electronic Music: Synthesis & Composition I	5
MUSC 123B	Electronic Music: Synthesis & Composition II	5
MUSC 123C	Electronic Music: Synthesis & Composition III	5
PHYS 115	Computational Physics	5
PHYS 150	Quantum Computing	5

Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement.

The DC requirement for the computer science B.A. is satisfied by completing one of the following additional courses:

	One of these courses	
CSE 115A	Introduction to Software Engineering	5
CSE 185E	Technical Writing for Computer Science and Engineering	5
CSE 195	Senior Thesis Research	5

The course used for the DC requirement cannot also be used as an upper-division elective.

Comprehensive Requirement

In addition to the above B.A. requirements, students in the computer science majors must satisfy one of the following two exit requirements:

1. Pass one of the capstone courses (see Capstone Courses below);
   A passed capstone course also counts toward satisfying

the minimum number of upper-division electives requirement.

2. Successfully complete a senior thesis as described below.
   CSE 195 can count toward satisfying the minimum number of upper-division electives requirement or completing the DC requirement, but not both.

Capstone Courses

Students may choose from one of the following capstone courses to satisfy their exit requirement (lecture/lab combinations count as one course.):

CSE 110A	Fundamentals of Compiler Design I	5
CSE 115C	Software Design Project II	5
CSE 115D	Software Design Project - Accelerated	5
CSE 134	Embedded Operating Systems	5
CSE 138	Distributed Systems	5
CSE 140	Artificial Intelligence	5
CSE 143	Introduction to Natural Language Processing	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 145	Introduction to Data Mining	5
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 157	Internet of Things	7
CSE 160	Introduction to Computer Graphics	7
CSE 161	Introduction to Data Visualization	5
CSE 161L	Data Visualization Laboratory	2
CSE 162	Advanced Computer Graphics and Animation	5
CSE 162L	Advanced Computer Graphics and Animation Laboratory	2
CSE 163	Data Programming for Visualization	5
CSE 168	Introduction to Augmented Reality and Virtual Reality	7
CSE 181	Database Systems II	5
CSE 183	Web Applications	5
CSE 184	Data Wrangling and Web Scraping	5
CSE 187	Full Stack Web Development II	5
CMPM 172	Game Production Studio	7

CSE 110A, CSE 115C, CSE 115D, CSE 134, CSE 138, CSE 156/CSE 156L, CSE 157, CSE 160, CSE 161, CSE 162, CSE 168, and CSE 181 require CSE 101.

Senior Thesis

The senior thesis consists of a self-contained project within the broad scope of computer science, but one that is not available in the regular course offerings. A student wishing to complete a senior thesis must successfully complete a minimum of 5 credits in CSE 195, Senior Thesis Research. The supervision of a senior thesis student is always at the discretion of the faculty member.

The student first submits a written thesis proposal and obtains approval of a faculty sponsor. Then the student submits a written draft and makes an oral presentation to a faculty examining committee. After receiving feedback from the examining committee, the student submits one or more additional drafts, until the final draft is approved by the examining committee. The total amount of writing shall be consistent with the campus Disciplinary Communication requirement. A passing grade in CSE 195 is earned when the final thesis is approved.

CSE 195	Senior Thesis Research	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are three sample academic plans: (1) a four-year plan for the B.A. major for first-year students with programming experience; (2) an alternative first-year plan for students without programming experience; and (3) a two-year plan for the B.A. major for transfer students.

Students completing the courses in the planners will have satisfied the MF general education requirement.

Four-Year Plan for Students with Programming Experience

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	CSE 30 MATH 19A College 1	AM 10 MATH 19B WRIT 1/WRIT 1E (if needed)	CSE 12	
2nd (soph)	CSE 13S	Breadth	CSE 101	

	WRIT 2[1]	CSE 40	
3rd (junior)	Breadth	Elective	Breadth
	Elective		
4th (senior)	DC elective		Elective (capstone)

[1]WRIT 2 should be taken in or before spring quarter of the second year.

First-Year Plan for Students Without Programming Experience

	Fall	**Winter**	**Spring**	**Summer**
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	CSE 20	CSE 30	CSE 12	
	MATH 3	MATH 19A	MATH 19B	
	College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	CSE 40	AM 10	CSE 101P	
	WRIT 2[1]	CSE 16		
3rd (junior)	Breadth[2]	Breadth[2]	Breadth[2]	
	Elective[2]	Elective[2]		
4th (senior)	CSE 185S		Elective (capstone)[2]	

[1] WRIT 2 should be taken in or before spring quarter of the second year.
[2] Breadth and elective courses cannot require CSE 101.

Two-Year Degree Planner for Transfer Students

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T
				Summer Edge
				(optional)
1st (junior)	CSE 40	CSE 101P	Breadth[1]	
	AM 10			
2nd (senior)	Breadth[1]	Breadth[1]	CSE 185S	
	Elective[1]	Elective[1]	Elective (capstone)[1]	

[1] Breadth and elective courses cannot require CSE 101.

Curriculum charts for all Baskin Engineering majors are available on the Baskin Engineering undergraduate advising Major Curriculum Charts page.

NETWORK AND DIGITAL TECHNOLOGY B.A.

Information and Policies

Introduction

The Bachelor of Arts in Network and Digital Technology at the University of California, Santa Cruz, provides students with in-depth knowledge of the underlying structure and function of networking and digital-computer technology and the design processes that make those technologies function. The program is tailored to students who wish to combine technology with other fields or have a general focus on software-based digital technologies that enable Internet services and computer networks. The B.A. in network and

digital technology is not an engineering degree, but B.A. graduates will be prepared to work with technology development in other capacities, or join the computer networking workforce. Students interested in graduate study should pursue a B.S. program.

Program Learning Outcomes

For the Network and Digital Technology B.A. degree the program learning outcomes are:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design a system, component, or process;
- an ability to communicate effectively; and
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Academic Advising for the Program

The Baskin Engineering undergraduate advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer students who want to pursue the network and digital technology major, must have applied and been admitted to UC Santa Cruz as a proposed network and digital technology major.

Transfer Admission Screening Policy

Students should complete at least six courses from the following list

Lecture-lab combinations count as one course.

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5
AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5
AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7
ECE 13	Computer Systems and C Programming	7
PHYS 5A	Introduction to Physics I	5
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

AM 10 and MATH 21 are alternatives; only one or the other, whichever is completed first can count toward the six courses.

AM 20 and MATH 24 are alternatives; only one or the other, whichever is completed first can count toward the six courses.

AM 30 and MATH 23A are alternatives; only one or the other, whichever is completed first, can count toward the six courses.

ECE 13 and CSE 13S are alternatives; only one or the other, whichever is completed first, can count toward the six courses.

PHYS 5A and PHYS 5L are alternatives to PHYS 6A and PHYS 6L; only one or the other can count toward the six courses.

PHYS 5C and PHYS 5N are alternatives to PHYS 6C and PHYS 6N; only one or the other can count toward the six courses.

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. Instructions for declaring a major in the Baskin Engineering are on the undergraduate advising major declaration page.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the Transfer Admission Screening requirements.

In order to declare the network and digital technology major, students must be listed as a proposed major within Baskin Engineering. Please refer to the Baskin Engineering "Proposed Major Retention" and its "Declaring a Baskin Engineering Major" sections in the catalog for more information.

In addition to being listed as a proposed Baskin Engineering major, qualification for the network and digital technology major is based on performance in the following lower-division courses and associated labs required for the major. To qualify for the network and digital technology major students must have completed at least 36 credits in these courses with a cumulative GPA of at least 2.30 or greater.

All of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7

Plus one of the following

AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5

Plus one of the following

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Plus one of the following

CSE 13S	Computer Systems and C Programming	7
ECE 13	Computer Systems and C Programming	7

Plus one of the following lecture/lab options

	Either these courses	
PHYS 5A	Introduction to Physics I	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1

Plus one of the following lecture/lab combinations

	Either these courses	
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

Cumulative GPA

Students seeking to change their current major to network and digital technology after their sixth quarter must have completed the courses listed above with a cumulative GPA of at least 2.30.

Please note that while exam credit can satisfy major qualification requirements it does not count toward the minimum GPA. If you satisfy the transfer admissions screening requirements, you are not required to take additional coursework in order to declare.

Appeal Process

Students who are informed that they do not qualify for the major may appeal this decision by submitting a letter to the undergraduate director through the Baskin Engineering undergraduate advising office within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision.

How to Declare a Major

There are four steps to declaring a Baskin Engineering major. For a detailed guide to this process, please consult Baskin Engineering's Declare Your Major website.

Students should start the declaration of major process by completing Step One on the Baskin Declare Your Major website as soon as they complete 36 credits in the major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed enough major qualification courses.

Letter Grade Policy

All students admitted to a Baskin Engineering major, or seeking admission to a major, must take all courses required for that major for a letter grade. This policy includes courses required for these degrees that are sponsored by other departments.

[Optional Catchall]

Course Substitution Policy

Undergraduate engineering students who wish to substitute a major course with a course from another department at UC Santa Cruz, or from another academic institution, must first seek approval through the Baskin Engineering Undergraduate Advising Office. The advising office requires a Petition for Course Substitution be approved before credit for an alternate course can be applied to any Baskin Engineering major requirement.

Petition forms are available at the Undergraduate Advising Office and online.

Petitions and procedures for approval must be obtained from and submitted to the Undergraduate Advising Office.

Community Colleges courses once enrolled at UCSC

Once enrolled in Baskin Engineering students who wish to take a course at a California community college must first check Assist.org to see if the course is equivalent at UC Santa Cruz. If the course is not listed on Assist.org, students must submit a course substitution petition to the BE Undergraduate Advising Office to have it reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

If the course is approved for equivalency or was on Assist.org, then students with declared majors must also receive approval by their major department to take the class at the community college PRIOR to taking it. Undeclared students must receive prior approval from the CSE Department to substitute a course for CSE 13S. Undeclared students do not require prior approval for other courses listed on Assist.org. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Four-Year Institutions and the UC Education Abroad Program (UCEAP)

Students who intend to take a course at a four-year institution or UC Education Abroad, must submit a Course Substitution Petition to the BE Undergraduate Advising Office to have the course reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus. It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better.

Double Majors and Major/Minor Combinations Policy

Students completing any of the following degrees cannot also receive the Network and Digital Technology B.A.

- Robotics Engineering B.S.
- Computer Engineering B.S.
- Computer Science B.S.
- Computer Science B.A.

The following minors cannot be combined with the Network and Digital Technology B.A/ :

- Computer Engineering minor
- Computer Science minor

Study Abroad

Honors

Majors are considered for “Honors in the Major” and “Highest Honors in the Major” based on their GPA and on results of undergraduate research and other significant contributions to Baskin Engineering. Students with a GPA of 3.70, in most cases, receive highest honors. Students with a GPA of 3.30, in most cases, receive honors. Students with particularly significant accomplishments in undergraduate research or contributions to Baskin Engineering may be considered with a lower GPA.

School of Engineering Policies

Please refer to the Baskin Engineering section of the catalog for additional policies that apply to all Baskin Engineering programs.

Materials Fee and Miscellaneous Fees

Please see the section on fees under the School of Engineering.

Requirements and Planners

Course Requirements

All students in the network and digital technology major must take the following courses. The comprehensive requirement is satisfied by completion of the capstone course. Some courses may be satisfied via exam credit.

Lower-Division Courses

Students who may have originally pursued another major should discuss with the Baskin Engineering undergraduate advising office whether or not already completed coursework may be substituted for one or more lower division-requirements.

One of the following

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following

AM 20	Ordinary Differential Equations for Engineers	5

MATH 24	Ordinary Differential Equations	5

Plus one of the following

AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5

Plus all of the following

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Students with no prior programming will take CSE 20 before CSE 30 and CSE 12. Students with a prior programming course, AP credit, or clearing the "Test-out" bar will start with CSE 30 and CSE 12.

Plus one of the following

CSE 13S	Computer Systems and C Programming	7
ECE 13	Computer Systems and C Programming	7

Plus one of the following lecture/lab combinations

	Either these courses	
PHYS 5A	Introduction to Physics I	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1

Plus one of the following lecture/lab combinations

	Either these courses	
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

Upper-Division Courses

All of the following

CSE 101	Introduction to Data Structures and Algorithms	5
CSE 150	Introduction to Computer Networks	7
CSE 185E	Technical Writing for Computer Science and Engineering	5

Electives

Five additional 5-credit or more, upper-division electives, and associated laboratories are required.
Students may choose courses from either or both of the lists below, or from the additional approved electives list. One of these five courses should also be used to satisfy the comprehensive requirement below. See Comprehensive Requirement below for courses which satisfy that requirement.

Students are encouraged to discuss their interests and elective choices with their faculty advisors. Students may use the following lists to focus their studies in a particular area.

Digital Technology for Networking Focus

Students wishing to focus on digital technology for networking should consider including among their courses the following (lecture-lab combinations are counted as one course):

CSE 118	Mobile Applications	5
CSE 151	Advanced Computer Networks	5
CSE 151L	Advanced Computer Networks Laboratory	2
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 157	Internet of Things	7
CSE 167	Mobile Sensing and Interaction	5
CSE 183	Web Applications	5

CSE 157 has additional prerequisites.

Internet Software Technology Focus

Students wishing to focus on Internet software technology should consider including among their courses the following:

CSE 115A	Introduction to Software Engineering	5
CSE 117	Open Source Programming	5
CSE 119	Software for Society	5
CSE 130	Principles of Computer Systems Design	5
CSE 165	Human-Computer Interaction	5
CSE 180	Database Systems I	5
CSE 181	Database Systems II	5
CSE 182	Introduction to Database Management Systems	5
CSE 186	Full Stack Web Development I	5
CSE 187	Full Stack Web Development II	5

CSE 115A, CSE 117, CSE 157, and CSE 181 have additional prerequisites.
Students may not receive credit for both CSE 180 and CSE 182.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in network and digital technology is satisfied by completing CSE 185E, Technical Writing for Computer Engineers.

CSE 185E	Technical Writing for Computer Science and Engineering	5

Comprehensive Requirement

One of the following courses must be completed. This course can count as one of the five required electives.

CSE 115A	Introduction to Software Engineering	5
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 157	Internet of Things	7
CSE 181	Database Systems II	5
CSE 183	Web Applications	5
CSE 187	Full Stack Web Development II	5

Lecture-lab combinations count as one course.
Students may petition to request approval to satisfy the comprehensive requirement with another engineering course having a substantial technology based project.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans: (1) a four-year plan for first-year students with no prior programming experience, and (2) a two-year plan for transfer students that have completed all lower-division major requirements except AM 30, CSE 13S, and CSE 30. Students completing the courses in the four-year planner will have satisfied the MF and SI General Education requirements.

Four-Year Major Planner for Network and Digital Technology

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 CSE 20 College 1	MATH 19A CSE 30 WRIT 1/WRIT 1E (if needed)	MATH 19B AM 10	
2nd (soph)	CSE 12 PHYS 6A PHYS 6L WRIT 2[1]	CSE 13S CSE 16	CSE 101 PHYS 6C PHYS 6N	
3rd (jr)	CSE 150 AM 30	Elective AM 20	CSE 185E Elective	
4th (sr)	Elective	Capstone course	Elective	

[1]WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Planner for Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (jr)	CSE 30 CSE 150	CSE 13S AM 30	CSE 101 CSE 185E	
2nd (sr)	Elective Elective	Capstone course Elective	Elective	

Curriculum charts for all Baskin Engineering majors are available at the Baskin Engineering undergraduate advising website.

COMPUTER ENGINEERING MINOR

Course Requirements

Complete the following requirements for the Computer Engineering Minor. Some courses may be satisfied via exam credit. Though courses for the minor may be taken for a letter grade or Pass/No Pass (P/NP), many of the courses may be required for a student's major which could require a letter grade (including all Baskin Engineering majors). Students should be aware of the letter grade policy for their chosen major before choosing Pass/No Pass.

Lower-Division Courses

The following course

CSE 12	Computer Systems and Assembly Language and Lab	7

Plus one of the following

CSE 13S	Computer Systems and C Programming	7
ECE 13	Computer Systems and C Programming	7

Plus all of the following

CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Students with no prior programming will take CSE 20 before CSE 30, and CSE 12. Students with a prior programming course, AP credit, or clearing the “Test-out” bar will start with CSE 30 and CSE 12.

Math placement is required for one or more of the courses for this minor. For more information, please review the Math Placement website.

Plus one of the following

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

AM 20 and MATH 24 both require one additional mathematics course as a prerequisite.

Plus one of the following lecture/lab combinations

	Either these courses	
PHYS 5A	Introduction to Physics I	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1

Plus one of the following lecture/lab combinations

	Either these courses	
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

Upper-Division Courses

All of the following

CSE 100	Logic Design	5
CSE 100L	Logic Design Laboratory	2
CSE 120	Computer Architecture	5

Plus one of the following

ECE 118	Introduction to Mechatronics	10
CSE 121	Embedded System Design	7

Plus all of the following

CSE 101	Introduction to Data Structures and Algorithms	5
ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2

COMPUTER SCIENCE MINOR

Course Requirements

Thirteen courses are required for the computer science minor. Some courses may be satisfied via exam credit. Though courses for the minor may be taken for a letter grade or Pass/No Pass, many of the courses may be required for a student's major which could require a letter grade (including all Baskin Engineering majors). Students should be aware of the letter grade policy for their chosen major before choosing Pass/No Pass

Lower-Division Courses

One of the following options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

MATH 19B	Calculus for Science, Engineering, and Mathematics or these courses	5
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Plus one of the following:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus all of the following

CSE 20	Beginning Programming in Python	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7

Students with no prior programming will take CSE 20 before CSE 30, and CSE 12. Students with a prior programming course, AP credit, or clearing the “Test-out” bar will start with CSE 30, and CSE 12.

Math placement is required for one or more of the foundational courses for this minor. For more information, please review the Math Placement website.

Plus one of the following

CSE 13S	Computer Systems and C Programming	7
ECE 13	Computer Systems and C Programming	7

Upper-Division Courses

The following course

CSE 101	Introduction to Data Structures and Algorithms	5

Plus two upper-division computer science and engineering courses from the following list

CSE 101M	Mathematical Thinking for Computer Science	5
CSE 102	Introduction to Analysis of Algorithms	5
CSE 103	Computational Models	5
CSE 110A	Fundamentals of Compiler Design I	5
CSE 114A	Foundations of Programming Languages	5
CSE 115A	Introduction to Software Engineering	5
CSE 118	Mobile Applications	5
CSE 120	Computer Architecture	5
CSE 130	Principles of Computer Systems Design	5
CSE 132	Computer Security	5
CSE 134	Embedded Operating Systems	5
CSE 138	Distributed Systems	5
CSE 140	Artificial Intelligence	5
CSE 142	Machine Learning	5
CSE 143	Introduction to Natural Language Processing	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 150	Introduction to Computer Networks	7
CSE 160	Introduction to Computer Graphics	7
CSE 180	Database Systems I	5
CSE 183	Web Applications	5
CSE 184	Data Wrangling and Web Scraping	5
CSE 186	Full Stack Web Development I	5

Plus two additional upper-division courses

Two additional courses satisfying one of the following conditions. Lecture/lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be passed to count for this requirement.

1. Any 5-credit or more upper-division CSE course with a number between 100 and 189 or CSE 195.

2. Any 5-credit or more CSE course with a number between 201 and 279. Approval for courses with numbers 290 and above may be requested by submitting a course substitution petition to the BE Undergraduate Advising Office. Courses with numbers 280-289 are not eligible. Undergraduate students require permission from the instructor to enroll in graduate courses.

3. Any course from the following list

AM 148	GPU Programming for Scientific Computations	5
AM 160	Introduction to Scientific Machine Learning	5

COMPUTER SCIENCE AND ENGINEERING CONTIGUOUS BACHELOR’S/MASTER’S PATHWAY: COMPUTER SCIENCE AND ENGINEERING

The Department of Computer Science and Engineering (CSE) offers a combined bachelor's/master's pathway. Undergraduate students from any major in Baskin Engineering can apply to the pathway in order to earn a bachelor's degree together with an M.S. degree in Computer Science and Engineering. Depending on the student’s progress and advance planning, it is expected that the combined pathway can be completed in five years.

The five-year bachelor's/master's pathway offers a competitive edge to students who are completing their undergraduate degree at UC Santa Cruz, by enabling those with advanced preparation to move directly from the

undergraduate to the graduate program and complete an M.S. degree with as few as seven courses beyond the bachelor's degree.

The pathway prepares students for leadership positions in industry, and is also attractive for undergraduate students planning to pursue a Ph.D. degree targeting research careers in industry or academia. Baskin Engineering has many opportunities for undergraduate and graduate research, enabling Bachelor's/Master's pathway students to continue their undergraduate research projects as graduate students with the same research group.

Students in the M.S. programs are not guaranteed any form of financial support from the department. It is the student's responsibility to ensure that they have sufficient funds to complete the M.S. degree program.

Particularly motivated students can complete both the bachelor's and the master's degrees in 15 quarters (five academic years). However, advance planning is essential. Interested students should contact the CSE Graduate Advising Office and their faculty adviser early in their college career—no later than the end of their junior year. Students in this pathway retain undergraduate status until the completion of all undergraduate requirements, but may begin graduate coursework in advance of graduate standing.

Admission to the Contiguous Five-Year Bachelor's/Master's Pathway

The undergraduate degree requirements are not changed by the Bachelor's/Master's pathway; however, the pathway capitalizes on graduate-level courses that may apply toward both the undergraduate and graduate degree requirements (see Course Requirements below). Students should consult the Baskin Engineering Undergraduate Affairs Office concerning their respective undergraduate degree requirements.

Acceptance into the CSE Bachelor's/Master's pathway is by formal application, and confirmed eligibility for the program does not guarantee admission. Students who apply to the M.S. program through the Bachelor's/Master's pathway will be measured against the full applicant pool during the admissions decision process. Undergraduates interested in the pathway can complete the interest form at any time starting in the first quarter of junior standing. To qualify, applicants must be current UC Santa Cruz undergraduates declared in a major within Baskin Engineering, must have a 3.0 cumulative GPA when they apply to the Bachelor's/Master's pathway, and must maintain a 3.0 or higher cumulative GPA until the completion of their undergraduate degree The Graduate Affairs Office will verify and track students' eligibility for the pathway until completion of the bachelor's degree. Two of the three required letters of recommendation are waived for applicants with confirmed eligibility for the pathway. However, the one required letter must be from a UCSC faculty or instructor.

If admitted to the CSE M.S. program, pathway students are able to count qualified courses previously completed as an undergraduate toward their CSE M.S. degree requirements. To ensure courses are qualified to count toward the M.S. degree, students should review the CSE M.S. degree requirements and communicate with their graduate student advisor.

Students who do not meet the Bachelor's/Master's pathway eligibility requirements or who wish to take time off between the bachelor's and master's degree programs are encouraged to apply for admission to the standard CSE M.S. program through the regular graduate admissions process.

Course Requirements

Master's students can graduate by pursuing either Thesis Plan I or a Capstone Plan II. The Thesis Plan I is appropriate for students interested in advanced studies and in carrying out independent research, as well as for those students contemplating pursuit of a Ph.D. degree. The Thesis Plan I may extend the expected time for graduation beyond the expected one academic year as students typically take two to three quarters to complete a thesis. Advance planning is essential to graduate from the CSE M.S. program with the Thesis Plan I in one academic year. The Capstone Plan II is appropriate for students interested in advanced studies to better prepare themselves for the information technology workforce. The expected time for graduation with Capstone Plan II is one academic year for a full-time student.

Students may count up to two courses (10 credits) taken as an undergraduate toward the M.S. coursework requirements, as either of the following:

- 2 graduate courses (10 credits)
- 1 undergraduate course (5 credits) and 1 graduate course (5 credits)

If a student wishes to use an undergraduate course toward the M.S. coursework requirements, the course must not have been used to satisfy any undergraduate degree requirements.

A minimum of 35 credits of graduate coursework must still be completed during the graduate career. At most one upper-division undergraduate course can be counted toward the M.S. degree requirements.

Students should refer to the CSE M.S. program statement for more specific information on degree requirements, concentrations, academic progress, and applying to graduate.

COMPUTER SCIENCE AND ENGINEERING M.S.

Introduction

The Computer Science and Engineering Department offers a Master of Science (M.S.) degree program. An M.S. student can graduate by pursuing either Thesis Plan I or Capstone Plan II. Students in either plan complete a total of 48 credits as follows: 13 credits of core requirements, 15 credits of

breadth requirements, 15 credits of elective requirements, and 5 credits of capstone course requirements.

The expected time for graduation with Thesis Plan I is two academic years for a full-time student. This option is appropriate for students interested in advanced studies and in carrying out independent research, as well as for those students contemplating pursuit of a Ph.D. degree. The expected time for graduation with Capstone Plan II is one to two academic years for a full-time student. This option is appropriate for students interested in advanced studies to better prepare themselves for the information technology workforce.

Students in the M.S. program are not guaranteed any form of financial support from the department. It is the student's responsibility to ensure that they have sufficient funds for completing the M.S. degree program. Although obtaining an internship is not part of the program's requirements, most M.S. students manage their finances by working as interns at companies in the Bay Area during the summer months.

Requirements

Course Requirements

CSE 200	Research and Teaching in Computer Science and Engineering	3
CSE 201	Analysis of Algorithms	5
CSE 210A	Programming Languages	5
CSE 220	Computer Architecture	5

Thesis Plan I

Each student is required to take 48 credits as follows:

1. A core requirement must be met by taking CSE 200, Research and Teaching in Computer Science and Engineering (CSE), and any two out of the following three courses: CSE 201, Analysis of Algorithms; CSE 210A, Programming Languages; and CSE 220, Computer Architecture. Each student must complete CSE 200 in their first year.
2. One course each from three different breadth categories for a total of three courses (15 credits)—see the Breadth Requirements webpage.
3. Students must take 5 credits of CSE 299, Thesis Research, in order to fulfill the Thesis Plan I capstone course requirement. Up to 10 credits of CSE 299 or 5 credits of CSE 299 and 5 credits of CSE 247 may be counted toward the degree requirements.
4. All remaining courses must be regular, 5-credit graduate courses (not 2-credit seminars). Courses that do not count toward the 48 credits requirement include all courses numbered CSE 247, CSE 296 and all courses in the CSE 280 and CSE 297 series.
5. Up to 10 credits from courses taught at UCSC other than CSE courses may be counted toward the degree requirements. The student must obtain the graduate director's authorization to count a course from outside of Baskin Engineering.
6. Upper-division undergraduate UC Santa Cruz CSE courses may be taken as a graduate student to strengthen a student's knowledge base. At most, 5 credits of UC Santa Cruz upper-division undergraduate CSE courses may be counted toward the 48 credits requirement if they were not already used toward an undergraduate degree requirement.

Capstone Plan II

Each student is required to take 48 credits as follows:

1. A core requirement must be met by taking CSE 200, Research and Teaching in Computer Science and Engineering (CSE), and any two out of the following three courses: CSE 201, Analysis of Algorithms; CSE 210A, Programming Languages; and CSE 220, Computer Architecture. Each student must complete CSE 200 in their first year.
2. One course each from three different breadth categories for a total of three courses (15 credits)—see the Breadth Requirements webpage.
3. Students must take 5 credits of CSE 297, Independent Study, or CSE 247, Projects in Artificial Intelligence. CSE 297 may be taken more than once; however, only 5 credits of CSE 297 or CSE 247 will be counted toward the required 48 credits to fulfill the capstone course requirement.
4. All remaining courses must be regular, 5-credit graduate courses (not 2-credit seminars). Courses that do not count toward the 48-credit requirement include all courses numbered CSE 247, CSE 296, and all courses in the CSE 280 and CSE 299 series.
5. Up to 10 credits from courses taught at UCSC other than CSE courses may be counted toward the degree requirements. The student must obtain the graduate director's authorization to count a course from outside of Baskin Engineering.
6. Upper-division undergraduate UC Santa Cruz CSE courses may be taken as a graduate student to strengthen a student's knowledge base. At most, 5 credits of UC Santa Cruz upper-division undergraduate CSE courses may be counted toward the 48 credits requirement if they were not already used toward an undergraduate degree requirement.

Letter Grade Policy

With the exception of CSE 200 and all courses in the CSE 280 and CSE 297/CSE 299 series, all graduate courses and upper-division courses must be taken for letter grades. Only courses with a letter grade of B- or higher can be counted toward the M.S. degree requirements. This policy includes courses used for this degree that are sponsored by other departments. To ensure they will receive a letter grade, students should check that they have selected the letter grade

option no later than the 15th day of instruction each quarter for each class in which they are enrolled.

Other Requirements

Students in Thesis Plan I must complete an M.S. thesis, while students in Capstone Plan II must complete an M.S. project.

Thesis Plan I

After the student has completed some coursework in the proposed area of research and become acquainted with the faculty conducting research in that area, a student electing Thesis Plan I submits a written proposal to a faculty member, usually by the third academic quarter. If the faculty member determines they are able to advise the student's thesis, they collaborate with the student to further develop the scope of the student's research and refine the proposal. By accepting the proposal, the faculty member becomes the student's faculty/thesis advisor. In consultation with the advisor, the student forms a Master's Thesis Reading Committee with at least two additional faculty members, each of whom is provided a copy of the proposal. Exceptions to the committee structure may be granted by the graduate program director and/or by the graduate dean. Changes in the membership of the committee, once appointed, may only be made with the approval of the graduate dean.

Members of a Master's Thesis Reading Committee must meet the following criteria:

1. The first member must be a Senate CSE faculty member.
2. The second member must be a Senate UC Santa Cruz Baskin Engineering faculty member (may be CSE as well).
3. The third member must be a UC Santa Cruz Baskin Engineering faculty member or a recognized expert in the student's research area, as judged by the graduate program director and the Graduate Division Dean. In the event that the outside member is not from UCSC, the outside member's CV must be submitted along with the exam committee nomination form.

Additional members may be added to the committee. Students should consult their advisors about the membership of their committee.

By the end of the second week of the quarter in which a student plans to graduate, the student must submit a formal nomination of their Master's Thesis Reading Committee to the Graduate Division for approval. The required form for nominating a Master's Thesis Reading Committee is located on the Graduate Division's website. A final draft of the thesis must be provided to the members of the Master's Thesis Reading Committee for review at least 30 days before the last day of the quarter in which the student plans to graduate. The final thesis must be accepted by the Master's Thesis Reading Committee before the M.S. degree is awarded. Once the final thesis has been approved, the student must submit a PDF copy of the signed title page and a PDF copy of the thesis to their graduate advisor by the deadline listed in the Academic Calendar. The student must also submit the original signed title page of the thesis to the Graduate Division by the deadline indicated in the Academic Calendar. Finally, an approved PDF copy of the thesis should be submitted through the ProQuest dissertation site. Formatting guidelines for the master's thesis can be found on the Graduate Division's website.

CSE 299A	Thesis Research	5

Capstone Plan II

The M.S. project is an individual or a team-based project supervised by a faculty advisor and approved by a Master's Project Reading Committee composed of the faculty advisor and a faculty member from Baskin Engineering.

Members of a Master's Project Reading Committee must meet the following criteria:

1. The first member must be a Senate CSE faculty member.
2. The second member must be a Senate UC Santa Cruz Baskin Engineering faculty (may be CSE as well).

Master's Project Reading Committees are nominated by completing a Master's Project form and are approved by the graduate director.

A team consists of up to five members. Projects can either be proposed by the team or the team may bid on projects proposed by faculty members. It is also possible to have industry-sponsored or government-sponsored projects, in which case the industry/government supervisor can be invited to be an optional third member of the Master's Project Reading Committee.

The final project must be accepted by the Reading Committee before the M.S. degree is conferred.

CSE 297A	Individual Study or Research	5

Transfer Credit

Courses from other institutions may be substituted for equivalent courses at UC Santa Cruz (with the approval of the graduate director) but may not count toward the 48-credit requirement. For example, an equivalent Computer Architecture course taken elsewhere may be used in lieu of CSE 220. However, the student will need to replace it with 5 credits of another graduate elective course. As another example, a student may substitute an equivalent graduate course for CSE 260 and count that for a breadth requirement, but may not count that course toward the 48-credit requirement. Petitions should be submitted along with the transcript from the other institution. For courses taken at other institutions, copies of the syllabi, exams, and other coursework should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UC Santa Cruz. At most, a total of three courses may be transferred from other institutions.

Up to 10 credits of graduate courses fulfilling the degree requirements of the CSE M.S. degree may be taken before beginning the graduate program as a UC Santa Cruz

undergraduate student or through the UCSC Open Campus/Concurrent Enrollment program. To petition to transfer credits completed previously at UC Santa Cruz, students should contact their graduate student advisor in their first quarter of the CSE M.S. program. If a student took courses through the UCSC Open Campus/Concurrent Enrollment program, transcripts from UCSC Extension should be included with the petition.

Only courses completed before the start of the graduate program that fulfill the letter grade policy of the CSE M.S. program will be considered. The letter grade policy is as follows: With the exception of CSE 200, CSE 296, and all courses in the CSE 280 and CSE 297/9 series, all graduate courses and upper-division courses must be taken for a letter grade. Only courses with a letter grade of B- or higher can be counted toward the M.S. degree requirements

Academic Progress

Each year, the faculty reviews the progress of every student. Expected academic progress for master's students includes selecting a capstone plan (Thesis Plan I or Capstone Plan II) and identifying a faculty advisor by the end of the third quarter. Many students complete the program in four quarters, and all full-time students are expected to complete the degree within six quarters.

Students without adequate academic preparation may be required to take additional courses. Full-time students are normally expected to complete the degree requirements at the rate of at least two courses per quarter. Full-time CSE students must complete their core requirements (CSE 200 and two of the three following courses: CSE 201, CSE 210A, and CSE 220) within one year and normally must complete all course requirements within two years for the M.S.

Students receiving two or more unsatisfactory grades (U or a letter grade below B-) in Baskin Engineering courses are not making adequate progress and will be recommended for academic notice for the following three quarters of registered enrollment. Taking a leave of absence does not count as enrollment, and it does not extend the degree timeline. Part-time enrollment is counted as a half quarter of enrollment.

Students not making adequate progress toward completion of degree requirements (see the Graduate Student Handbook to review the policy on satisfactory academic progress) may be recommended for academic notice. Students who violate the terms of their academic notice are subject to dismissal from the program.

Should any CSE graduate student fail a Baskin Engineering course while on academic notice, the CSE Department may request the graduate dean dismiss that student from the graduate program. If after being removed from academic notice the student again fails a Baskin Engineering course, they will return immediately to academic notice.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their faculty advisor and the graduate director immediately. Students may appeal their dismissal.

Applying for Graduation

All candidates for a degree must submit an Application for Master's Degree to the Graduate Advising Office by the date stated in the Academic and Administrative Calendar for the quarter you wish to receive the degree. Failure to declare candidacy by the deadline means that you cannot be considered a candidate until the next term.

A student is required to be registered or on Filing Fee Status, whichever is applicable, during the quarter in which the degree is conferred. Students should consult their graduate student advisor to determine which option fits their situation. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

COMPUTER SCIENCE AND ENGINEERING PH.D.

Introduction

The Computer Science and Engineering Department offers a doctorate (Ph.D.) degree program. The normative time for the Ph.D. program is five to six years for a full-time student. Students admitted to the Ph.D. program usually receive financial support in the form of a combination of fellowships, teaching assistantships, and/or graduate research assistantships.

Advancement to Candidacy

Course Requirements

Each student is required to take 58 credits as follows:

- 18 credits of core requirements must be met by taking CSE 200 and one course each from three Core Categories: Programming Languages/Theory; Computer Architecture/Systems and Artificial Intelligence/Machine Learning/Data Science.
- 40 credits of regular, 5-credit graduate courses (not 2-credit seminars). Courses that do not count toward the 58-credit requirement include CSE 296, and all courses numbered CSE 280. CSE 297 and/or CSE 299 may be taken more than twice; however, only 10 credits total of CSE 297 and/or CSE 299 will be counted toward the required 58 credits.
- At most 10 credits can be from courses taught by departments other than CSE. The student must obtain their advisor’s authorization to take a course from outside of Baskin Engineering.
- Undergraduate courses do not count toward the 58-credit requirement.

Foreign Language Requirements

English Language Proficiency Requirement

Applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL) exam or the

International English Language Testing System (IELTS) exam and submit an official score report with the admission application. For admission purposes, the minimum passing score for the TOEFL exam must be 570 on the paper-based, 230 on the computer-based, or 89 on the Internet-based test. The minimum passing score for the IELTS exam is 7. TOEFL/IELTS waivers for admission purposes may be requested by applicants who have completed a four-year bachelor's degree at an English-speaking institution.

To be considered for teaching assistant support, students must meet the English language requirement for teaching assistants. Students may satisfy this requirement in one of the following ways:

- Achieving a minimum score of 26 on the spoken portion of the Internet-based TOEFL
- Achieving an overall score of 7 or higher and a speaking score of 8 or higher on the IELTS
- Participating in the Graduate Preparation Program (GPP)

Teaching Requirements

Each student is required to complete at least one quarter of teaching assistantship. This requirement can be met before or after advancement to candidacy. Certain exceptions may be permitted for those with extensive prior teaching experience or those who are not allowed to be employed due to visa regulations.

Pre-Qualifying Requirements

Qualifying Examination

The qualifying examination (QE) is made up of multiple components. After completing all required coursework, the student must prepare a written thesis prospectus detailing their proposed dissertation research. This prospectus serves as the basis of the oral qualifying examination, which is a test of the student’s knowledge in advanced technical areas relevant to the dissertation topic. This oral examination consists of a seminar-style talk before an examining committee pre-approved by the graduate division where the student describes the thesis prospectus, followed by questions from the committee on the substance of the talk and the areas of presumed expertise of the student.

After successful completion of the QE exam and the timely submission of the Qualifying Exam Report by the QE committee, the student will nominate a dissertation reading committee (which may differ from the QE exam committee) that must also be approved by the Graduate Division.

To continue in the Ph.D. program, students must advance to candidacy by the end of their third year. The first step is identifying and formally nominating the qualifying exam committee. The members of the qualifying exam committee should be decided in collaboration with the student’s faculty advisor and must include the following:

1. The chair of the committee must be a tenured Senate CSE faculty member who is not the student's advisor.
2. A Senate CSE faculty member (may be the advisor).
3. A Senate UCSC faculty member or a recognized expert in the student's research area as judged by the graduate director and Graduate Division dean. (may be the advisor).
4. The outside member must be a tenured Senate faculty member from a department other than CSE at UCSC or a recognized expert in the student's research area from outside UCSC. The outside member may not be the student's advisor. In the event that the outside member is not from UCSC they must have credentials equivalent to a tenured faculty member as judged by the graduate director and the Graduate Division dean. The outside member's CV must be submitted along with the exam committee nomination form.

A ladder rank faculty (Academic Senate member) holds the title of assistant professor, associate professor, professor, assistant teaching professor, associate teaching professor, or teaching professor. Associate professors, professors, associate teaching professors, and teaching professors have tenure.

Additional members may be added to the committee. Exceptions to the committee requirements above may be granted by the graduate director when appropriate, as long as the committee meets the Graduate Division requirements. In order to formally nominate their proposed QE committee, the student should submit a QE Nomination Form for review well in advance of the Graduate Division’s submission deadline. The CSE faculty graduate director will review and, if approved, forward to the Graduate Division for final review and approval. Should the QE committee not be approved, the CSE department and/or Graduate Division may ask the student to reschedule the QE date. It is also recommended that students reach out to their committee with a draft of their paper/presentation in order to incorporate any feedback before the QE exam takes place.

At least two weeks before the QE, the student should submit the title of their prospectus, an abstract, and the location information for their exam using the Advancement/Defense Notification Request Form so that the Advising Office can send out an announcement to the BE community.

In order to pass the qualifying examination, the committee must come to unanimous agreement that the student has passed the exam, and the committee will provide a written report on the qualifying exam. The final step in the advancement process for the student is to identify and formally nominate a dissertation reading committee.

If the student does not pass the qualifying examination, the student may be asked to complete additional coursework, or other research-related work, before retaking the examination. The student may be allowed to retake the qualifying examination once, and the composition of the examining committee will remain the same for the second try. Students who fail the qualifying examination twice may be dismissed

from the Ph.D. program, or given the option to exit with a master's degree.

Students are advanced to candidacy after they have completed the course requirements, passed the qualifying examination, cleared all incompletes from their records, have an appointed dissertation reading committee, and paid the advancement to candidacy fee.

Students who have not advanced to candidacy by the end of their third year (nine quarters) are recommended for academic notice, and are subject to dismissal from the program if they do not advance by the end of their fourth year (12 quarters).

See additional instructions at Baskin Enginneering's Graduate Experience website.

Post-Qualifying Requirements

Letter Grade Policy

Letter grading is required for all courses applied toward the Computer Science and Engineering Ph.D. degree with an exception for up to 10 credits of the student's choice and the following courses: CSE 200, Research and Teaching in Computer Science and Engineering; CSE 297, Independent Study or Research; CSE 299, Thesis Research; and seminar courses (CSE 280 series). With the exception of CSE 200, courses used to satisfy the core requirement must be taken for letter grade. This policy includes courses used for this degree that are sponsored by other departments. To ensure they will receive a letter grade, students should check that they have selected the letter grade option no later than the 15th day of instruction each quarter for each class in which they are enrolled.

Transfer Credit

Up to three courses (15 credits) can be transferred from another institution with approval by the CSE graduate director.

Petitions should be submitted along with the transcript from the other institution or UC Santa Cruz extension. For courses taken at other institutions, copies of the syllabi, exams, and other coursework should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UCSC.

Dissertation

Dissertation

Each student writes a Ph.D. dissertation which must be submitted to the reading committee at least one month prior to the dissertation defense. The members of the Dissertation Reading Committee must include at least three members as follows:

1. The faculty advisor of the student. This is the chair of the committee.
2. A Senate Baskin Engineering faculty member who is not the student's advisor. This member must be from CSE at UCSC if the advisor is not from CSE at UCSC.
3. A Senate UCSC faculty or a recognized expert in the student's research area with credentials equivalent to a Senate UCSC faculty member as judged by the graduate director and Graduate Division dean.

At least half of the committee must be members of the Santa Cruz Division of the Academic Senate.

Additional members may be added to the committee. Students should consult their advisors about the membership of their committee. The committee must be approved by the graduate director. Exceptions to the committee requirements above may be granted by the graduate director when appropriate, as long as the committee meets the Graduate Division requirements.

The dissertation must show the results of in-depth research, be an original contribution of significant knowledge, and include material worthy of publication. Where appropriate, research internships with companies, government laboratories, or elsewhere are recognized (and may be required) as an integral part of the research leading to the dissertation.

Dissertation Defense

At least two weeks before the defense, the student should submit the title of their dissertation, an abstract, and the location information for their exam using the Advancement/Defense Notification Request Form so that the Advising Office can send out an announcement to the BE community. The defense consists of a presentation of the candidate's research results in a public seminar sponsored by the dissertation supervisor. The seminar is followed by a defense of the dissertation to the public and the reading committee. The committee then decides whether the dissertation is acceptable or requires revision. Upon submission of the final dissertation, the committee will sign the cover page. The student must then submit a Docusigned or original, wet-ink signed cover page to the Division of Graduate Studies, as well as an electronic copy of the dissertation to ProQuest. Copies must also be sent to the graduate advisor. Successful completion of the dissertation fulfills the final academic requirement for the Ph.D. degree.

Academic Progress

Each year, the faculty reviews the progress of every student. The department expects Ph.D. students to advance to candidacy by the end of the third year (nine quarters), and requires students to advance to candidacy by the end of the fourth year (12 quarters). Ph.D. students who have not advanced to candidacy by the end of their third year (nine quarters) will be recommended for academic notice, and may be subject to dismissal from the program if not advanced to candidacy by the end of their fourth year (12 quarters). Students are expected to complete the degree by the end of the fifth year (15 quarters), and required to do so by the end of the sixth year (18 quarters) in order to maintain good academic standing.

Students without adequate academic preparation may be required to take additional courses. Full-time students are normally expected to complete the degree requirements at the rate of at least two courses per quarter. Full-time CSE students must complete their core requirements within two years and normally must complete all course requirements within three years.

Students who are on part-time status accrue time-to-degree at one-half the rate of full-time students for those quarters during which they are on approved part-time study, unless they have advanced to candidacy. Taking a leave of absence does not count as enrollment, and it does not extend the degree timeline. Doctoral students who have advanced to candidacy accrue time-to-degree at the regular rate, regardless of part-time or full-time status. Taking a leave of absence post-advancement does not "stop the clock" on normative time. Time-to-degree continues to accrue at the normal rate while Ph.D. candidates are on approved leave.

Students receiving two or more unsatisfactory grades (U or letter grade below B-) in Baskin Engineering courses are not making adequate progress and will be recommended for academic notice for the following three quarters of registered enrollment. Students not making adequate progress toward completion of degree requirements (see the Graduate Student Handbook for policy on satisfactory academic progress) may be recommended for academic notice. Students who violate the terms of their academic probation are subject to dismissal from the program.

Should any CSE graduate student fail a Baskin Engineering course while on probation, the CSE Department may request the graduate dean to dismiss the student from the graduate program. If after being removed from academic notice, the student again fails a Baskin Engineering course, they will return immediately to academic probation.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their faculty advisor and the graduate director immediately. Students may appeal their dismissal.

Applying for Graduation

All candidates for a degree must submit an Application for Doctor of Philosophy Degree to the Graduate Advising Office by the date stated in the Academic and Administrative Calendar for the quarter you wish to receive the degree. Failure to declare candidacy by the deadline means that you cannot be considered a candidate until the next term.

A student is required to be registered or on Filing Fee Status, whichever is applicable, during the quarter in which the degree is conferred. Students should consult the department advisor to determine which option fits their situation. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

[Optional Catchall]

NATURAL LANGUAGE PROCESSING M.S.

Introduction

Natural Language Processing (NLP) focuses on the development of computer programs to understand, generate, and learn from human language. It is a fundamental capability of artificial intelligence, and provides algorithms, methods and tools for analyzing text or speech for applications including conversational agents, machine translation, question answering, knowledge discovery, and sentiment analysis. The University of California, Santa Cruz professional Master of Science in Natural Language Processing program provides an education that has both depth and breadth in the core algorithms and methods used for NLP, and integrates foundational skills in data science and linguistic theory to prepare graduates to work in the field of natural language processing in industry, governmental agencies or nonprofit organizations. The degree is offered through the UCSC campus in Silicon Valley, enabling connection and collaboration with local industry and a focus on career development. Students are expected to complete coursework in four to five academic quarters, without leaves of absence.

Course Requirements

The minimum credit requirement for the M.S. Degree in Natural Language Processing is 59 credits. All courses must be taken for a letter grade with the exception of seminar courses.

Note: All students, both international and domestic, must graduate once they meet all program requirements.

Core Courses

All students are required to take the following six core courses (30 credits):

NLP 201	Natural Language Processing I	5
NLP 202	Natural Language Processing II	5
NLP 203	Natural Language Processing III	5
NLP 220	Data Science and Machine Learning Fundamentals	5
NLP 243	Deep Learning for Natural Language Processing	5
NLP 244	Advanced Machine Learning for Natural Language Processing	5

Electives

In addition, students are required to take two elective courses from the list below (10 credits):

NLP 245	Conversational Agents	5
NLP 255	Topics in Applied Natural Language Processing	5
NLP 267	Machine Translation	5
NLP 270	Linguistic Models of Syntax and Semantics for Computer Scientists	5

CSE 245	Computational Models of Discourse and Dialogue	5
CSE 272	Information Retrieval	5
CSE 290C	Advanced Topics in Machine Learning	5
CSE 290K	Advanced Topics in Natural Language Processing	5

Seminar

Students are encouraged to take the NLP seminar each time it is offered, however a maximum of 4 credits of NLP 280 can be counted toward the 59 credits required for the degree.

All students are required to take the following seminar course at least twice (4 credits):

NLP 280	Seminar in Natural Language Processing	2

Capstone Courses

NLP M.S. students are required to take all courses in the following capstone series (15 credits):

NLP 271A	Capstone I: Recent Research in NLP	5
NLP 271B	Capstone II: Natural Language Processing	10

Transfer Credit

The NLP M.S. program does not accept transfer credit or course substitutions from other institutions. Course substitutions for elective courses taken at UCSC will be considered by petition.

Capstone Requirements

The capstone requirement for the M.S. Degree is fulfilled through an application team project. Students are expected to work on their capstone requirement over the spring and second fall quarters. Teams will consist of three to five students, who will work collaboratively on the project.

The teamwork will be spread over a 5-credit class in the spring quarter (NLP 271A) and a 10-credit class in the second fall quarter (NLP 271B) to constitute the complete 15-credit capstone experience.

In NLP 271A, student teams will explore the NLP research literature and present a proposal for their capstone project. In NLP 271B, student teams will complete their capstone project and present the final results to the public.

In NLP 271A, student teams will review papers from the research literature and get matched to mentors from either industry or the UC Santa Cruz NLP program faculty, based on their interests. Mentors will meet with their teams at least once a week to evaluate progress and provide guidance. At the end of the quarter, each team will produce a 10-page written project proposal, and orally present it to the NLP Industry Advisory Board. The proposal will cover the topic for their capstone project, the background, the data sources, the high level design, and a milestone schedule. The proposal will need to be approved by the capstone coordinator (typically, the executive director of the program).

In NLP 271B, teams will complete the implementation of their capstone project, under guidance from their mentors. At the end of the quarter, each team will submit a 10-page written report and present their work at the annual UC Santa Cruz NLP Capstone Workshop. Student evaluations will be based on the quality of the team project, individual class participation, and peer evaluations (in which students evaluate the contributions of their teammates).

All students will be required to either present a poster or oral presentation at the UCSC NLP Capstone Workshop, which will be an integral part of the capstone evaluation. The Capstone Workshop will be an annual event taking place at the end of each fall quarter to which program faculty, students, and members of the Industry Advisory Board will be encouraged to attend. The workshop will also serve as a general outreach to NLP scientists in local industry and government.

Planners

Students can complete the M.S. Degree requirements in either four quarters or five quarters depending on the pace at which they wish to complete the degree and if they would like to engage in optional independent research during the program. By the end of the second week in their first fall quarter in the program, students are required to inform their graduate student advisor if they plan to complete the M.S. Degree requirements in four quarters or five quarters.

The sample planners below may include summer internships or independent studies to engage in research. These are not required and do not bear academic credit.

Sample Planner for Completing the Program in Four Quarters (Fall, Winter, Spring, Fall)

Fall Quarter 1 (15 credits)	NLP 201 (5 credits)
	NLP 220 (5 credits)
	NLP 243 (5 credits)
Winter Quarter 2 (12-17 credits)	NLP 202 (5 credits)
	NLP 244 (5 credits)
	Elective 1 (5 credits) - alternatively can be completed in Spring Quarter
	NLP 280 (2 credits)
Spring Quarter 3 (17 credits)	NLP 203 (5 credits)
	NLP 271A (5 credits)
	Elective 1 / Elective 2 (5 credits) - depends on whether an elective was completed previously in first Winter Quarter
	NLP 280 (2 credits)
Summer Session	Internship or Independent Study (optional)

Fall Quarter 4 (10-15 credits)	NLP 271B (10 credits) Elective 2 (5 credits) - not required if 10 credits of elective coursework were completed previously

Sample Planner for Completing the Program in Five Quarters (Fall, Winter, Spring, Fall, Winter)

Fall Quarter 1 (15 credits)	NLP 201 (5 credits) NLP 220 (5 credits) NLP 243 (5 credits)
Winter Quarter 2 (10-12 credits)	NLP 202 (5 credits) NLP 244 (5 credits) NLP 280 (2 credits) - alternatively can be completed in second Winter Quarter
Spring Quarter 3 (12-17 credits)	NLP 203 (5 credits) NLP 271A (5 credits) Elective 1 (5 credits) - alternatively can be completed in second Fall or Winter Quarters NLP 280 (2 credits)
Summer Session	Internship or Independent Study (optional)
Fall Quarter 4 (10-15 credits)	NLP 271B (10 credits) Elective 1 (5 credits) - depends on whether an elective was completed previously Elective 2 (5 credits) - alternatively can be completed in second Winter Quarter
Winter Quarter 5 (10-12 credits)	Elective 1 (5 credits) - required if not completed previously Elective 2 (5 credits) - required if not completed previously NLP 280 (2 credits) - required if second offering of the seminar was not completed previously

Review of Progress

Normative time for completion of the NLP M.S. program is four quarters (fall, winter, spring, and an additional fall term). Alternatively, students can complete the program in five quarters (fall, winter, spring terms, and an additional fall and winter) if they wish to pursue a less intensive schedule or participate in optional internship and research opportunities during the program. Engagement in an internship or independent research is not required by the NLP M.S. program. Students are expected to maintain full-time enrollment for the duration of the program and complete all degree requirements within four to five quarters. Students are required to inform their Graduate Student Advisor by the end of the second week of their first fall quarter if they plan to complete the M.S. Degree requirements in four quarters or five quarters.

All courses, with the exception of the NLP 280 seminar, are offered once per academic year. If a student fails a core course, they will be required to retake and pass that course the following year when it is offered. If a student fails an elective course, they may make up those credits by passing an additional elective course in a subsequent quarter. Students receiving two or more unsatisfactory grades (U or letter grade below B-) are not making adequate progress and will be recommended for academic probation for up to three quarters of registered enrollment. Should a student fail a course while on academic probation, the department may request the graduate dean to dismiss the student from the graduate program. If after being removed from probation, the student again fails a Baskin School of Engineering course, they will return immediately to academic probation. Taking a leave of absence does not count as enrollment.

Students not making adequate progress toward completion of degree requirements (see the Graduate Student Handbook for policy on satisfactory academic progress) may be recommended for academic probation. Students who violate the terms of their academic probation are subject to dismissal from the program.

Applying for Graduation

All candidates for a degree must submit an Application for the Master's Degree to the Graduate Advising Office by the date stated in the Academic and Administrative Calendar for the quarter you wish to receive the degree. Failure to declare candidacy by the deadline means that you cannot be considered a candidate until the next term. For more information about applying for graduation, visit the Baskin School of Engineering Graduate Studies website.

Optional Catchall

HUMAN LANGUAGE MEDIA AND MODELING DESIGNATED EMPHASIS

Introduction

The graduate designated emphasis (DE) leading to the degree notation “with an emphasis in Human Language Media and Modeling Designated Emphasis” (HLMM) is a collaboration of faculty from the Departments of Computer Science and Engineering, Linguistics, and Psychology. This DE is administered by the Department of Computer Science and Engineering. Students wishing to complete a master’s thesis, project, or doctoral dissertation in this area must satisfy the degree requirements of a primary program as well as those of the DE. The DE is most suitable for students pursuing degrees in linguistics, computational media, computer science and engineering, and psychology. However, students from any area may work in this interdisciplinary field as long as they

meet all requirements, including progress, within the primary degree program.

The current HLMM DE faculty are:

- Pranav Anand, Linguistics
- Jeffrey Flanigan, Computer Science and Engineering
- Jean E. Fox Tree, Psychology
- Yi Zhang, Computer Science and Engineering

Requirements

All students must demonstrate an understanding of human language media and modeling designated emphasis, through prior work and the completion of a set of HLMM DE electives or courses.

Committee Composition and Departmental Approvals

The student's M.S. project or thesis, or Ph.D. qualifying exam, or Ph.D. committee must include one member of the HLMM DE faculty.

Course Requirements

All students must complete three 5-credit graduate core courses from the approved list of courses and two offerings of a 2-credit seminar course.

List of Approved Courses

Three 5-credit courses, plus two 2-credit seminars are required, chosen from the list of approved courses:

CSE 240	Artificial Intelligence	5
CSE 245	Computational Models of Discourse and Dialogue	5
CSE 244B	Machine Learning for Natural Language Processing	5
CSE 290K	Advanced Topics in Natural Language Processing	5
CSE 243	Data Mining	5
CSE 272	Information Retrieval	5
STAT 266C	Introduction to Data Wrangling	3

Seminar Course List

CSE 280Z	Seminar in Natural Language Processing and Dialogue	2
NLP 280	Seminar in Natural Language Processing	2

Writing, Research and/or Teaching Requirements

The student's dissertation or master's project or thesis must demonstrate knowledge of, and orientation to, research issues related to HLMM.

Proficiency Requirements

All students must demonstrate an understanding of Natural Language Processing, through prior work and the completion of a set of HLMM electives or courses.

COMPUTER ENGINEERING BS ELECTIVE COURSE LIST

Computer Engineering Electives

Electives

The courses listed here will satisfy the upper division/graduate/or approved elective requirement for the computer engineering major.

AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5
CMPM 146	Game AI	5
CSE 101M	Mathematical Thinking for Computer Science	5
CSE 102	Introduction to Analysis of Algorithms	5
CSE 103	Computational Models	5
CSE 106	Applied Graph Theory and Algorithms	5
CSE 108	Algorithmic Foundations of Cryptography	5
CSE 110A	Fundamentals of Compiler Design I	5
CSE 110B	Fundamentals of Compiler Design II	5
CSE 111	Advanced Programming	5
CSE 112	Comparative Programming Languages	5
CSE 113	Parallel and Concurrent Programming	5
CSE 114A	Foundations of Programming Languages	5
CSE 115A	Introduction to Software Engineering	5
CSE 118	Mobile Applications	5
CSE 122	Introduction to VLSI Digital System Design	5
CSE 125	Logic Design with Verilog	7
CSE 130	Principles of Computer Systems Design	5
CSE 132	Computer Security	5
CSE 134	Embedded Operating Systems	5
CSE 138	Distributed Systems	5
CSE 140	Artificial Intelligence	5
CSE 142	Machine Learning	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 150	Introduction to Computer Networks	7
CSE 151	Advanced Computer Networks	5
CSE 151L	Advanced Computer Networks Laboratory	2
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 157	Internet of Things	7

CSE 160	Introduction to Computer Graphics	7
CSE 161	Introduction to Data Visualization	5
CSE 161L	Data Visualization Laboratory	2
CSE 165	Human-Computer Interaction	5
CSE 167	Mobile Sensing and Interaction	5
CSE 180	Database Systems I	5
CSE 181	Database Systems II	5
CSE 183	Web Applications	5
CSE 186	Full Stack Web Development I	5
CSE 193	Field Study	5
CSE 198	Individual Study or Research	5
CSE 220	Computer Architecture	5
CSE 222A	VLSI Digital System Design	5
CSE 225	Introduction to ASIC Systems Design	7
CSE 228A	Agile Hardware Design	5
CSE 276	Optimization Theory and Applications	5
ECE 102	Properties of Materials	5
ECE 102L	Properties of Materials Laboratory	2
ECE 115	Introduction to Solid Mechanics	5
ECE 118	Introduction to Mechatronics	10
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 141	Feedback Control Systems	5
ECE 151	Communications Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 153	Digital Signal Processing	5
ECE 171	Analog Electronics	5
ECE 171L	Analog Electronics Laboratory	2
ECE 172	Advanced Analog Circuits	5
ECE 173	High-Speed Digital Design	7
ECE 175	Energy Generation and Control	5
ECE 175L	Energy Generation and Control Laboratory	2

COMPUTER ENGINEERING BS DIGITAL HARDWARE CONCENTRATION GRAD-LEVEL COURSE LIST

Computer Engineering B.S. Digital Hardware Concentration Grad-Level Course List

Computer Engineering B.S. Digital Hardware Concentration Grad-Level Course List

CSE 207	Graph Algorithms	5
CSE 220	Computer Architecture	5
CSE 221	Advanced Microprocessor Design	5
CSE 222A	VLSI Digital System Design	5
CSE 222B	VLSI System-on-a-Chip Design	5
CSE 225	Introduction to ASIC Systems Design	7
CSE 226	Advanced Parallel Processing	5
CSE 228A	Agile Hardware Design	5
CSE 229	Field-Programmable Gate Arrays Computer-Assisted Design	5
CSE 234	Understanding Cryptography	5
CSE 250A	Computer Networks	5
CSE 250B	Principles of Computer Communication	5
CSE 250C	High Speed Computer Networks	5
CSE 253	Network Security	5
CSE 257	Wireless and Mobile Networks	5
CSE 259	Sensor Networks	5
CSE 264	Computer Vision	5
CSE 265	Human-Computer Interaction	5
ECE 215	Models of Robotic Manipulation	5
ECE 216	Bio-Inspired Locomotion	5
ECE 218	Mechatronics	10
ECE 240	Introduction to Linear Dynamical Systems	5
ECE 241	Introduction to Feedback Control Systems	5
ECE 242	Applied Feedback Control	5
ECE 244	Digital Control	5
ECE 246	Hybrid Dynamical Systems	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5
ECE 249	Introduction to Cyber-physical Systems	5

NETWORK AND DIGITAL TECHNOLOGY ELECTIVES COURSE LIST

Network and Digital Technology Electives

The following additional electives may count toward the Network and Digital Technologies B.A. electives requirement. In addition to the list below, courses on the major's program statement listed under the Digital Technology for Networking Focus and/or Internet Software Technology Focus will count as electives.

Lecture/lab combinations count as one course.

Applied Mathematics

AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5
AM 231	Nonlinear Control Theory	5

Computational Media

CMPM 146	Game AI	5

Computer Science and Engineering

CSE 100	Logic Design	5
CSE 100L	Logic Design Laboratory	2
CSE 101M	Mathematical Thinking for Computer Science	5
CSE 102	Introduction to Analysis of Algorithms	5
CSE 103	Computational Models	5
CSE 107	Probability and Statistics for Engineers	5
CSE 110A	Fundamentals of Compiler Design I	5
CSE 110B	Fundamentals of Compiler Design II	5
CSE 111	Advanced Programming	5
CSE 112	Comparative Programming Languages	5
CSE 113	Parallel and Concurrent Programming	5
CSE 120	Computer Architecture	5
CSE 121	Embedded System Design	7
CSE 125	Logic Design with Verilog	7
CSE 132	Computer Security	5
CSE 138	Distributed Systems	5
CSE 140	Artificial Intelligence	5
CSE 142	Machine Learning	5
CSE 144	Applied Machine Learning: Deep Learning	5
CSE 160	Introduction to Computer Graphics	7
CSE 161	Introduction to Data Visualization	5
CSE 161L	Data Visualization Laboratory	2
ECON 166A	Game Theory and Applications I	5
CSE 193	Field Study	5
CSE 198	Individual Study or Research	5
CSE 276	Optimization Theory and Applications	5

CSE 193 and 198 require approval that is determined by the department via Course Substitution Petition. Students may take CSE 107 or STAT 131, but not both.

Electrical and Computer Engineering

ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 102	Properties of Materials	5
ECE 102L	Properties of Materials Laboratory	2
ECE 103	Signals and Systems	5
ECE 103L	Signals and Systems Laboratory	2
ECE 115	Introduction to Solid Mechanics	5
ECE 118	Introduction to Mechatronics	10
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 151	Communications Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 153	Digital Signal Processing	5
ECE 167	Sensing and Sensor Technologies	7
ECE 171	Analog Electronics	5
ECE 171L	Analog Electronics Laboratory	2
ECE 172	Advanced Analog Circuits	5
ECE 173	High-Speed Digital Design	7
ECE 175	Energy Generation and Control	5
ECE 175L	Energy Generation and Control Laboratory	2
ECE 180J	Advanced Renewable Energy Sources, Storage, and Smart Grids	5

Statistics

STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

Students may take CSE 107 or STAT 131, but not both.

Electrical and Computer Engineering

Baskin Engineering
(831) 459-2158
engineering.ucsc.edu

PROGRAMS OFFERED

Electrical Engineering B.S. (p. 609)

Robotics Engineering B.S. (p. 617)

Electrical Engineering Minor (p. 623)

Assistive Technology Minor (p. 627)

Bioelectronics and Biophotonics Minor (p. 628)

Electrical and Computer Engineering Contiguous Bachelor's/Master's Pathway (p. 628)

Electrical and Computer Engineering M.S. (p. 630)

Electrical and Computer Engineering Ph.D. (p. 633)

Robotics and Control Designated Emphasis (p. 637)

The Electrical and Computer Engineering Department at UC Santa Cruz aims to achieve engineering discoveries that benefit humankind through a combination of curiosity, open-mindedness, and inclusiveness. We aim to provide undergraduate and graduate students with inspiration and quality education, believing that rigor, creativity, and excitement should be part of the Electrical and Computer Engineering curriculum. Our Electrical Engineering undergraduate program is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org.

UNDERGRADUATE PROGRAM

The Electrical and Computer Engineering Department's undergraduate program offers bachelor of science degrees for students majoring in electrical engineering and robotics engineering. The electrical engineering B.S. degree is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org. Minors are also offered in electrical engineering, bioelectronics and biophotonics, and assistive technology.

The department emphasizes teaching excellence, opportunities for students to engage in research with our faculty, and preparation for industrial professional practice through yearlong interdisciplinary team-based capstone projects. Students primarily intending to pursue graduate study research can choose the thesis option instead of the capstone sequence.

For more details, visit the Electrical and Computer Engineering Department website and the department's program statements in the catalog.

GRADUATE PROGRAM

The Department of Electrical and Computer Engineering (ECE) at the University of California, Santa Cruz (UCSC) offers master of science (M.S.) and doctor of philosophy (Ph.D.) degree programs and conducts research in the following core areas:

- Electronic Circuits and Energy Systems
- Photonic and Electronic Devices
- Robotics, Control, and Cyber-Physical Systems
- Signals, Image Processing, and Communication Systems

For more information about the core areas and associated graduate courses, the department, and its faculty, please visit the Electrical and Computer Engineering Department website and the respective program statements in the catalog.

ELECTRICAL ENGINEERING B.S.

Information and Policies

Introduction

The electrical engineering B.S. program is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org.

Students can pursue either of two concentrations, Electronics/Optics or Communications, Signals and Systems.

Program Learning Outcomes

Program Educational Objectives:

Program Educational Objectives (PEOs) are based on the needs of the Electrical Engineering program constituents. They describe what graduates are expected to attain within a few years after graduation.

The PEOs for the Electrical Engineering program at the University of California, Santa Cruz, are as follows:

1. Advanced Learning and Professional Development: Achieve a high quality, professional approach to engineering through a desire for advanced education, lifelong learning and participation in the professional engineering community.
2. Adaptation to Technological Change: Enjoy a successful professional career in a world with rapid technological change by having a sound foundation in the fundamental electrical engineering theory, design and basic science upon which future technology will be based.
3. Skills for Initial and Continued Employment Success: Demonstrate job-relevant electrical engineering skills through theoretical and practical competence in hardware, software, and programming aspects of electrical engineering, as well as independence in thought and action.
4. Leadership, Teamwork and Entrepreneurial Skills: Achieve a high level of individual creativity for personal achievement as well as the interpersonal, communications and responsibility skills for creating an effective team project environment, including an ability to apply engineering competence in both research and product oriented settings.
5. Ethics and Societal Issues: Practice a high standard of professional ethics and have a positive impact on the social and environmental aspects of engineering design and implementation.

Student Outcomes:

Upon graduation, students completing the Electrical Engineering B.S. program shall have an ability to:

1. identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;
2. apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;
3. communicate effectively with a range of audiences;
4. recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts;
5. function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions; and
7. acquire and apply new knowledge as needed, using appropriate learning strategies.

Academic Advising for the Program

The Baskin Engineering undergraduate advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications.

Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

For the first two years, all electrical engineering students are expected to take a basic set of lower-division mathematics, physical science, and engineering courses. After the first two years, electrical engineering students focus on topics within the discipline and specialize in one of two options: electronics/optics, including digital and analog circuits and devices, VLSI design, optoelectronics, electromagnetics, power engineering, and biomedical device engineering; or communications, signals, systems, and control, including optical, wireless communication, signal and image processing, networks signal processing, instrumentation, and control.

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer students who want to pursue the electrical engineering major, must have applied and been admitted to UC Santa Cruz as a proposed electrical engineering major.

Transfer Admission Screening Policy

The following Transfer Screening policy takes effect in fall 2024 and will be mandatory for all transfer students entering UC Santa Cruz fall 2026 and later. Transfer students entering UCSC prior to fall 2026 are encouraged to complete these requirements, but will still be considered for admission if they fulfill the 2023-2024 admissions screening requirements.

Time to degree completion varies based on coursework completed prior to transfer. Students are strongly encouraged to complete all equivalent coursework available to them before transferring.

Please refer to the sample plans in the Requirements and Planners section. In most cases, students are not able to complete more than two upper-division classes per term. Contact the BE Advising office if you have questions regarding how long it will take to complete the degree requirements.

The following courses or their equivalents, are required prior to transfer by the end of spring term for students planning to enter in the fall.

First-year calculus

Both:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Linear algebra

One of:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Differential equations

One of:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Calculus-based physics

A year of calculus-based physics courses accepted as equivalent to:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5C	Introduction to Physics III	5

PHYS 5N	Introduction to Physics Laboratory III	1

Cumulative GPA

A minimum GPA of 2.8 must be obtained in the courses listed above.

Beginning fall of 2026, CSE 12 or an equivalent will be required prior to transfer.

Computer systems

CSE 12	Computer Systems and Assembly Language and Lab	7

Additionally

In addition, the following courses are recommended prior to transfer

PHYS 5D	Introduction to Physics IV	5
CSE 20	Beginning Programming in Python	5
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2

General Education Options

Prospective students are encouraged to prioritize required and recommended major preparation prior to transfer, and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. Instructions for declaring a major in Baskin Engineering are on the Declare Your Major page.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the Transfer Admission Screening requirements.

Admission to the electrical engineering major is selective. In order to be admitted into the electrical engineering major students must be listed as a proposed major within Baskin Engineering, and complete all the courses listed below with a GPA of 2.8 or better. Some courses may be satisfied via exam credit. Courses completed via exam credit are not included in the GPA calculation.

Please refer to the Baskin Engineering "Proposed Major Retention" and its "Declaring a Baskin Engineering Major" sections in the catalog or Baskin Engineering's information on declaring a major for more information.

Both of the following:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following courses:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following courses:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Plus all the following courses:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1

PHYS 5B/PHYS 5M can be substituted by one of the required upper-division courses for the purposes of major qualification. PHYS 5B/PHYS 5M is still required to complete major requirements.

Plus the following course:

ECE 80T	Modern Electronic Technology and How It Works	5

ECE 80T is waived for transfer students, though the course is still recommended.

Plus one additional lower-division required course:

CSE 12	Computer Systems and Assembly Language and Lab	7
ECE 13	Computer Systems and C Programming	7
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
AM 30	Multivariate Calculus for Engineers	5
AM 100	Mathematical Methods for Engineers	5
PHYS 5D	Introduction to Physics IV	5

MATH 23A or AM 30;

MATH 23B or AM 100

Appeal Process

Students who are informed that they are not eligible to declare may appeal this decision by submitting a letter to the undergraduate director within 15 days from the date the notification was mailed. Within 15 days of receipt of the

appeal, the department will notify the student, the college, and the Office of the Registrar of the decision.

If you have further questions concerning the appeal process, please contact the Undergraduate Advising Office at (831) 459-5840 or email bsoeadvising@ucsc.edu.

More information regarding the appeal process can be found on the Baskin Engineering Major Declaration Appeal Process page.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Major Declaration consists of four steps:

Step 1- Log into MyUCSC and submit the Petition for Major/Minor via MyUCSC as soon as you have met major qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Step 2- After submitting the Petition for Major/Minor via MyUCSC *it can take up to 10 business days to receive a response.* The response will be an email from our office indicating that your petition has been processed and informing you of your next steps. At this point, you will either be given information regarding next steps for Major Declaration **OR** next steps for the Major Declaration Appeal process.

Step 3- Students who meet their major qualification requirements to declare will be added to a Canvas course. The Canvas course consists of several modules with information about campus and major policies, major requirements, as well as academic planning guidance. Students will be expected to score a 100% on a short quiz, checking for understanding of this information before their major declaration will be processed.

Step 4- The Baskin Engineering Undergraduate Advising office will review which students have completed the Final Major Declaration quiz with 100% and have submitted an academic plan every Wednesday. If you have completed both items, your major declaration will be processed within a week from that Wednesday and any associated major declaration holds will be lifted.

To see if your major has been officially declared: You can go to your MyUCSC Student Center and click on “Student Advising Summary".

On the Career/Program/Plan tab, you will see the field "Declared Major:" and your major will be listed.

If your major declaration has not been entered yet, you will see the field "Proposed Major:" with your proposed major listed.

Detailed instructions for declaring a major in Baskin Engineering are on the BE Undergraduate Advising Declare your Major page.

Letter Grade Policy

The Electrical and Computer Engineering Department requires letter grading for all courses applied toward the Electrical Engineering Bachelor of Science (B.S.) degree.

[Optional Catchall]

Course Substitution Policy

Please refer to the Substitutions for Courses Taken at UCSC and Course Equivalencies and Substitutions Taken at an Outside Institution sections of the Baskin Engineering page of the catalog for the policy regarding course substitutions.

Double Majors and Major/Minor Combinations Policy

ECE 121, ECE 141 and ECE 167, which are used toward the assistive technology minor, cannot also be used to satisfy electrical engineering B.S. electives.

Study Abroad

Four-Year Institutions and the UC Education Abroad Program (UCEAP)

Students who intend to take a course at a four-year institution or UC Education Abroad, must submit a Course Substitution Petition to the BE Undergraduate Advising Office to have the course reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus.

It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations.

To guarantee equivalency, departments may sometimes require a grade of B or better. If the course is approved for equivalency, then the student must also receive approval by their major department **PRIOR** to taking the class. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Honors

Electrical engineering majors are considered for “Honors in the Major” and “Highest Honors in the Major” based on the GPA and on results of undergraduate research and other significant contributions to Baskin Engineering. Students with a GPA of 3.7 or higher receive highest honors. Students with a GPA of 3.3 or higher but less than 3.7, receive honors. A student meeting the GPA requirement for highest honors or honors may not receive honors if a student has been found guilty of academic misconduct. Students with particularly significant accomplishments in undergraduate research or contributions to Baskin Engineering may be considered with a lower GPA. Electrical engineering juniors and seniors may also be eligible for election to the UC Santa Cruz chapter of Tau Beta Pi, the national engineering honor society founded in 1885.

Materials Fee and Miscellaneous Fees

Please see the section on fees under Baskin Engineering.

[Optional Catchall]

Requirements and Planners

Course Requirements (all concentrations)

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

Students gain a solid foundation in calculus, engineering mathematics, physics, computer science, and computer engineering during their first two years. Majors must complete the following 13 lower-division courses (including corresponding laboratories). These courses form part of the prerequisite sequence and should be completed during the first two years at UC Santa Cruz. The requirements are rigorous; students must be prepared to begin these courses early in their studies.

Electrical and Computer Engineering

ECE 80T	Modern Electronic Technology and How It Works	5

This course is waived for transfer students.

Computer Science and Engineering

One of these courses:

CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7

A test-out option is available for CSE 20.

Plus both of these courses:

CSE 12	Computer Systems and Assembly Language and Lab	7
ECE 13	Computer Systems and C Programming	7

Mathematics

Take the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following options:

	Either these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5
	or these courses	
AM 30	Multivariate Calculus for Engineers	5
AM 100	Mathematical Methods for Engineers	5

Applied Mathematics

One of the following

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Physics

All of the following:

PHYS 5A	Introduction to Physics I	5
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
PHYS 5D	Introduction to Physics IV	5

Upper-Division Courses

Fifteen upper-division courses along with associated 1- or 2-credit laboratories are required for the major. The course requirements include both depth and breadth, technical writing, and a comprehensive capstone design project.

All students are required to take the following eight upper-division courses, with associated laboratories.

Electrical and Computer Engineering

ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 102	Properties of Materials	5
ECE 102L	Properties of Materials Laboratory	2
ECE 103	Signals and Systems	5
ECE 103L	Signals and Systems Laboratory	2
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 151	Communications Systems	5
ECE 171	Analog Electronics	5
ECE 171L	Analog Electronics Laboratory	2

Computer Science and Engineering

CSE 100	Logic Design	5
CSE 100L	Logic Design Laboratory	2

Statistics

One of the following

CSE 107	Probability and Statistics for Engineers	5
STAT 131	Introduction to Probability Theory	5

Lecture/lab combinations count as one course.

Electives

In addition to completing the courses required for both concentrations, electrical engineering majors must complete four elective courses chosen from the lists below. Students pursuing the Electronics/Optics concentration must choose at least three courses from the Electronics/Optics courses listed below. Students pursuing the Communications, Signals and Systems concentration must choose at least three courses from the Communication and Signals courses listed below.

Certain graduate-level courses as well as those courses taught in conjunction with graduate courses may also be used to fulfill an elective requirement as listed below. No course may be counted twice.

ECE 183 can be taken as an elective course with an approval of the undergraduate director.

Design Elective: One of the four concentration courses chosen must include at least one of the following design electives ECE 118, ECE 121, ECE 157 ECE 157L, ECE167 and ECE 173. This course must be taken before the first capstone course ECE 129A.

Electronics/Optics Concentration Courses

Electrical and Computer Engineering

ECE 104	Bioelectronics	5
ECE 110	Brain-Inspired Machine Learning	5
ECE 115	Introduction to Solid Mechanics	5
ECE 118	Introduction to Mechatronics	10
ECE 121	Microcontroller System Design	7
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 157	RF Hardware Design	5
ECE 157L	RF Hardware Design Laboratory	2
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 167	Sensing and Sensor Technologies	7
ECE 172	Advanced Analog Circuits	5
ECE 173	High-Speed Digital Design	7
ECE 169	Electric Machinery and Control	5
ECE 175	Energy Generation and Control	5
ECE 175L	Energy Generation and Control Laboratory	2
ECE 176	Energy Conservation and Control	5
ECE 176L	Energy Conversion and Control Laboratory	2
ECE 177	Power Electronics	5
ECE 177L	Power Electronics Laboratory	2
ECE 178	Device Electronics	5
ECE 180J	Advanced Renewable Energy Sources, Storage, and Smart Grids	5
ECE 183	Special Topics in Electrical Engineering	5
ECE 185	Introduction to the US Electricity Industry	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 201	Introduction to Nanotechnology	5
ECE 203	Nanocharacterization of Materials	5
ECE 207	Nanomaterials and Nanometer-Scale Devices	5
ECE 210	Brain-Inspired Machine Learning	5
ECE 215	Models of Robotic Manipulation	5
ECE 221	Advanced Analog Integrated Circuits	5
ECE 222A	Advances in Agriculture Technology	5
ECE 230	Optical Fiber Communication	5
ECE 231	Optical Electronics	5
ECE 241	Introduction to Feedback Control Systems	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5
ECE 275	Energy Market, Policy, and Modeling	5

Lecture/lab combinations count as one course. Each of the ECE 183, ECE 193, and ECE 198 courses can be taken only once as an elective course.

[(ECE 130 and ECE 230), (ECE 141 and ECE 241), and (ECE 172 and ECE 221) are undergraduate and graduate courses, and from each pair of classes only one can be taken for this program.]

Communications, Signals, Systems Concentration Courses

Electrical and Computer Engineering

ECE 118	Introduction to Mechatronics	10
ECE 121	Microcontroller System Design	7
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 152	Introduction to Wireless Communications	5
ECE 153	Digital Signal Processing	5

ECE 157	RF Hardware Design	5
ECE 157L	RF Hardware Design Laboratory	2
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 173	High-Speed Digital Design	7
ECE 183	Special Topics in Electrical Engineering	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 230	Optical Fiber Communication	5
ECE 215	Models of Robotic Manipulation	5
ECE 237	Image Processing and Reconstruction	5
ECE 241	Introduction to Feedback Control Systems	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 244	Digital Control	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5
ECE 250	Digital Signal Processing	5
ECE 251	Principles of Digital Communications	5
ECE 252	Wireless Communications	5
ECE 253	Introduction to Information Theory	5
ECE 255	Error Control Coding	5
ECE 256	Statistical Signal Processing	5

Computer Science and Engineering

CSE 150	Introduction to Computer Networks	7

Lecture/lab combinations count as one course. Each of the ECE 183, ECE 193 and ECE 198 courses can be taken only once as an elective course.

[(ECE 130 and ECE 230), (ECE 152 and ECE 252), (ECE 141 and ECE 241), and (ECE 153 and ECE 250) are undergraduate and graduate courses, and from each pair of classes only one can be taken for this program.]

Disciplinary Communication (DC) Requirement

Students in all majors must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement is satisfied by completing the senior capstone course sequence:

Either these three courses:

ECE 129A	Capstone Project I	5
ECE 129B	Capstone Project II	5
ECE 129C	Capstone Project III	5

Or these two courses:

ECE 129A	Capstone Project I	5
ECE 195	Senior Thesis Research	5
ECE 195	Senior Thesis Research	5

10 credits for the senior thesis course, ECE 195, must be completed for this option.

Comprehensive Requirement

The senior comprehensive requirement for electrical engineering majors is in two parts: a project course and assessment options.

Project Course

These senior-level courses encompass an in-depth project, including analysis, design, testing, and documentation, requiring students to call upon knowledge acquired throughout their undergraduate studies. Students must complete one capstone design course that spans three quarters. Current course choices include the following:

ECE 129A	Capstone Project I	5
ECE 129B	Capstone Project II	5
ECE 129C	Capstone Project III	5

Or complete the following courses:

ECE 129A	Capstone Project I	5
ECE 195	Senior Thesis Research	5
ECE 195	Senior Thesis Research	5

10 credits for the senior thesis course, ECE 195, must be completed for this option.

Outcomes Assessment Options

The Electrical and Computer Engineering Department requires an outcomes assessment. All students are required to complete an exit survey and meet with a faculty member for an exit interview. The specifics of the outcomes assessment may change from year to year; for this catalog year, students must also complete one of the following options:

1. maintenance of a 2.5 grade point average in all required and elective courses for the major; or
2. senior thesis submission; or
3. portfolio review.

Portfolios must include the following:

- project report(s)
- a one- or two-page overview of the student’s contribution to the project(s);
- a two-page essay concerning the relationship of engineering to society (specific topics will be provided by the Electrical and Computer Engineering Department).

The portfolios must be submitted electronically at least seven days before the end of the instruction in the quarter of graduation. Portfolios will not be returned.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following is a sample academic plan for incoming first-year students. Students who are unable to follow this planner should consult with ECE advisors for alternatives. Transfer students should seek advisement as their plans will vary depending on their lower-division courses.

Plan for Entering Frosh

	Fall	Winter	Spring	**Summer**
Entering				Summer Edge (optional) CSE 20 or test-out MATH placement exam
1st year	MATH 19A CSE 20 College 1	MATH 19B PHYS 5A PHYS 5L ECE 80T	CSE 12 AM 10 PHYS 5B PHYS 5M	
2nd year	PHYS 5C PHYS 5N AM 30 or MATH 23A PHYS 5D	ECE 101 ECE 101L AM 20 WRIT 2**	ECE 13 ECE 103 ECE 103L	Recommended Option: ECE 171 ECE 171L
3rd year	ECE 171 ECE 171L CSE 100 CSE 100L ECE 174 (if DE is ECE 157 or ECE 173)	Design Elective or Elective 1 STAT 131	Design Elective or Elective 2 AM 100 or MATH 23B	Internship
4th year	ECE 129A ECE 102 ECE 102L Elective 3	ECE 129B or ECE 195 (thesis) ECE 151	ECE 129C or ECE 195 (thesis) ECE 135 ECE 135L Elective 4	

* Students with no prior programming will take CSE 20 before CSE 12. Students with a prior programming course, AP credit, or clearing the “Test-out” bar will start with CSE 12.

** WRIT 2 should be taken in or before spring quarter of the second year.

Three of the four electives must be taken in the student’s concentration.

In addition to the specific courses shown in the planner above, a student must complete courses satisfying the CC, ER, IM, TA and PE general education requirements.

Plan for Junior Transfer Students with completion of screening requirements for admission

	Fall	Winter	Spring	**Summer**
2nd year				Summer Edge (optional) MATH recommended CSE 20 or test-out if no prior programming
3rd year	ECE 101 ECE 101L CSE 12 AM30 or MATH 23A	CSE 100 CSE100L STAT 131	ECE 103 ECE103L ECE 13	Recommended Option: ECE 171 ECE 171L
4th	ECE	Design	Design	

year	102 ECE 102L	Elective or Elective 1	Elective or Elective 2
	ECE 171 ECE 171L	ECE 151	Elective 3
	ECE 174 (if DE is ECE 157 or 173)		
5th year	ECE 129A	ECE 129A or ECE 195 (thesis)	ECE129 C or ECE195 (thesis)
	PHY S 5D	Elective 4	ECE 135 ECE 135L
	AM 100 or MAT H 23B		

Three of the four electives must be taken in the student's concentration.

Plan for Junior Transfer Students with completion of all recommended coursework prior to transfer

	Fall	Winter	Spring	**Summer**
2nd year				Summer Edge (optional) STAT 131 ECE 171 ECE 171L
3rd year	ECE 103 ECE 103L	Design Elective or Elective 1	Design Elective or Elective 2	
	ECE 13	ECE 171 ECE 171L	CSE 100 CSE 100L	
	ECE 174 (if DE is ECE 157 or 173)			
4th year	ECE 129A	ECE 129B or ECE 195 (thesis)	ECE 129C or ECE 195 (thesis)
	ECE 102 ECE 102L	ECE 151	ECE 135 ECE 135L
	STAT 131		
5th year	Elective 3		
	Elective 4		

Three of the four electives must be taken in the student's concentration.

Curriculum charts for all BE majors are available at the Baskin Engineering undergraduate advising Major Curriculum Charts page.

Additional information about this program can be found on the department's website.

ROBOTICS ENGINEERING B.S.

Information and Policies

Introduction

Program Learning Outcomes

Student Outcomes

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Academic Advising for the Program

The Baskin Engineering Undergraduate Advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications.

Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at the University of California, Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer students who want to pursue the robotics engineering major must have applied and been admitted to UC Santa Cruz as a proposed robotics engineering major.

Transfer Admission Screening Policy

Time to degree completion varies based on coursework completed prior to transfer. Students are strongly encouraged to complete all equivalent coursework available to them before transferring.

Please refer to the sample plans in the requirements and planners section. In most cases, students are not able to complete more than two upper-division classes per term. Contact the BE Advising office if you have questions regarding how long it will take to complete the degree requirements.

The following courses or their equivalents, are required prior to transfer by the end of spring term for students planning to enter in the fall.

First-year calculus

Both:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Linear Algebra

One of:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Differential equations

One of:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Calculus-based physics

Two quarters of calculus-based physics courses accepted as equivalent to:

PHYS 5A	Introduction to Physics I	5
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1

Cumulative GPA

A minimum GPA of 2.8 must be obtained in the courses listed above.

Beginning fall of 2026, CSE 12 or an equivalent will be required prior to transfer

Computer engineering

CSE 12	Computer Systems and Assembly Language and Lab	7

Additionally

In addition, the following courses are recommended prior to transfer.

MATH 23A	Vector Calculus	5
CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2

Also, CSE 16, CSE 20, CSE 30, MATH 23A, ECE 13, ECE 101/ECE 101L, ECE 171/ECE 171L, STAT 131 and many general education requirements may be offered by UC Santa Cruz Summer Session and taken prior to starting the first fall quarter at UCSC.

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. Instructions for declaring a major in Baskin Engineering are on the Declare Your Major page.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the Transfer Admission Screening requirements.

In order to be admitted into the robotics engineering major students must be listed as a proposed major within Baskin Engineering. Please refer to the Baskin Engineering "Proposed Major Retention" and its "Declaring a Baskin Engineering Major" sections in the catalog or the BE Undergraduate Advising Prepare to Declare page for more information.

In addition to being listed as a proposed Baskin Engineering major, declaration of the robotics engineering major in the first six quarters of enrollment at UC Santa Cruz is based on performance in the following lower-division courses and associated labs required for the major:

Take both of these courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following:

AM 30	Multivariate Calculus for Engineers	5
MATH 23A	Vector Calculus	5

Plus one of the following:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

And all of these courses:

ECE 9	Statics and Mechanics of Materials	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7
ECE 13	Computer Systems and C Programming	7
PHYS 5A	Introduction to Physics I	5
PHYS 5C	Introduction to Physics III	5

Appeal Process

Students who are informed that they are not eligible to declare may appeal this decision by submitting a letter to the undergraduate director within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, the college, and the Office of the Registrar of the decision.

If you have further questions concerning the appeal process, please contact the Undergraduate Advising Office at (831) 459-5840 or email bsoeadvising@ucsc.edu.

More information regarding the appeal process can be found on the BE Undergraduate Advising Appeal Your Major page.

How to Declare a Major

Instructions for declaring a major in Baskin Engineering are on the Baskin Engineering Undergraduate Advising Declare Your Major page.

Letter Grade Policy

The Electrical and Computer Engineering Department requires letter grading for all courses applied toward the B.S. in robotics engineering. This policy includes courses required for the degree that are sponsored by other departments.

[Optional Catchall]

Course Substitution Policy

Please refer to the Substitutions for Courses Taken at UCSC and Course Equivalencies and Substitutions Taken at an Outside Institution sections of the Baskin Engineering page of the catalog for the policy regarding course substitutions.

Double Majors and Major/Minor Combinations Policy

Students completing this major cannot also receive the computer engineering minor, assistive technology minor or the network and digital technology B.A. degree.

Study Abroad

Four-Year Institutions and the UC Education Abroad Program (UCEAP)

Students who intend to take a course at a four-year institution or UC Education Abroad, must submit a Course Substitution Petition to the BE Undergraduate Advising Office to have the course reviewed for equivalency. Courses that need to be reviewed must be accompanied by a course description and syllabus.

It is very helpful if students can provide further evidence of course content, such as examples of programming assignments, homework, or examinations. To guarantee equivalency, departments may sometimes require a grade of B or better. If the course is approved for equivalency, then the student must also receive approval by their major department

PRIOR to taking the class. Forms and procedures for approval can be obtained from and submitted to the BE Undergraduate Advising Office.

Honors

Majors are considered for "Honors in the Major" and "Highest Honors in the Major" based on their GPA and on results of undergraduate research and other significant contributions to Baskin Engineering. Students with a GPA of 3.7 or higher, in most cases, receive highest honors. Students with a GPA of 3.3 or higher but less than 3.7, in most cases, receive honors. Students with particularly significant accomplishments in undergraduate research or contributions to Baskin Engineering may be considered with a lower GPA. Robotics engineering juniors and seniors may also be eligible for election to the UC Santa Cruz chapter of Tau Beta Pi, the national engineering honor society founded in 1885.

School of Engineering Policies

Please refer to the Baskin Engineering section of the catalog for additional policies that apply to all Baskin Engineering programs.

Materials Fee and Miscellaneous Fees

Please see the section on fees under Baskin Engineering.

[Optional Catchall]

Requirements and Planners

Course Requirements

Completing the major declaration requirements in math and physics during the first two years is a priority to meet upper-division prerequisites. Although not required, it is recommended that students interested in the robotics engineering major take ECE 8, Introduction to Robot Automation. Please contact BE Advising if you have questions. The senior comprehensive requirement for robotics engineering majors is satisfied by completion of the capstone course and the portfolio exit requirement. Students not making sufficient progress in the major may be recommended to change to another major. Some courses may be satisfied via exam credit.

Lower-Division Courses

Students who may have originally pursued another major should discuss with the Baskin Engineering Undergraduate Advising office whether or not already completed coursework may be substituted for one or more lower-division requirements.

Either of the following:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Either of the following:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

And the following:

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7

Students with no prior programming will take CSE 20 before CSE 30. Students with a prior programming course, AP credit, or clearing the "Test-out" bar will start with CSE 30.

And either of the following:

MATH 23A	Vector Calculus	5
AM 30	Multivariate Calculus for Engineers	5

And all the following courses:

ECE 13	Computer Systems and C Programming	7
CSE 16	Applied Discrete Mathematics	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
PHYS 5A	Introduction to Physics I	5
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
ECE 9	Statics and Mechanics of Materials	5
ECE 10	Fundamentals of Robot Kinematics and Dynamics	5

Upper-Division Courses

All of the following:

CSE 100	Logic Design	5
CSE 100L	Logic Design Laboratory	2
ECE 141	Feedback Control Systems	5
ECE 167	Sensing and Sensor Technologies	7
CSE 101	Introduction to Data Structures and Algorithms	5
ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 103	Signals and Systems	5
ECE 103L	Signals and Systems Laboratory	2
ECE 118	Introduction to Mechatronics	10
ECE 121	Microcontroller System Design	7

And either of the following:

CSE 107	Probability and Statistics for Engineers	5
STAT 131	Introduction to Probability Theory	5

Electives

Advanced Robotics Elective

One of the following:

ECE 215	Models of Robotic Manipulation	5
ECE 216	Bio-Inspired Locomotion	5
ECE 240	Introduction to Linear Dynamical Systems	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 244	Digital Control	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5
ECE 246	Hybrid Dynamical Systems	5
ECE 249	Introduction to Cyber-physical Systems	5

Upper-Division and Graduate Elective

One course from the following (with a recommendation of ECE163):

ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 149	Introduction to Cyber-physical Systems	5
ECE 153	Digital Signal Processing	5
ECE 222A	Advances in Agriculture Technology	5
ECE 110	Brain-Inspired Machine Learning	5
ECE 169	Electric Machinery and Control	5
ECE 151	Communications Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 171	Analog Electronics	5
ECE 171L	Analog Electronics Laboratory	2
ECE 172	Advanced Analog Circuits	5
ECE 173	High-Speed Digital Design	7
ECE 175	Energy Generation and Control	5
ECE 175L	Energy Generation and Control Laboratory	2
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 102	Properties of Materials	5
ECE 102L	Properties of Materials Laboratory	2
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5
CSE 131	Introduction to Operating Systems	5
CSE 156	Network Programming	5
CSE 156L	Network Programming Laboratory	2
CSE 118	Mobile Applications	5
CSE 140	Artificial Intelligence	5
CSE 142	Machine Learning	5
CSE 276	Optimization Theory and Applications	5
CMPM 146	Game AI	5

Lecture and required concurrent lab course counts as one course.

Disciplinary Communication (DC) Requirement

Students in all majors must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in robotics is satisfied by completing the senior capstone course sequence:

Either these three courses:

ECE 129A	Capstone Project I	5
ECE 129B	Capstone Project II	5
ECE 129C	Capstone Project III	5

Or these two courses:

ECE 129A	Capstone Project I	5
ECE 195	Senior Thesis Research	5
ECE 195	Senior Thesis Research	5

10 credits for the senior thesis course, ECE 195, must be completed for this option.

Comprehensive Requirement

The senior comprehensive requirement for robotics engineering majors is in two parts: a project course and assessment options.

Capstone Requirement

Students must complete one capstone design course that spans three quarters

ECE 129A	Capstone Project I	5
ECE 129B	Capstone Project II	5
ECE 129C	Capstone Project III	5

or complete the following courses:

ECE 129A	Capstone Project I	5

ECE 195	Senior Thesis Research	5
ECE 195	Senior Thesis Research	5

10 credits for the senior thesis course, ECE 195, must be completed for this option.

Exit Requirement

Students are required to complete an exit survey and attend an exit interview. Portfolios of the students work will be collected from our courses for program evaluation. The portfolios will be reviewed by the Electrical and Computer Engineering undergraduate committee and will include two project reports: ECE 118 and either the senior capstone report (ECE 129A/ECE 129B/ECE 129C) or the student's senior thesis.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following is a sample academic plan for incoming first-year students. Students who are unable to follow this planner should consult with ECE advisors for alternatives. Transfer students should seek advisement as their plans will vary depending on their lower-division courses.

Plan for Entering Frosh

Year	Fall	Winter	Spring	**Summer**
1st	MATH 19A	MATH 19B	CSE 12	
	CSE 20	PHYS 5A PHYS 5L	AM 10	
	College 1	WRIT 1 (if neded)	CSE 16	
	ECE 8* (recommended if MATH 19A is completed)			
2nd	PHYS 5C PHYS 5N	AM 20	ECE 13	Elective Option: ECE 171 ECE 171L completes EE minor
	AM 30	ECE 101 ECE 101L	ECE 103 ECE 103L	
	CSE 30	WRIT 2**		
3rd	CSE 100 CSE 100L	ECE 121	ECE 118	
	CSE 107 or STAT 131	ECE9	ECE 10	
	ECE 8* (recommended)			
4th	ECE 129A	ECE 129B or ECE 195 (thesis)	ECE 129C or ECE 195 (thesis)	
	ECE 141	ECE 167	Adv. Robo. Elective	
	CSE 101		Elective	

* MATH 19A is the priority for 1st-year students. ECE 8 is recommended for 1st-year students who have already earned credit for MATH 19A. Please consult with BE Advising if you have questions.

** WRIT 2 should be taken in or before spring quarter of the second year.
Electives and advanced robotics electives may only be offered once per year, and may have additional prerequisites.

Plan for Junior Transfer Students with completion of screening requirements for admission

Year	Fall	Winter	Spring	**Summer**
2nd				Summer Edge (optional) (math recommended)
3rd	ECE 101 ECE 101L	CSE 100 CSE 100L	ECE 103 ECE 103L	Elective Option: ECE 171 ECE 171L completes EE minor
	CSE 12	ECE 9	ECE 13	

	CSE 16	CSE 20	AM 30 or MATH 23A
4th	CSE 30	ECE 121	ECE 118
	ECE 141	CSE 107 or STAT 131	ECE 10
5th	ECE 129A	ECE 129B or ECE 195 (thesis)	ECE 129C or ECE 195 (thesis)
	Elective or Adv. Robo. Elective	ECE 167	Elective or Adv. Robo. Elective
	CSE 101		

Electives and Advanced Robotics Electives may only be offered once per year, and may have additional prerequisites.

Plan for Junior Transfer Students with completion of all recommended coursework prior to transfer

Year	Fall	Winter	Spring	**Summer**
2nd				Summer Edge (optional)
3rd	ECE 103 ECE 103L	Elective Option: ECE 171 ECE 171L completes EE minor	CSE 100 CSE 100L	
	ECE 13	ECE 9	ECE 10	
4th	CSE 101	ECE 121	ECE 118 (10 credits, not recommended with other upper-division coursework)	
	ECE 141	CSE 107		
5th	ECE 129A	ECE 129B or ECE 195 (thesis)	ECE 129C or ECE 195 (thesis)	
Adv. Robo. Elective	ECE 167			
	Part Time Final Quarter			

Electives and Advanced Robotics Electives may only be offered once per year, and may have additional prerequisites. Curriculum charts for all Baskin Engineering majors are available at the BE Undergraduate Advising Major Curriculum Charts page.

ELECTRICAL ENGINEERING MINOR

The electrical engineering minor provides a solid foundation in the core areas of electronic circuits and signals and systems, as well as the prerequisite material in mathematics and physics. Concentration of upper-division electives in either of the major tracks constitutes substantial and focused work in the discipline of electrical engineering. This minor is particularly suitable for students with majors in applied physics or any Baskin Engineering major.

Course Requirements

Requirements for the minor in Electrical Engineering are the following. Though courses for the minor may be taken for a letter grade or Pass/No Pass (P/NP), many of the courses may be required for a student's major which could require a letter grade (including all Baskin Engineering majors). Students should be aware of the letter grade policy for their chosen major before choosing Pass/No Pass.

Lower-Division Courses

Mathematics

Math placement is required for one or more of the foundational courses for this minor. For more information, please review the Math Placement website.

All of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following courses

MATH 23A	Vector Calculus	5
AM 30	Multivariate Calculus for Engineers	5

Plus one of the following

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Science

One of the following lecture/lab combinations

	Either these courses	
PHYS 5A	Introduction to Physics I	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1

Plus one of the following lecture/lab combinations

	Either these courses	
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
	or these courses	
PHYS 6C	Introductory Physics III	5
PHYS 6N	Introductory Physics III Laboratory	1

Upper-Division Courses

All of the following courses

ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 103	Signals and Systems	5
ECE 171	Analog Electronics	5
ECE 171L	Analog Electronics Laboratory	2

Electives

Plus at least 15 additional credits of upper-division or graduate courses from the lists below. All of the upper-division electives must come from the same concentration.

If a course has a required lab, students must pass the lecture and lab in order to use the lab credits to fulfill the 15-credit requirement for the minor.

ECE 183 can be taken as an elective course with an approval of the undergraduate director.

Communications Signal Processing Concentration

Electrical and Computer Engineering

ECE 118	Introduction to Mechatronics	10
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 149	Introduction to Cyber-physical Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 157	RF Hardware Design	5
ECE 157L	RF Hardware Design Laboratory	2
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 183	Special Topics in Electrical Engineering	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 215	Models of Robotic Manipulation	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5
ECE 251	Principles of Digital Communications	5
ECE 253	Introduction to Information Theory	5
ECE 255	Error Control Coding	5
ECE 256	Statistical Signal Processing	5

Each of ECE 183, ECE 193 and ECE 198 courses can be taken only once as an elective course.

(ECE 130 and ECE 230, ECE 141 and ECE 241, and ECE 153 and ECE 250 are undergraduate and graduate courses taught in conjunction, and only one can be taken for this program.)

Computer Science and Engineering

CSE 150	Introduction to Computer Networks	7

Control and Signal Processing Concentration

Electrical and Computer Engineering

ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 136	Engineering Electromagnetics	5
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 149	Introduction to Cyber-physical Systems	5
CSE 152	Principles of Computer Communication	5
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 172	Advanced Analog Circuits	5
ECE 176	Energy Conservation and Control	5
ECE 176L	Energy Conversion and Control Laboratory	2
ECE 177	Power Electronics	5
ECE 177L	Power Electronics Laboratory	2
ECE 183	Special Topics in Electrical Engineering	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 215	Models of Robotic Manipulation	5
ECE 237	Image Processing and Reconstruction	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 244	Digital Control	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5
ECE 251	Principles of Digital Communications	5
ECE 253	Introduction to Information Theory	5
ECE 255	Error Control Coding	5
ECE 256	Statistical Signal Processing	5

Each of ECE 183, ECE 193 and ECE 198 courses can be taken only once as an elective course.

(ECE 130 and ECE 230, and ECE 172 and ECE 221 are undergraduate and graduate courses taught in conjunction, and only one can be taken for this program.)

Computer Science and Engineering

CSE 150	Introduction to Computer Networks	7

Electronics and Photonics Concentration

Electrical and Computer Engineering

ECE 102	Properties of Materials	5
ECE 102L	Properties of Materials Laboratory	2
ECE 104	Bioelectronics	5
ECE 110	Brain-Inspired Machine Learning	5
ECE 115	Introduction to Solid Mechanics	5
ECE 121	Microcontroller System Design	7
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 153	Digital Signal Processing	5
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 149	Introduction to Cyber-physical Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 157	RF Hardware Design	5
ECE 157L	RF Hardware Design Laboratory	2
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 172	Advanced Analog Circuits	5
ECE 167	Sensing and Sensor Technologies	7
ECE 173	High-Speed Digital Design	7
ECE 174	Introduction to EDA Tools for PCB Design	3
ECE 175	Energy Generation and Control	5
ECE 175L	Energy Generation and Control Laboratory	2
ECE 176	Energy Conservation and Control	5
ECE 176L	Energy Conversion and Control Laboratory	2
ECE 177	Power Electronics	5
ECE 177L	Power Electronics Laboratory	2
ECE 178	Device Electronics	5
ECE 180J	Advanced Renewable Energy Sources, Storage, and Smart Grids	5
ECE 183	Special Topics in Electrical Engineering	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 201	Introduction to Nanotechnology	5
ECE 203	Nanocharacterization of Materials	5
ECE 210	Brain-Inspired Machine Learning	5
ECE 215	Models of Robotic Manipulation	5
ECE 231	Optical Electronics	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5

Each of ECE 183, ECE 193 and ECE 198 courses can be taken only once as an elective course.

(ECE 130 and ECE 230, ECE 141 and ECE 241, and ECE 172 and ECE 221 are undergraduate and graduate courses taught in conjunction, and only one can be taken for this program.)

Power and Energy Concentration

Electrical and Computer Engineering

ECE 104	Bioelectronics	5
ECE 121	Microcontroller System Design	7
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 149	Introduction to Cyber-physical Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 153	Digital Signal Processing	5
ECE 157	RF Hardware Design	5
ECE 157L	RF Hardware Design Laboratory	2
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 167	Sensing and Sensor Technologies	7
ECE 170	Advanced Power Electronics	5
ECE 172	Advanced Analog Circuits	5
ECE 173	High-Speed Digital Design	7
ECE 174	Introduction to EDA Tools for PCB Design	3
ECE 175	Energy Generation and Control	5
ECE 175L	Energy Generation and Control Laboratory	2
ECE 176	Energy Conservation and Control	5
ECE 176L	Energy Conversion and Control Laboratory	2
ECE 177	Power Electronics	5
ECE 177L	Power Electronics Laboratory	2
ECE 178	Device Electronics	5
ECE 180J	Advanced Renewable Energy Sources, Storage, and Smart Grids	5
ECE 181J	Renewable Energy Sources in Practice	7
ECE 183	Special Topics in Electrical Engineering	5
ECE 185	Introduction to the US Electricity Industry	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 215	Models of Robotic Manipulation	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 275	Energy Market, Policy, and Modeling	5

Each of ECE 183, ECE 193 and ECE 198 courses can be taken only once as an elective course.

(ECE 130 and ECE 230, ECE 141 and ECE 241, and ECE 172 and ECE 221 are undergraduate and graduate courses taught in conjunction, and only one can be taken for this program.)

Robotics and Automation Concentration

Electrical and Computer Engineering

ECE 115	Introduction to Solid Mechanics	5
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
ECE 149	Introduction to Cyber-physical Systems	5
ECE 151	Communications Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 153	Digital Signal Processing	5
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 176	Energy Conservation and Control	5
ECE 176L	Energy Conversion and Control Laboratory	2
ECE 183	Special Topics in Electrical Engineering	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 215	Models of Robotic Manipulation	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5

Each of ECE 183, ECE 193 and ECE 198 courses can be taken only once as an elective course.

Digital Hardware Concentration

Electrical and Computer Engineering

ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
ECE 135	Electromagnetic Fields and Waves	5
ECE 135L	Electromagnetic Fields and Waves Laboratory	2
ECE 136	Engineering Electromagnetics	5
ECE 141	Feedback Control Systems	5
ECE 145	Estimation and Introduction to Control of Stochastic Processes	5

ECE 149	Introduction to Cyber-physical Systems	5
ECE 151	Communications Systems	5
ECE 152	Introduction to Wireless Communications	5
ECE 153	Digital Signal Processing	5
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 167	Sensing and Sensor Technologies	7
ECE 172	Advanced Analog Circuits	5
ECE 176	Energy Conservation and Control	5
ECE 176L	Energy Conversion and Control Laboratory	2
ECE 183	Special Topics in Electrical Engineering	5
ECE 193	Field Study	5
ECE 198	Individual Study or Research	5
ECE 215	Models of Robotic Manipulation	5
ECE 242	Applied Feedback Control	5
ECE 243	System Identification	5
ECE 245	Estimation and Introduction to Control of Stochastic Processes	5

Each of ECE 183, ECE 193 and ECE 198 courses can be taken only once as an elective course.

(ECE 130 and ECE 230, ECE 141 and ECE 241, and ECE 172 and ECE 221 are undergraduate and graduate courses taught in conjunction, and only one can be taken for this program.)

ASSISTIVE TECHNOLOGY MINOR

The assistive technology minor is designed for students interested in helping people with movement disabilities. The emphasis is on designing exoskeletons and robots built on two core cross-disciplinary courses: Mechatronics (ECE 118) and Functional Anatomy (METX 135 & METX 135L).

The minor requirements may satisfy the requirements of other majors or minors under the campus policy discussed under Major and Minor Requirements. Because of the large number of courses required, it is most suitable for students in majors already requiring a substantial number of these courses. The minor cannot be combined with the Assistive Technology: Motor concentration of the former bioengineering major or the Robotics Engineering B.S. major. ECE 121, ECE 141 and ECE 167 cannot also be used to satisfy electrical engineering B.S. electives.

Course Requirements

Requirements for the minor in assistive technology are the following. Though courses for the minor may be taken for a letter grade or Pass/No Pass (P/NP), many of the courses may be required for a student's major which could require a letter grade (including all Baskin Engineering majors). Students should be aware of the letter grade policy for their chosen major before choosing Pass/No Pass.

Lower-Division Courses

Math placement is required for one or more of the foundational courses for this minor. For more information, please review the Math Placement website.

One of the following

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Plus one of the following

CHEM 3A	General Chemistry	5
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Note: This requirement may also be satisfied with prior completion of CHEM 1A or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

All of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
PHYS 5A	Introduction to Physics I	5
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
CSE 12	Computer Systems and Assembly Language and Lab	7
ECE 13	Computer Systems and C Programming	7

Upper-Division Courses

All of the following courses:

ECE 101	Introduction to Electronic Circuits	5

ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 103	Signals and Systems	5
CSE 100	Logic Design	5
CSE 100L	Logic Design Laboratory	2
ECE 118	Introduction to Mechatronics	10
METX 135	Functional Anatomy	5
METX 135L	Functional Anatomy Lab	3
ECE 167	Sensing and Sensor Technologies	7

Plus one of the following courses:

ECE 121	Microcontroller System Design	7
ECE 141	Feedback Control Systems	5

BIOELECTRONICS AND BIOPHOTONICS MINOR

The bioelectronics and biophotonics minor is designed for students in chemical, biological, environmental sciences, and biomolecular engineering to learn how to interface biological systems with electronics including sensors, actuators, and wireless communications. Introductory chemistry and physiology is desired, but not required.

Course Requirements

Essential courses for the minor in bioelectronics and biophotonics deal with the analog electronics to interface biological systems to sensors and with the signals they produce, both analog and digital, for interfacing to computer systems. The minor requirements may satisfy the requirements of other majors or minors under the campus policy discussed under Major and Minor Requirements. Though courses for the minor may be taken for a letter grade or Pass/No Pass (P/NP), many of the courses may be required for a student's major which could require a letter grade (including all Baskin Engineering majors). Students should be aware of the letter grade policy for their chosen major before choosing Pass/No Pass.

Requirements for the minor in bioelectronics and biophotonics consist of the following:

Lower-Division Courses

Math placement is required for one or more of the foundational courses for this minor. For more information please review the Math placement website.

All of the following

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
PHYS 5A	Introduction to Physics I	5
PHYS 5C	Introduction to Physics III	5
PHYS 5N	Introduction to Physics Laboratory III	1
CSE 12	Computer Systems and Assembly Language and Lab	7
ECE 13	Computer Systems and C Programming	7

Plus one of the following:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5

Plus one of the following:

AM 20	Ordinary Differential Equations for Engineers	5
MATH 24	Ordinary Differential Equations	5

Upper-Division Courses

All of the following courses:

CSE 100	Logic Design	5
CSE 100L	Logic Design Laboratory	2
ECE 101	Introduction to Electronic Circuits	5
ECE 101L	Introduction to Electronic Circuits Laboratory	2
ECE 103	Signals and Systems	5
ECE 121	Microcontroller System Design	7
ECE 167	Sensing and Sensor Technologies	7

Plus one of the following options

	Either this course	
ECE 104	Bioelectronics	5
	or these courses	
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 130L	Introduction to Optoelectronics Laboratory	1
	or this course	
BME 140	Bioinstrumentation	5

ECE 130 ECE 130L requires PHYS 5B

ELECTRICAL AND COMPUTER ENGINEERING CONTIGUOUS BACHELORS MASTERS PATHWAY

The Department of Electrical and Computer Engineering (ECE) offers a combined bachelor's (B.S.) and master's of science (M.S.) degree path. Undergraduate students can apply to this program to earn a B.S. degree in their own major together with an M.S. degree in electrical and computer engineering. Depending on the student's progress, students can complete the combined path in five years.

The five-year bachelor's/master's pathway offers a competitive edge to students who are completing their undergraduate degree at UC Santa Cruz by enabling those with advanced preparation to move directly from the undergraduate to the graduate program and complete an M.S.

degree with as few as seven courses beyond the bachelor's degree.

Particularly motivated students can complete both the bachelor's and the master's degrees in 15 quarters (five academic years). However, advance planning is essential. Interested students should contact the Baskin Engineering Graduate Affairs Office and their staff adviser early in their college career—no later than the end of their junior year. Students in this pathway retain undergraduate status until the completion of all undergraduate requirements, but may begin graduate coursework in advance of graduate standing.

Admission process to the contiguous pathway

The undergraduate degree requirements are not changed by the bachelor's/master's pathway; however, the pathway capitalizes on graduate-level courses that may apply toward both the undergraduate and graduate degree requirements (see Course Requirements below). Students should consult Undergraduate Advising concerning their respective undergraduate degree requirements.

Students can apply to the B.S./M.S. contiguous pathway in electrical and computer engineering at any time starting in the first quarter of junior standing by completing the ECE Contiguous Pathway Eligibility Survey. The Graduate Affairs Office will verify and track students' eligibility for the pathway until completion of the bachelor's degree. Admission to the contiguous pathway program in ECE is open to all qualified UC Santa Cruz students. All students who apply to the pathway will be admitted into it, provided they satisfy the requirements (see below). However, approval of an undergraduate student into a five-year bachelor's/master's path does not automatically guarantee admission into the one-year master's program. Students apply for admission into the M.S. program during their senior year using the same procedure and timeline as all other applicants to the program. Students are then considered for the M.S. program along with regular applicants. Students who do not satisfy the requirements for the contiguous pathway will be encouraged to apply to the regular M.S. program.

If admitted to the ECE M.S. program, pathway students are able to count up to 15 credits of qualified graduate-level courses previously completed as an undergraduate or through UCSC's open campus enrollment program toward their ECE M.S. degree requirements. To ensure courses are qualified to count toward the M.S. degree, students should review the ECE M.S. degree requirements and communicate with their graduate student advisor. Nevertheless, campus policy requires a minimum of 35 credits be completed during the graduate career, of which a maximum of 15 credits can be undergraduate upper-division coursework.

Students who do not meet the bachelor's/master's pathway eligibility requirements or who wish to take time off between the bachelor's and master's degree programs are encouraged to apply for admission to the standard ECE M.S. program through the regular graduate admissions process.

Requirements

The minimum requirements for the B.S./M.S. contiguous pathway are as follows:

- Applicants must have a 3.0 GPA when they apply to the B.S./M.S. contiguous pathway program, and must maintain a 3.0 GPA or higher until the completion of their undergraduate requirements.
- Applicants who are a current UC Santa Cruz undergraduate declared in a major within Baskin Engineering do not need to complete any prerequisite coursework. Applicants who hold a declared major outside of Baskin Engineering must select a designated core area and complete the required coursework prerequisites prior to their submission of the formal M.S. program application:

Electronic Circuits and Energy Systems

At least two classes from one of the following two lists with grade B+ or higher:

Electronic Circuits

ECE 157	RF Hardware Design	5
ECE 171	Analog Electronics	5
ECE 172	Advanced Analog Circuits	5
ECE 173	High-Speed Digital Design	7
ECE 177	Power Electronics	5

Energy Systems

ECE 171	Analog Electronics	5
ECE 175	Energy Generation and Control	5
ECE 176	Energy Conservation and Control	5
ECE 177	Power Electronics	5

Photonics and Electronic Devices

At least two classes from the following list with grade B+ or higher:

ECE 102	Properties of Materials	5
ECE 130	Introduction to Optoelectronics and Photonics	5
ECE 135	Electromagnetic Fields and Waves	5

Robotics, Controls, and Cyber-Physical Systems

At least two classes from the following lists with grade B+ or higher:

One required course from the following list:

ECE 141	Feedback Control Systems	5
ECE 241	Introduction to Feedback Control Systems	5

And at least one course from the following list:

ECE 118	Introduction to Mechatronics	10

ECE 121	Microcontroller System Design	7
ECE 163	Introduction to Small-Scale UAV Theory and Practice	7
ECE 167	Sensing and Sensor Technologies	7

Signals, Image Processing, and Communications

Both of the following classes with grade B+ or higher:

ECE 151	Communications Systems	5
ECE 153	Digital Signal Processing	5

Students should refer to the ECE M.S. program statement for more specific information on degree requirements, concentrations, academic progress, and applying to graduate.

ELECTRICAL AND COMPUTER ENGINEERING M.S.

Introduction

The Department of Electrical and Computer Engineering (ECE) at the University of California, Santa Cruz (UCSC) offers master of science (M.S.) and doctor of philosophy (Ph.D.) degree programs and conducts research in the following core areas:

- Electronic Circuits and Energy Systems
- Photonic and Electronic Devices
- Robotics, Control, and Cyber-Physical Systems
- Signals, Image Processing, and Communication Systems

Students indicate their core area of study on their admission application. These core areas determine the broad focus of a student's study (providing depth) while still providing the flexibility needed within the program to allow for breadth and the desire to meet each individual student's goals for study.

For more information about the core areas and associated graduate courses, the department, and its faculty, please visit the Electrical and Computer Engineering Department website.

Students begin the program with the completion of courses in a core area of interest and then proceed to do research in their area of specialization. M.S. students must complete a master's thesis (Plan I: Thesis), pass the comprehensive examination (Plan II A: Comprehensive Examination), or complete a project (Plan II B: Project). The expected time to degree with Plan I: Thesis is two academic years for a full-time student. This option is appropriate for students interested in advanced studies and in carrying out independent research, as well as for those students contemplating pursuit of a Ph.D. degree.

The expected time to degree with Plan II A: Comprehensive Examination and Plan II B: Project is two academic years for a full-time student. Students pursuing these two tracks can complete the degree in one academic year with careful planning. These options are ideal for students pursuing advanced studies to enhance their preparation for careers in a variety of technical fields including areas such as electronic circuits and energy systems, photonic and electronic devices, robotics, control, and cyber-physical systems, as well as signals, image processing, and communication systems.

The default track for all admitted students is the comprehensive examination track. Upon enrollment, students are not assigned an academic faculty advisor and should work with the graduate program advisor for guidance on course selection and program options. Students who plan to follow Plan I: Thesis or Plan II B: Project nominate a faculty advisor no later than the end of their first academic year in the program. If a student does not intend to follow Plan II A: Comprehensive Exam, they must notify the graduate advisor no later than the end of their first year (third quarter) in the program. Students will not be permitted to change degree plan tracks after the completion of their first year.

Requirements

Course Requirements

Thesis Track

Each student is required to take 45 credits, which must consist of:

- At least 15 credits from one of the four core areas defined above.
- At least 20 credits of the total 45 credits must be satisfied through ECE graduate courses.*
- At most 25 credits can be from courses taught by departments other than ECE. The student must obtain the graduate director's authorization to take a course from outside of Baskin Engineering. Approved core area courses do not require prior authorization.
- At most 10 credits of independent study (ECE 297, ECE 299) are counted toward the ECE course requirements.
- At most 5 credits of ECE 290 and ECE 291 can be counted toward the ECE course requirements. A combined total of 5 credits from ECE 290 and/or ECE 291 are mandatory.
- Undergraduate courses do not count toward the 45-credit requirement.

Total credits required for the M.S. degree is 45.

*The 20 credits of ECE graduate courses can include courses from the core areas only if they are ECE graduate courses. Graduate courses offered by other departments and approved for the core areas are not counted as ECE graduate courses.

Note that each graduate course satisfying the above requirements typically covers 5 credits. Courses in the ECE 280 series do not count toward the 45-credit requirement.

Comprehensive Examination Track

Each student is required to take 45 credits, which must consist of:

- At least 15 credits from one of the four core areas defined above.
- At least 25 credits of the total 45 credits must be satisfied through ECE graduate courses.*
- At most 20 credits can be from courses taught by departments other than ECE. The student must obtain the graduate director's authorization to take a course from outside of Baskin Engineering. Approved core area courses do not require prior authorization.
- At most 5 credits of ECE 290 and ECE 291 can be counted toward the ECE course requirements. A combined total of 5 credits from ECE 290 and/or ECE 291 are mandatory.
- Undergraduate courses do not count toward the 45-credit requirement.

Total credits required for the M.S. degree is 45.

*The 25 credits of ECE graduate courses can include courses from the core areas only if they are ECE graduate courses. Graduate courses offered by other departments and approved for the core areas are not counted as ECE graduate courses.

Note that each graduate course satisfying the above requirements typically covers 5 credits. Independent study credits do not count toward the degree requirements for students in the comprehensive examination track. Courses in the ECE 280 series do not count toward the 45-credit requirement.

Each student in the comprehensive examination track must pass three comprehensive exam subjects from ECE courses in their chosen core area. Students may not take the comprehensive exam in the same subject more than twice, and may attempt a maximum of six subjects.

Project Track

Each student is required to take 45 credits, which must consist of:

- At least 15 credits must be satisfied with courses from one of the four core areas defined above.
- At least 25 credits of the total 45 credits must be satisfied through ECE graduate courses.*
- At most 5 credits of independent study (ECE 297, ECE 299) are counted toward the ECE course requirements.
- At most 20 credits can be from courses taught by departments other than ECE. The student must obtain the graduate director's authorization to take a course from outside of Baskin Engineering. Approved core area courses do not require prior authorization.
- At most 5 credits of ECE 290 and ECE 291 can be counted toward the ECE course requirements. A combined total of 5 credits from ECE 290 and/or ECE 291 are mandatory.
- Undergraduate courses do not count toward the 45-credit requirement.

Total credits required for the M.S. degree is 45.

*The 25 credits of ECE graduate courses can include courses from the core areas only if they are ECE graduate courses. Graduate courses offered by other departments and approved for the core areas are not counted as ECE graduate courses.

Note that each graduate course satisfying the above requirements typically covers 5 credits. Courses in the ECE 280 series do not count toward the 45-credit requirement.

Other Requirements

Thesis Track

A master's research thesis, viewed as acceptable by a thesis committee approved by the Graduate Division, is required of each student in this track. To fulfill this requirement, the student submits a written proposal to a faculty member, usually by the third academic quarter. By accepting the proposal, the faculty member becomes the thesis advisor. In consultation with the advisor, the student forms a Master's Thesis Reading Committee with at least two additional faculty members, each of whom is provided a copy of the proposal. Exceptions to the committee structure may be granted by the graduate program director and/or by the graduate dean. Changes in the membership of the committee, once appointed, may only be made with the approval of the graduate dean. The majority of the membership of a thesis reading committee shall be members of the Santa Cruz Division of the Academic Senate. Members of a Master's Thesis Reading Committee must meet the following criteria:

1. The first member will serve as the committee chair and must be a ladder rank ECE faculty member.
2. The second member must be a ladder rank Baskin Engineering (BE) faculty (may be ECE as well).
3. The third member must be a UC Santa Cruz Baskin Engineering faculty member or a recognized expert in the student's research area, as judged by the graduate program director and the Graduate Division dean. In the event that the outside member is not from UCSC, the outside member's CV must be submitted along with the thesis committee nomination form.

One additional member may be added to the committee. Students should consult their advisors about the membership of their committee.

By the end of the second week of the quarter in which a student plans to graduate, the student must submit a formal nomination of their Master's Thesis Reading Committee to the ECE Department for approval. The required form for nominating a Master's Thesis Reading Committee is located on the Graduate Division's website. A final draft of the thesis must be provided to the members of the Master's Thesis Reading Committee for review at least 30 days before the last day of the quarter in which the student plans to graduate. Upon completion of the thesis work, the student presents an expository talk on the thesis research, and the final thesis must be accepted by the Master's Thesis Reading Committee before the award of the master of science degree. Once the final thesis has been approved, the student must submit a PDF copy of the signed title page and a PDF copy of the thesis to their graduate advisor by the deadline listed in the Academic Calendar. The student must also submit the original signed title page of the thesis to the Graduate Division by the deadline indicated in the Academic Calendar. Finally, an approved PDF copy of the thesis should be submitted through the ProQuest dissertation site. Formatting guidelines for the master's thesis can be found on the Graduate Division's website.

Comprehensive Examination Track

The comprehensive exams are only available for ECE graduate courses approved in the four core areas. Graduate courses approved in the four core areas outside ECE (such as AM or CSE) are not available for the comprehensive exams.

At the end of each quarter students will have the opportunity to take the section of the comprehensive examination relevant to the courses offered that quarter that are approved for the core areas as outlined above. The comprehensive examination will focus on fundamental material related to the subject matter of the course The results of these examination sections, when integrated, will comprehensively test the student's mastery of the curriculum. In order to pass the overall comprehensive examination, a student is required to pass at least three sections of the comprehensive examination in the proposed core area of study. Students may attempt more than one section per quarter.

Master's students must take the corresponding course in order to take the comprehensive exam in a given subject. A maximum of six exams may be attempted, and a student must pass a minimum of three subjects within their core area in order to fulfill the comprehensive exam capstone requirement.

Eligibility for the comprehensive exam is not contingent upon a student's performance in the associated course. All ECE M.S. students enrolled in an ECE core area course are eligible to complete the comprehensive exam in that subject provided they meet the registration deadline for the relevant quarter.

Students must register for the exam subjects they wish to take each quarter when the call for exam registrations is sent. Students who do not register may not be permitted to take the exam.

Students are notified of their exam results (pass/fail) by email prior to the start of the following quarter, and the results are also recorded in the student's file by the graduate advisor. If students have questions about the exam or how it was graded, they should contact the instructor who wrote the exam to request a meeting to go over the exam. Once a student has passed three exam subjects within their core area, they have fulfilled the comprehensive examination requirement and are eligible for graduation as soon as they have completed all of the other requirements for the degree.

Students in the M.S. comprehensive examination track are not eligible for Filing Fee status.

Note that Plan II A: Comprehensive Examination, is the default option for all M.S. students. Students can select Plan I: Thesis, or Plan II B: Project, only if they can find a faculty sponsor to supervise the thesis or project. If a student does not plan to follow Plan II A: Comprehensive Exam, they must notify the graduate advisor no later than the end of their first year (third quarter) in the program. Students will not be permitted to change degree plan tracks after the completion of their first year.

Project Track

Completion of a project report is required for the master's degree in this track. To fulfill this requirement, the student submits a written proposal to a faculty member, usually by the third academic quarter. By accepting the proposal, the faculty member becomes the project advisor. In consultation with the advisor, the student forms a project reading committee with at least one additional faculty member, each of whom is provided a copy of the proposal.

Members of a Master's Project Reading Committee must meet the following criteria:

1. The first member must be a ladder rank ECE faculty member.
2. The second member must be a ladder rank Baskin Engineering (BE) faculty member (may be ECE as well).

The Master's Project Reading Committee is subject to the approval of the graduate director. Students must submit the names of the proposed members to the ECE Department no later than the second week of the quarter in which they intend to graduate.

Upon completion of the project, the student submits the report to the project reading committee, and the final project must be accepted by the reading committee before the award of the master of science degree. The student must also submit a PDF copy of the signed title page and a PDF copy of the approved

project to their graduate advisor by the deadline listed in the Academic Calendar.

Review of Progress

Each year, the faculty reviews the progress of every student. Students not making adequate progress toward completion of degree requirements may be recommended for academic notice. Students who violate the terms of their academic notice are subject to dismissal from the program. Students without adequate academic preparation may be required to take additional courses. Full-time students are normally expected to complete the degree course requirements at the rate of at least two 5-credit graduate-level courses each quarter. Full-time students are expected to complete all course requirements within two years for the M.S.

Students receiving two or more grades of U (unsatisfactory) or below B- in Baskin Engineering courses are not making adequate progress and will be placed on academic notice for the following three quarters of registered enrollment. Withdrawing or taking a leave of absence does not count as enrollment. Part-time enrollment is counted as a half-quarter of enrollment.

If an electrical and computer engineering graduate student fails a Baskin Engineering course while on probation, the Electrical and Computer Engineering Department may request the graduate dean to dismiss that student from the graduate program. If after being removed from probation, the student again fails a Baskin Engineering course, they will return immediately to academic notice.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their advisor and the graduate director immediately. Students may appeal their dismissal to the graduate committee.

Applying for Graduation

All candidates for a degree must submit an Application for the Master's Degree to the Graduate Advising Office by the date stated in the Academic and Administrative Calendar for the quarter you wish to receive the degree. Failure to declare candidacy by the deadline means that you cannot be considered a candidate until the next term.

A student is required to be registered or on Filing Fee Status, whichever is applicable, during the quarter in which the degree is conferred. Students should consult the graduate program advisor to determine which option fits their situation. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

Optional Catchall

ELECTRICAL AND COMPUTER ENGINEERING PH.D.

Introduction

The Department of Electrical and Computer Engineering (ECE) at the University of California, Santa Cruz (UCSC) offers master of science (M.S.) and doctor of philosophy (Ph.D.) degree programs and conducts research in the following core areas:

- Electronic Circuits and Energy Systems
- Photonic and Electronic Devices
- Robotics, Control, and Cyber-Physical Systems
- Signals, Image Processing, and Communication Systems

For more information about the core areas and associated graduate courses, the department, and its faculty, please visit the Electrical and Computer Engineering website.

Students begin the program with the completion of courses in a core area of interest and then proceed to do research in their area of specialization. Ph.D. students are required to complete the preliminary exam requirement within their first four quarters of study. After completing the course requirements, students must pass an oral qualifying exam and write a dissertation. Part-time study is possible for students working in industry while attending school.

Advancement to Candidacy

Each student is required to take 55 credits which must consist of:

- At least 20 credits in one of the four core areas defined above.
- At least 30 of the total 55 credits must be satisfied through ECE graduate courses.
- At most 25 credits can be from courses taught by departments other than ECE. The student must obtain their advisor’s authorization to take a course from outside of Baskin Engineering. Approved core area courses do not require prior authorization.
- At most 10 credits of independent study (ECE 297, ECE 299) will be counted toward ECE course requirements.
- A combined total of 5 credits from ECE 290 and/or ECE 291 are mandatory, but no more than 5 credits from these two courses can be counted toward degree requirements. Students are required to take ECE 291 in order to become eligible to be a teaching assistant within the ECE department.
- Undergraduate courses do not count toward the 55 credit requirement.

Total credits required for the Ph.D. degree is 55.

The 30 credits of ECE graduate courses can include courses from the core areas only if they are ECE graduate courses. Graduate courses offered by other departments and approved for the core areas are not counted as ECE graduate courses.

The ECE Department sponsors a weekly graduate seminar course, ECE 290, in fall, winter, and spring quarters. All graduate students are required to register and attend for at least one quarter during their graduate student career, and are encouraged to enroll every quarter. The graduate seminar consists of talks by invited speakers from industry and academia.

Some faculty also sponsor a weekly lab seminar or lab meeting, ECE 280. Faculty advisers can require their students to enroll for these seminars and they do count toward maintaining full-time enrollment, however they do not count toward the coursework requirements for the degree.

Course Requirements

Foreign Language Requirements

Teaching Requirements

Pre-Qualifying Requirements

Preliminary Examination

By the conclusion of their fourth quarter in the program, students admitted to the Ph.D. program must satisfy the requirements of the preliminary examination to continue in the Ph.D. program. Students who do not meet the four-quarter deadline will be placed on academic notice on the condition that they complete all required preliminary examinations by the end of the following quarter.

This examination is as follows:

- Pass three comprehensive exams from subjects in their chosen core area
- Pass one additional section of the comprehensive examination from a different core area.

The preliminary exams are only available for ECE graduate courses approved in the four core areas. Graduate courses approved in the four core areas outside ECE (such as AM or CSE) are not available for the preliminary exams.

At the end of each quarter, students will have the opportunity to take the section(s) of the preliminary examination relevant to the courses offered that quarter that are approved for the core areas. The preliminary examination will focus on fundamental material related to the subject matter of the course. The results of these examination sections, when integrated, will comprehensively test the student's mastery of the curriculum. In order to pass the overall preliminary examination, a student is required to pass at least three preliminary exam subjects in their core area, plus one exam that is not approved for their core area.

Students may attempt more than one subject per quarter. A maximum of eight exams may be attempted, and a student must pass a minimum of four subjects—three within their selected core area, and one from a different core area. Students who have obtained approved course substitutions for one or more courses within their core area may attempt the preliminary exams for those substituted courses without having taken the course at UCSC. In such cases, students are strongly encouraged to contact the instructor of the UCSC course at the beginning of the quarter to request course materials and/or audit the class.

Eligibility for the preliminary exam is not contingent upon a student's grade in the associated course. Any Ph.D. student who is either enrolled in the relevant core area course or who has demonstrated significant background knowledge of the course material to the instructor of record (for example, through an approved credit transfer) is eligible to complete the preliminary exam in that subject provided they meet the registration deadline for the relevant quarter.

Students must register for the exam subjects they wish to take each quarter when the call for exam registrations is sent. Students who do not register may not be permitted to take the exam.

Passing three preliminary exam subjects within one core area satisfies the comprehensive exam capstone requirement for the ECE Master's degree. Ph.D. students who wish to apply for a non-terminal Master's degree once they have completed this requirement are welcome to do so, provided that they have also met the coursework requirements for the M.S. degree.

Qualifying Examination

This oral examination is a defense of the student's thesis prospectus and a test of the student's knowledge in advanced technical areas of relevance to the dissertation topic. This oral examination consists of a seminar-style talk before the examining committee, where the student describes the thesis prospectus, followed by questions from the committee on the substance of the talk and the areas of presumed expertise of the student. The examination, taken typically in the third year of Ph.D. study, is administered by a Ph.D. qualifying examination committee, consisting of at least four examiners. The composition of the committee must be approved by the graduate director and the dean of graduate studies whereupon the student and the committee are notified.

If the student does not pass the qualifying examination, the student may be asked to complete additional coursework, or other research-related work, before retaking the examination. The student may be allowed to retake the qualifying examination once, and the composition of the examining committee will remain the same for the second try. Students

who fail the qualifying examination twice may be dismissed from the Ph.D. program.

The Qualifying Exam (QE) Committee is composed of at least four members who must meet the following eligibility criteria:

1. QE Chair: This person must be tenured* ECE faculty and cannot be the student's research advisor(s).
2. Member 1: Ladder-rank ECE faculty member (usually the student's research advisor).
3. Member 2: Ladder-rank SOE faculty member (may be the student's research advisor) or a recognized expert in the student's research area from outside UCSC, as judged by the graduate director and dean of Graduate Studies.
4. Outside Member: This person must be tenured UCSC faculty from outside ECE or a recognized expert in the student's research area from outside UCSC, as judged by the graduate director and dean of Graduate Studies. The outside member may not be the student's research advisor. In the event that the outside member is not from UCSC, they must have credentials equivalent to a tenured faculty member as judged by the graduate director and the dean of Graduate Studies. The outside member's CV must be submitted along with the committee nomination form.

*A ladder rank faculty (Academic Senate member) holds the title of assistant professor, associate professor, professor, assistant teaching professor, associate teaching professor, or teaching professor. Associate professors, professors, associate teaching professors, and teaching professors have tenure. Assistant professors are not tenured and cannot serve as QE Chair or the Outside Member. However, they are ladder-rank and can be Member 1 or 2.

Additional members may be added to the committee. Exceptions to the committee requirements above may be granted by the graduate director when appropriate, as long as the committee meets the Graduate Division requirements. In order to formally nominate their proposed QE committee, the student should submit a QE Nomination Form to the ECE department's graduate advisor at least 30 days in advance of the planned QE date. This will be signed by the faculty graduate representative and then sent to the Graduate Division for final approval. Students are required to submit a draft of their paper/presentation at least 30 days prior to the proposed QE date in order to incorporate any feedback before the QE exam takes place.

At least two weeks before the QE, the student should submit the title of their prospectus, an abstract, and the location information for their exam using the Advancement/Defense Notification Request Form so that the Advising Office can send out an announcement to the Baskin Engineering community.

In order to pass the qualifying examination, the committee must come to unanimous agreement that the student has passed the exam and provide a written report on the qualifying exam. The final step in the advancement process for the student is to identify and formally nominate a dissertation reading committee. Ph.D. students who have not advanced to candidacy by the end of the third year (nine quarters) are recommended for academic notice, and are subject to dismissal from the program if they do not advance by the end of their fourth year (12 quarters).

Post-Qualifying Requirements

Advancement to candidacy requires that the student:

- pass the preliminary examinations;
- complete all course requirements prior to taking the qualifying examination;
- clear all Incompletes from the student's record;
- pass the qualifying examination; and
- have an appointed Ph.D. dissertation reading committee.

Transfer Credit

ECE Ph.D. students may petition for a transfer of up to 20 credits for commensurate coursework completed at a previous institution with regional accreditation. The approval for credit transfer is contingent upon the assessment of the course substitution application by the instructor of the corresponding UCSC course and the ECE graduate director.

Non-Terminal Master's Degree

Students not already holding an M.S.E.E. degree, who are studying for the Ph.D. degree, may apply to be granted a M.S. degree when they have fulfilled all the M.S. degree requirements (including submission of an M.S. thesis or project, or passing the comprehensive examination).

Optional Catchall

Dissertation

Dissertation

Each student writes a Ph.D. dissertation which must be submitted to the reading committee at least one month prior to the dissertation defense. The members of the Dissertation Reading Committee must include at least three members as follows:

1. Committee Chair - An ECE faculty member (may be the student's research adviser).
2. Member 1 - A tenured ECE faculty member who is not the student's research adviser.

3. Member 2 - A ladder rank UCSC faculty (may be the student's research adviser) or a recognized expert in the student's research area with credentials equivalent to a ladder rank UCSC faculty member as judged by the graduate director and the dean of Graduate Studies.

NOTE: A ladder rank faculty (Academic Senate member) holds the title of assistant professor, associate professor, or professor. associate professors and professors have tenure.

If a student has two co-advisers, they should both be listed as co-chairs. Students should consult their advisers about the membership of their committees. Additional members may be added, however, the final committee must be approved by the graduate director. Exceptions to the committee requirements above may be granted by the graduate director when appropriate, as long as the committee meets the Graduate Division requirements. The Dissertation Reading Committee must be appointed in order to advance to candidacy.

The Ph.D. dissertation must show the results of in-depth research, be an original contribution of significant knowledge to the student's field of study, and include material worthy of publication. The student is strongly advised to submit research work for publication in advance of completing the dissertation so that the latter requirement is clearly satisfied. The Ph.D. dissertation results are presented in both oral and written forms, the oral form being a dissertation defense (see below) and the written form being the Ph.D. dissertation. The student must submit their written Ph.D. dissertation to the dissertation reading committee at least one month before the defense.

Dissertation Defense

At least two weeks before the defense, the student should submit the title of their dissertation, an abstract, and the location information for their exam using the Advancement/Defense Notification Request Form so that the Advising Office can send out an announcement to the BE community. The candidate presents their research results in a public seminar sponsored by the dissertation supervisor. The seminar is followed by a defense of the dissertation to the reading committee (only), who will then decide whether the dissertation is acceptable or requires revision. Successful completion of the dissertation fulfills the final academic requirement for the Ph.D. degree.

Academic Progress

Each year, the faculty reviews the progress of every student. Students not making adequate progress toward completion of degree requirements may be recommended for academic notice. Students who violate the terms of their academic notice are subject to dismissal from the program. Students without adequate academic preparation may be required to take additional courses. Full-time students are normally expected to complete the Ph.D. coursework requirements at the rate of at least two courses each quarter. Full time ECE Ph.D. students must complete all coursework requirements within three years (nine quarters).

Students receiving two or more unsatisfactory grades (U or letter grade below B-) in Baskin Engineering courses are not making adequate progress and will be placed on academic notice for the following three quarters of registered enrollment. Withdrawing or taking a leave of absence does not count as enrollment. Part-time enrollment is counted as a half-quarter of enrollment.

If an electrical and computer engineering graduate student fails a Baskin Engineering course while on probation, the Electrical and Computer Engineering Department may request the graduate dean to dismiss that student from the graduate program. If after being removed from probation, the student again fails a Baskin Engineering course, they will return immediately to academic notice.

Graduate students experiencing circumstances or difficulties that impact their academic performance should contact their advisor and the graduate director immediately. Students may appeal their dismissal to the graduate committee.

Normative Time

Normative time for completion of the dissertation is three years (nine quarters) from the date of advancement to candidacy, and six years (18 quarters) in total. Students who fail to meet expected milestones must request a program extension from the Graduate Division. A written request, signed by the student and their faculty adviser, detailing the timeline to degree completion should be approved by the graduate director prior to submission to the dean of graduate studies. Multiple extensions may be considered.

Students who fail to complete their dissertation within three years of advancement to candidacy, or who fail to complete the Ph.D. degree within six years, may be recommended for academic notice. In order to maintain good academic standing, students must advance to candidacy within the first three years (nine quarters), and complete the degree within the subsequent three years (nine quarters).

Students who are on part-time status accrue time-to-degree at one-half the rate of full-time students for those quarters during which they are on approved part-time study. Doctoral students who have advanced to candidacy accrue time-to-degree at the regular rate, regardless of part-time or full-time status. Taking a leave of absence does not "stop the clock" on normative time. Time-to-degree continues to accrue at the normal rate while students are on approved leave.

If the Ph.D. degree is not awarded within seven years from the date of advancement to candidacy, the student's candidacy will lapse and the student will be required to pass a new Qualifying Exam prior to submitting the dissertation, or to undergo another formal review as directed by the student's department, and the result of this examination or review will be transmitted in writing to the Graduate Council (Academic Senate Regulation 18.6).

Applying for Graduation

All candidates for a degree must submit an Application for Doctor of Philosophy Degree to the Graduate Advising Office by the date stated in the Academic and Administrative

Calendar for the quarter you wish to receive the degree. Failure to declare candidacy by the deadline means that you cannot be considered a candidate until the next term.

A student is required to be registered or on Filing Fee Status, whichever is applicable, during the quarter in which the degree is conferred. Students should consult the department adviser to determine which option fits their situation. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

ROBOTICS AND CONTROL DESIGNATED EMPHASIS

Introduction

The graduate designated emphasis (DE) leading to the degree notation "with an emphasis in Robotics and Control" is a collaboration of faculty from several Baskin School of Engineering programs and is administered by the Department of Electrical and Computer Engineering. Students wishing to complete a master's thesis or doctoral dissertation in this area must satisfy the degree requirements of a primary program as well as of the DE. The DE is most suitable for students pursuing degrees in Applied Mathematics, Electrical and Computer Engineering, and Statistics, but students from any area may work in this interdisciplinary field so long as they meet all requirements, including progress, within the primary degree program. A current list of the robotics and control faculty and electives is available at the Electrical and Computer Engineering website.

Requirements

Committee Composition and Departmental Approvals

For master's students pursuing a project or thesis, at least one member of the reading committee must be listed among the robotics and control faculty. For Ph.D. students, a robotics and control faculty member must serve on both the Qualifying Exam Committee and the Dissertation Committee (does not need to be the same faculty member for both).

Course Requirements

The student must complete four five-credit graduate courses and several two-credit seminar courses. All students must complete either ECE 240 or ECE 242, and three 5-credit robotics and control graduate electives.

Master's students must complete two offerings of ECE 280C, Seminar in Control (2 credits).

Doctoral students must complete four offerings of ECE 280C, Seminar in Control (2 credits).

Writing, Research and/or Teaching Requirements

The student's dissertation or thesis must include a significant section (chapter) related to robotics and control, with content suitable for a conference or journal article. Students pursuing the M.S. project track must complete a project report related to robotics and control, with content suitable for a conference or journal article.

Academic Progress

[Optional Catchall]

Statistics

Baskin Engineering
(831) 459-2158
engineering.ucsc.edu

PROGRAMS OFFERED

Statistics Minor (p. 637)

Statistical Science Contiguous Bachelor's/Master's Pathway (p. 639)

Statistical Science M.S. (p. 641)

Statistical Science Ph.D. (p. 643)

Statistics Designated Emphasis (D.E.) (p. 646)

Data Science Designated Emphasis (D.E.) (p. 647)

Statistics is a discipline devoted to the use of mathematical methods and reasoning to solve real-world problems of a scientific or decision-making nature in a wide variety of subjects, principally (but not exclusively) in engineering, medicine, the physical and biological sciences, and the social sciences. Statistics, construed broadly, is the study of uncertainty: how to measure it (using ideas and methods in probability theory), and what to do about it (using concepts from statistical inference and decision theory).

The Statistics Department at UC Santa Cruz offers M.S. and Ph.D. programs in statistical science. The goal of these programs is to help students develop into independent scholars who are prepared for productive careers in research, teaching, and industry. The department also offers a designated emphasis in statistics and a minor in statistics.

Additional information on these programs can be found on the department website.

STATISTICS MINOR

The statistics minor is available for students who wish to gain a quantitative understanding of how to (a) measure uncertainty and (b) make good decisions on the basis of incomplete or imperfect information, and to apply these skills to their interests in another field. This minor could also be combined with a major in mathematics as preparation for a graduate degree in statistics or biostatistics.

Course Requirements

Students complete the following requirements to earn the statistics minor. Courses may be taken for a letter grade or Pass/No Pass. Some courses may be satisfied via exam credit.

Math placement is required for one or more of the foundational courses for this minor. For more information, please review the Math Placement website.

Lower-Division Courses

Basic calculus sequence

	Either these courses	
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Plus one course from each of the following four categories

Statistical concepts

	Either this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Computer Programming

Take one of the following courses:

BME 160	Research Programming in the Life Sciences	6
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
ASTR 119	Introduction to Scientific Computing	5
MATH 152	Programming for Mathematics	5

Passing the CSE 20 test-out exam will satisfy this requirement.

Linear Algebra

One of the following courses:

AM 10	Linear Algebra for Engineers	5
MATH 21	Linear Algebra	5
PHYS 116A	Mathematical Methods in Physics	5

It is recommended that students also take AM 20 or MATH 24.

Multivariate Calculus

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	or this course	
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 23A	Vector Calculus	5
MATH 23B	Vector Calculus	5

Upper-Division Courses

Probability

One of the following "probability" courses:

STAT 131	Introduction to Probability Theory	5
STAT 203	Introduction to Probability Theory	5
CSE 107	Probability and Statistics for Engineers	5

Statistical Inference

STAT 132	Classical and Bayesian Inference	5

Computational Methods

One of the following:

AM 147	Computational Methods and Applications	5
MATH 148	Numerical Analysis	5

Plus two electives from the following list of courses

STAT 108	Linear Regression	5
STAT 204	Introduction to Statistical Data Analysis	5
STAT 206	Applied Bayesian Statistics	5
STAT 207	Intermediate Bayesian Statistical Modeling	5
STAT 208	Linear Statistical Models	5
BME 205	Bioinformatics Models and Algorithms	5

ECE 145	Estimation and Introduction to Control of Stochastic Processes	5
CSE 142	Machine Learning	5
ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 113	Introduction to Econometrics	5
ECON 114	Advanced Quantitative Methods	6
ECON 120	Development Economics	5
ECON 161B	Marketing Research	5
ECON 190	Senior Proseminar	5
MATH 105A	Real Analysis	5
MATH 105B	Real Analysis	5
MATH 114	Introduction to Financial Mathematics	5
PSYC 181	Psychological Data Analysis	5
TIM 147	Introduction to Data Mining for Business	5

Note: Students planning graduate work in statistics are recommended to choose MATH 23A and MATH 23B, STAT 204 , STAT 205, and MATH 105A and MATH 105B.

STATISTICAL SCIENCE CONTIGUOUS BACHELOR'S MASTER'S PATHWAY

Information and Policies

Introduction

The Department of Statistics offers a Statistical Science Bachelor's/Master's pathway. Undergraduate students in certain majors can apply to the pathway in order to earn a B.S. degree in their own major together with an M.S. degree in Statistical Science. Approved programs are:

- B.S. in Applied Physics, Astrophysics, or Physics
- B.S. in Computer Science
- B.S. in Economics/Mathematics
- B.A. in Mathematics (Pure Math and Computational)

Sample planners for the pathway are available through the Baskin Engineering Graduate Affairs Office website. Qualified undergraduates from other undergraduate majors may also apply to the pathway and their applications will be considered on a case by case basis.

Depending on the student's progress, the B.S./M.S. pathway can be completed in five years.

Admission Requirements and Process

The requirements for admission into the 4+1 pathway are: (1) a cumulative GPA of 3.0 or more; (2) to have taken, or to have a plan to take, foundational coursework in univariate and multivariate calculus, linear algebra, introductory statistics, and programming; and (3) to have completed both STAT 131 and STAT 132 with an A- or above. (Please see Course Requirements section below for details.)

Interested students should schedule a meeting with the STAT graduate director to discuss their curriculum plan and fill the application form. The ultimate deadline for application to the pathway is the end of their junior year (ninth quarter of study at UC Santa Cruz), although students are encouraged to apply significantly earlier, ideally at the same time as their major declaration.

All students who apply to the pathway will be admitted into it, provided they satisfy the requirements. However, approval of an undergraduate student into a five-year bachelor's/master's path does not automatically guarantee admission into the one-year master's program.

Students apply for admission into the M.S. program during their senior year using the same procedure and timeline as all other applicants to the program, and they will be considered for the M.S. program along with regular applicants. The pathway assists qualified enrolled students with a simplified graduate application process that does not require students to submit Graduate Record Examination (GRE) scores. This will be made clear to students admitted into the pathway, as early as possible.

Course Requirements

Students pursuing the contiguous pathway are expected to have a strong quantitative background. At the time they apply to the pathways they will be expected to have completed the following coursework:

Basic Requirements

To be admitted into the contiguous pathway, students must have completed this series of courses with an average GPA of 3.0 or above.

Univariate Calculus

Either both MATH 19A and MATH 19B, or both MATH 20A and MATH 20B.

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Multivariate Calculus

MATH 22	Introduction to Calculus of Several Variables	5
	or this course	
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 23A	Vector Calculus	5
	AND	
MATH 23B	Vector Calculus	5

Linear Algebra

AM 10	Linear Algebra for Engineers	5
	OR	
MATH 21	Linear Algebra	5
	OR	
PHYS 116A	Mathematical Methods in Physics	5

Introductory Statistics

STAT 5	Statistics	5
	OR	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
	OR	
STAT 17	Statistical Methods for Business and Economics	5
	OR	
PHYS 133	Intermediate Laboratory	5

Programming

CSE 20	Beginning Programming in Python	5

or higher level programming course; or equivalent

Advanced Requirements

During their junior year (or before, if appropriate), students in the pathway will be expected to take two courses:

STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

Students must obtain a grade no lower than A- in both courses to remain eligible for the pathway. A grade of A- or higher in STAT 131 will waive the M.S. requirement of taking STAT 203, Introduction to Probability Theory. Instead of STAT 203, students in the pathway will need to take an additional elective course to satisfy the credit requirements for the M.S. program (see sample plan below).

Students who pass STAT 131 and STAT 132 with a grade of C or higher but lower than A-, although not eligible to continue in the contiguous pathway to the M.S., will still have the opportunity to complete a minor in statistics or to apply to the M.S. through the regular admission process.

Senior Year Requirements

Students apply for admission into the M.S. program during their senior year using the same procedure and timeline as all other applicants to the program. In addition, during the senior year, students in the pathway will be required to take two graduate-level courses:

STAT 204	Introduction to Statistical Data Analysis	5
STAT 206B	Intermediate Bayesian Inference	5

Note that the two courses satisfy requirements for the Statistical Science M.S. program and therefore cannot be counted as part of the minimum 40 credits of upper-division courses required by the undergraduate major.

Students who are accepted into the M.S. program but fail any of the two senior-year graduate courses will revert to the regular two-year M.S. timeline and will be allowed to retake them

M.S. Year Course Requirements

Students will complete the remaining required courses (STAT 200, STAT 280B, STAT 205 and STAT 208) and electives (four, one of them in lieu of STAT 203) for the M.S. program, as well as their capstone project, during their fifth year in the program. At least two of the four electives must be chosen from List A (courses offered by the Statistics Department).

A student enrolled in the 4+1 contiguous program will complete a total of 45 credits in classroom courses, just like students in the standard M.S. program, with 15 of those credits having been completed as part of their undergraduate degree.

If for any reason a student cannot complete the M.S. requirements during their fifth year, they will revert to the standard M.S. timeline.

Core Courses

STAT 200	Research and Teaching in Statistics	3
STAT 205	Introduction to Classical Statistical Learning	5
STAT 208	Linear Statistical Models	5
STAT 280B	Seminars in Statistics	2

STAT 205 and STAT 208 must be taken for a letter grade.

List A Electives

Electives offered by the Statistics Department and open to M.S. students.

STAT 207	Intermediate Bayesian Statistical Modeling	5
STAT 209	Generalized Linear Models	5
STAT 221	Statistical Machine Learning	5
STAT 222	Bayesian Nonparametric Methods	5
STAT 223	Time Series Analysis	5
STAT 224	Bayesian Survival Analysis and Clinical Design	5
STAT 225	Multivariate Statistical Methods	5
STAT 226	Spatial Statistics	5
STAT 227	Statistical Learning and High Dimensional Data Analysis	5
STAT 229	Advanced Bayesian Computation	5
STAT 243	Stochastic Processes	5
STAT 244	Bayesian Decision Theory	5
STAT 246	Probability Theory with Markov Chains	5

List B Electives

Electives offered outside the Statistics Department and open to STAT M.S. students.

AM 212A	Applied Partial Differential Equations	5
AM 216	Stochastic Differential Equations	5
AM 230	Numerical Optimization	5
AM 250	An Introduction to High Performance Computing	5
CSE 242	Machine Learning	5
CSE 243	Data Mining	5
CSE 249	Large-Scale Web Analytics and Machine Learning	5
CSE 261	Advanced Visualization	5
CSE 263	Data Driven Discovery and Visualization	5
CSE 272	Information Retrieval	5
CSE 277	Random Process Models in Engineering	5
ECE 253	Introduction to Information Theory	5
ECE 256	Statistical Signal Processing	5
ECON 211A	Advanced Econometrics I	5
ECON 211B	Advanced Econometrics II	5
ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215L	Exercises in Geographic Information Systems	2

ENVS 215L is the concurrent lab to ENVS 215A. The lecture/lab combination counts as one course.

Capstone Requirement

This is a Plan II Capstone. For the M.S. degree, students conduct an individual capstone research project (up to three quarters) and in the spring participate in a seminar in which results from their project are presented. Examples of capstone research projects include: review and synthesis of the literature on a topical area of statistical science, application and comparison of different models and/or computational techniques from a particular area of study in statistics, and comprehensive analysis of a data set from a particular application area.

Students must submit a proposal to the potential faculty sponsor no later than the end of their first academic quarter. If the proposal is accepted, the faculty member becomes the sponsor and supervises the research and writing of the project. When the project is completed and written, it must be submitted to and accepted by a committee of two individuals, consisting of the faculty advisor and one additional reader. The additional reader will be chosen appropriately from within the graduate program faculty or outside of it. Either the advisor or the additional reader must be from within the graduate program faculty.

Planner

STAT 131 and STAT 132 are requirements to qualify for the program, but do not satisfy any M.S. requirement (except, in the case of STAT 131, waiving the requirement of taking STAT 203). An M.S. elective is required in lieu of STAT 203.

Sample Planner for Bachelor's/Master's Pathway

	Fall	Winter	Spring
Junior Year	STAT 131	STAT 132	
Senior Year	STAT 204	STAT 206B	STAT 207
M.S. Year	STAT 200 (3 credits)	STAT 205	STAT 208
	M.S. elective	M.S. elective	STAT 296 (10 credits)
	M.S. elective	STAT 296	
	STAT 280B (2 credits)		

STATISTICAL SCIENCE M.S.

Introduction

Students in the statistical science program learn to develop and use statistical methods to provide a probabilistic assessment of the variability in different data structures. This knowledge is applied to the quantification of the uncertainties inherent in the discoveries, summaries and conclusions that are drawn from the data analysis. The Statistical Science M.S. places emphasis on the application of statistical methods to the solution of relevant scientific, technological and engineering problems, with the goal of preparing students for professional careers

Students will obtain an M.S. in statistical science. More specifically, students will develop background on statistical theory, methods, and computing through the program coursework, with emphasis on novel methods and applications.

Undergraduate preparation for admission

We will accept students with undergraduate degrees in fields that include computer science, engineering, mathematics, natural sciences, physics, and statistics, subject to appropriate course requirements in statistics and mathematics. Undergraduate preparation in mathematics and statistics should include:

- single variable and multivariate differential and integral calculus (UC Santa Cruz equivalent AM 11A, AM 11B or MATH 19A, MATH 19B, and MATH 23A, MATH 23B);
- linear algebra (UCSC equivalent AM 10 or MATH 21);
- introductory statistics (UCSC equivalent STAT 5 or STAT 7);
- introductory calculus-based probability and statistical inference (UCSC equivalent STAT 131 and STAT 132); and
- experience with basic computing using a high-level programming language such as R or Python (UCSC equivalent CSE 20).

Relationship of M.S. and Ph.D. programs

The M.S. and Ph.D. programs are freestanding and independent, so that students can be admitted to either program. Students completing the M.S. program may proceed into the Ph.D. program upon successful completion of the pre-qualifying examination (also known as the First-Year Exam), and successful application to the graduate committee and the graduate committee's approval. Students in the Ph.D. program have the option of receiving the M.S. degree upon completion of the M.S. program requirements, including the capstone research project. Ph.D. core course STAT 205B can be used in place of STAT 205 to fulfill the M.S. degree course requirements.

Requirements

Course Requirements

Seven core courses

M.S. students must complete seven core courses: the five 5-credit courses listed below; a 3-credit course on research and teaching (STAT 200); and a 2-credit research seminar (STAT 280B). M.S. students must complete three additional 5-credit courses from the approved list of elective courses, bringing the total non-seminar credit requirement to 43 credits. None of the additional elective courses required to satisfy the unit requirements for the M.S. program can be substituted by independent study courses (M.S. Project, Independent Study/Research, or Thesis Research).

Students in the M.S. program must take the following seven core courses:

STAT 200	Research and Teaching in Statistics	3
STAT 203	Introduction to Probability Theory	5
STAT 204	Introduction to Statistical Data Analysis	5
STAT 205	Introduction to Classical Statistical Learning	5
STAT 206B	Intermediate Bayesian Inference	5
STAT 208	Linear Statistical Models	5
STAT 280B	Seminars in Statistics	2

Elective Courses

In order to maintain a full load for graduate standing after their first year, students take additional courses, including independent study courses, from the approved list of elective courses, appropriate to their research interests and selected in consultation with their advisors.

All M.S. students must complete at least **three** 5-credit electives from the approved electives listed below. Two of these electives must be taken from list A, while the remaining elective may be taken from either list A or B.

In addition to the core and approved elective courses required to satisfy credit requirements for the program, students can take additional courses from across Baskin Engineering.

Electives available to MS students include:

List A Electives

Electives taught by the Statistics Department.

STAT 202	Linear Models in SAS	5
STAT 207	Intermediate Bayesian Statistical Modeling	5
STAT 209	Generalized Linear Models	5
STAT 221	Statistical Machine Learning	5
STAT 222	Bayesian Nonparametric Methods	5
STAT 223	Time Series Analysis	5
STAT 224	Bayesian Survival Analysis and Clinical Design	5
STAT 225	Multivariate Statistical Methods	5
STAT 226	Spatial Statistics	5
STAT 227	Statistical Learning and High Dimensional Data Analysis	5
STAT 229	Advanced Bayesian Computation	5
STAT 243	Stochastic Processes	5
STAT 244	Bayesian Decision Theory	5
STAT 246	Probability Theory with Markov Chains	5

List B Electives

Electives taught outside the Statistics Department.

AM 212A	Applied Partial Differential Equations	5
AM 216	Stochastic Differential Equations	5
AM 230	Numerical Optimization	5
AM 250	An Introduction to High Performance Computing	5
CSE 242	Machine Learning	5
CSE 243	Data Mining	5
CSE 249	Large-Scale Web Analytics and Machine Learning	5
CSE 261	Advanced Visualization	5
CSE 263	Data Driven Discovery and Visualization	5
CSE 272	Information Retrieval	5

CSE 277	Random Process Models in Engineering	5
ECE 253	Introduction to Information Theory	5
ECE 256	Statistical Signal Processing	5
ECON 211A	Advanced Econometrics I	5
ECON 211B	Advanced Econometrics II	5
ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215L	Exercises in Geographic Information Systems	2

ENVS 215L is the concurrent lab to ENVS 215A. The lecture/lab combination counts as one course.

M.S. Capstone Project Requirements

This is a Plan II Capstone. For the M.S. degree, students conduct an individual capstone research project in their second year (up to three quarters), and in the spring of that year participate in a seminar in which results from their project are presented. Examples of capstone research projects include: review and synthesis of the literature on a topical area of statistical science; application and comparison of different models and/or computational techniques from a particular area of study in statistics; comprehensive analysis of a data set from a particular application area.

Students must submit a proposal to the potential faculty sponsor no later than the end of the fourth academic quarter. If the proposal is accepted, the faculty member becomes the sponsor and supervises the research and writing of the project. When the project is completed and written, it must be submitted to and accepted by a committee of two individuals, consisting of the faculty advisor and one additional reader. The additional reader will be chosen appropriately from within the graduate program faculty or outside of it. Either the advisor or the additional reader must be from within the graduate program faculty.

Normative Time to Degree

The normative time to the M.S. degree (for students enrolled full-time) is two academic years.

Review of Academic Progress

Students will be admitted to the M.S. program, not to the research group of any individual faculty member. However, each student will be matched with a first-year mentor, to ensure that adequate guidance is provided in the crucial first year of graduate school. In the second year, the role of the mentor will be played by the M.S. project advisor. Faculty advisors will be responsible for charting the progress of their students on a regular basis, and for making necessary adjustments to their plan of study and research.

The graduate program faculty will meet in the spring quarter of each academic year to review the performance of all students in the program. Based on the results from the faculty review, a written report will be provided to each student with an assessment of her/his performance and description of specific program objectives for the following academic year.

Transfer Credit

Up to three Baskin Engineering courses fulfilling the degree requirements of the M.S. degree may be taken before beginning the graduate program through the concurrent enrollment program. Courses from other institutions may not be applied to the M.S. degree course requirements.

Students who complete the M.S. degree in statistical science and continue onto the Ph.D. program in statistical science can transfer all applicable courses taken during the M.S. to the Ph.D. program, provided that such students meet the minimum residency requirement for Ph.D. programs at UC Santa Cruz, as specified by the UCSC Graduate Division.

Applying for Graduation

All candidates for a degree must submit an Application for Master's Degree to the Baskin Engineering Graduate Student Affairs office by the date stated in the Academic and Administrative Calendar for the quarter they wish to receive the degree. Failure to declare candidacy by the deadline means that you cannot be considered a candidate until the next term. The deadline for degree applications is typically in the second week of the quarter. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

Optional Catchall

STATISTICAL SCIENCE PH.D.

Introduction

Students in the statistical science program learn to develop and use statistical methods to provide a probabilistic assessment of the variability in different data structures. This knowledge is applied to the quantification of the uncertainties inherent in the discoveries, summaries and conclusions that are drawn from the data analysis. The Ph.D. program provides mastery of fundamental concepts in statistical theory and methods, as well as analytical and computational skills to build modern statistical models, implement them, and effectively communicate their results. Through the process of learning these skills, the students develop the ability to conduct independent research.

Students will obtain a Ph.D. in statistical science. More specifically, students will develop background on statistical theory, methods, and computing through the program coursework, with research emphasis on novel methods and applications.

Undergraduate preparation for admission

We will accept students with undergraduate degrees in fields that include computer science, engineering, mathematics, natural sciences, physics, and statistics, subject to appropriate course requirements in statistics and mathematics. Undergraduate preparation in mathematics and statistics should include:

- Single variable and multivariate differential and integral calculus (UC Santa Cruz equivalent AM 11A,

AM 11B or MATH 19A, MATH 19B, and MATH 23A, MATH 23B);

- Linear algebra (UCSC equivalent AM 10 or MATH 21); introductory statistics (UCSC equivalent STAT 5 or STAT 7);
- Introductory calculus-based probability and statistical inference (UCSC equivalent STAT 131 and STAT 132); and
- Experience with basic computing using a high-level programming language such as R or Python (UCSC equivalent CSE 20).

Relationship of M.S. and Ph.D. programs

The M.S. and Ph.D. programs are freestanding and independent, so that students can be admitted to either. Students completing the M.S. program may proceed into the Ph.D. program upon successful completion of the pre-qualifying examination, and application to the graduate committee and acceptance. Students in the Ph.D. program have the option of receiving the M.S. degree upon completion of the M.S. program requirements, including the capstone research project. Ph.D. core course STAT 205B can be used in place of STAT 205 to fulfill the M.S. degree course requirements.

Advancement to Candidacy

Course Requirements

Nine core courses

Ph.D. students must complete nine core courses: seven 5-credit courses; a 3-credit course on research and teaching (STAT 200); and a 2-credit research seminar (STAT 280B). Ph.D. students must complete four additional 5-credit courses from the approved list of elective courses, bringing the total non-seminar credit requirements to 58 credits. None of the additional elective courses required to satisfy the credit requirements for the Ph.D. program can be substituted by independent study courses (Independent Study/Research or Thesis Research).

Students in the Ph.D. program must take the following nine core courses:

STAT 200	Research and Teaching in Statistics	3
STAT 203	Introduction to Probability Theory	5
STAT 204	Introduction to Statistical Data Analysis	5
STAT 205B	Intermediate Classical Inference	5
STAT 206B	Intermediate Bayesian Inference	5
STAT 207	Intermediate Bayesian Statistical Modeling	5
STAT 208	Linear Statistical Models	5
STAT 209	Generalized Linear Models	5
STAT 280B	Seminars in Statistics	2

Elective Courses

In order to maintain a full load for graduate standing after their first year, students take additional courses, including independent study courses, from the approved list of elective courses, appropriate to their research interests and selected in consultation with their advisors.

All Ph.D. students must complete at least **four** 5-credit electives from the approved electives listed below. Two of these electives must be taken from list A, while the remaining two electives might be taken from either list A or B.

None of the additional elective courses required to satisfy the credit requirements for the Ph.D. program can be substituted by independent study courses (STAT 297, Independent Study/Research; or STAT 299, Thesis Research). However, students are encouraged to enroll in Independent Study courses even when not engaged with formal classroom courses.

In addition to the core and approved elective courses required to satisfy credit requirements for the program, students can take additional courses from across Baskin Engineering.

Electives available to PhD students include:

List A Electives

Electives taught by the Statistics Department.

STAT 221	Statistical Machine Learning	5
STAT 222	Bayesian Nonparametric Methods	5
STAT 223	Time Series Analysis	5
STAT 224	Bayesian Survival Analysis and Clinical Design	5
STAT 225	Multivariate Statistical Methods	5
STAT 226	Spatial Statistics	5
STAT 227	Statistical Learning and High Dimensional Data Analysis	5
STAT 229	Advanced Bayesian Computation	5
STAT 243	Stochastic Processes	5
STAT 244	Bayesian Decision Theory	5
STAT 246	Probability Theory with Markov Chains	5

List B Electives

AM 212A	Applied Partial Differential Equations	5
AM 216	Stochastic Differential Equations	5
AM 230	Numerical Optimization	5
AM 250	An Introduction to High Performance Computing	5
CSE 240	Artificial Intelligence	5
CSE 242	Machine Learning	5
CSE 243	Data Mining	5
CSE 249	Large-Scale Web Analytics and Machine Learning	5
CSE 272	Information Retrieval	5

CSE 277	Random Process Models in Engineering	5
ECE 253	Introduction to Information Theory	5
ECE 256	Statistical Signal Processing	5
ECON 211A	Advanced Econometrics I	5
ECON 211B	Advanced Econometrics II	5
ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215L	Exercises in Geographic Information Systems	2
MATH 204	Analysis I	5
MATH 205	Analysis II	5
MATH 208	Manifolds I	5

ENVS 215L is the concurrent lab to ENVS 215A. The lecture/lab combination counts as one course.

Transfer Credit

Up to three Baskin Engineering courses fulfilling the degree requirements of the Ph.D. degree may be taken before beginning the graduate program through the concurrent enrollment program. Ph.D. students who have previously earned a M.S. degree in a related field at another institution may substitute courses from their previous university with approval of the advisor and the graduate committee. Petitions should be submitted along with the transcript from the other institution or UC Santa Cruz Extension. For courses taken at other institutions, copies of the syllabi, examinations, and other course work should accompany the petition. Such petitions are not considered until the completion of at least one quarter at UC Santa Cruz. At most, a total of three courses may be transferred from concurrent enrollment and other institutions.

Foreign Language Requirements

Teaching Requirements

Ph.D. students are required to serve as teaching assistants for at least one quarter during their graduate study. Certain exceptions may be permitted for those with extensive prior teaching experience, for those who are not allowed to be employed due to visa regulations, or for other reasons approved by the director of graduate studies.

Pre-Qualifying Requirements

At the end of the first year, Ph.D. students take a pre-qualifying examination, also known as the First-Year Exam, covering the six 5-credit core courses: STAT 203, STAT 204, STAT 205B, STAT 206B, STAT 207 and STAT 208. This examination comprises two parts: an in-class written examination, followed by a take-home project involving data analysis. Students who do not pass this examination can retake it before the start of the following fall quarter; if they fail the second examination they are dismissed from the Ph.D. program, but have the option to continue in the M.S. program.

Qualifying Examination

Ph.D. students must select a research advisor by the end of their second year in the program. Ph.D. students must complete the qualifying examination (advancement to candidacy) requirement by the end of the spring quarter of their third year. A written dissertation proposal must be submitted to the advisor, and filed with the Graduate Student Affairs Office. A qualifying examination committee will be formed, consisting of the advisor and at least three additional members, approved by the director of graduate studies and the dean of the Graduate Division. The following conditions must be met for the examination committee:

1. The chair of the qualifying examination committee must be a tenured faculty from within the graduate program faculty. The committee chair cannot be the student's advisor or one of their co-advisors.
2. For students with a single advisor, or two co-advisors one of which is from outside the graduate program faculty, the committee must include at least two members from within the graduate program faculty other than the advisor or co-advisor. For students with two co-advisors that are both members of the graduate program faculty, the committee must include at least one additional member from within the graduate program faculty.
3. The committee must include at least one member from outside the graduate program faculty, for which the Senate Regulations for committee membership apply. The outside member can be the student's advisor or co-advisor.

The student submits the written dissertation proposal to all members of the committee no less than one month in advance of the qualifying examination. The dissertation proposal is formally presented in a public oral qualifying examination with the committee, followed by a private examination.

Students will advance to candidacy after they have completed all course requirements (including removal of any incompletes), passed the qualifying examination, nominated a dissertation reading committee, and paid the advancement to candidacy fee. Under normal progress, a student will advance to candidacy by the end of the spring quarter of their third year. A student who has not advanced to candidacy by the start of the fourth year will be subject to academic probation.

Dissertation Reading Committee

Upon advancement to candidacy, a dissertation reading committee is formed, consisting of the dissertation advisor who serves as the chair of the committee, and at least two additional readers. Therefore, the minimum number of dissertation reading committee members is three.

For students with a single advisor, or two co-advisors one of which is from outside the graduate program faculty, the committee must include at least two additional readers from within the graduate program faculty.

For students with two co-advisors that are both members of the graduate program faculty, the committee must include at least one additional reader from within the graduate program faculty.

The committee is subject to the approval of the graduate director and of the Graduate Division.

Dissertation

Dissertation

The Ph.D. dissertation should consist of a minimum of three chapters composed of material suitable for publication in major professional journals in statistics and journals in relevant scientific fields where the statistical methodology is applied.

Dissertation Defense

The completed dissertation must be submitted to the reading committee at least one month before the dissertation defense, which consists of a public presentation of the research followed by a private examination by the reading committee. Successful completion of the dissertation defense is the final requirement for the Ph.D. degree.

Review of Academic Progress

Students will be admitted to the Ph.D. program, not to the research group of any individual faculty member. However, each student will be matched with a first-year mentor, to ensure that adequate guidance is provided in the crucial first year of graduate school. In later years, the role of the mentor will be played by the Ph.D. dissertation advisor. Faculty advisors will be responsible for charting the progress of their students on a regular basis, and for making necessary adjustments to their plan of study and research.

The graduate program faculty will meet in the spring quarter of each academic year to review the performance of all students in the program. Based on the results from the faculty review, a written report will be provided to each student with an assessment of their performance and description of specific program objectives for the following academic year.

The normative pre-candidacy period for Ph.D. students (enrolled full-time) is three years and the normative candidacy period is two years, for a total of five years to the Ph.D. degree.

Applying for Graduation

All candidates for a degree must submit an application for the Ph.D. degree to the Baskin Engineering Graduate Advising Office by the date stated in the Academic and Administrative Calendar for the quarter you wish to receive the degree. Failure to declare candidacy by the deadline means that you cannot be considered a candidate until the next term.

A student is required to be registered or on Filing Fee Status, whichever is applicable, during the quarter in which the degree is conferred. Students should consult the department advisor to determine which option fits their situation. For more information about applying for graduation, visit the Baskin Engineering Graduate Studies website.

STATISTICS DESIGNATED EMPHASIS

Introduction

Students from a Ph.D. degree program, other than statistical science, who meet the following requirements can have the designated emphasis of “statistics” annotated to their degree title. For example, a Ph.D. student in electrical engineering who meets the requirements would receive a diploma that reads “Ph.D. Electrical Engineering with an emphasis in (Statistics).”

Requirements

Committee Composition and Departmental Approvals

Upon electing to pursue a designated emphasis (DE) in statistics, students must choose a DE faculty advisor in the Statistics Department. A list of eligible DE advisors is maintained online. The student must organize a preliminary meeting with the DE advisor, and agree on a plan for completion of the requirements. Once this plan has been designated, the student and the DE advisor must complete the Application for a Designated Emphasis in Statistics form. The completed application form should be signed by the student's home department advisor, the DE advisor, and the statistics graduate director, and then filed with the Baskin Engineering Graduate Student Affairs Office (bsoe-ga@rt.ucsc.edu). This should be done at least one quarter before the student's advancement to candidacy.

Course Requirements

Both these courses

STAT 203	Introduction to Probability Theory	5
STAT 206B	Intermediate Bayesian Inference	5

Plus one of these courses

STAT 204	Introduction to Statistical Data Analysis	5
STAT 205	Introduction to Classical Statistical Learning	5
STAT 205B	Intermediate Classical Inference	5
STAT 207	Intermediate Bayesian Statistical Modeling	5

Plus one other statistics course from the following list of approved courses

STAT 204	Introduction to Statistical Data Analysis	5
STAT 205	Introduction to Classical Statistical Learning	5
STAT 205B	Intermediate Classical Inference	5

STAT 206	Applied Bayesian Statistics	5
STAT 207	Intermediate Bayesian Statistical Modeling	5
STAT 208	Linear Statistical Models	5
STAT 209	Generalized Linear Models	5
STAT 221	Statistical Machine Learning	5
STAT 222	Bayesian Nonparametric Methods	5
STAT 223	Time Series Analysis	5
STAT 224	Bayesian Survival Analysis and Clinical Design	5
STAT 225	Multivariate Statistical Methods	5
STAT 226	Spatial Statistics	5
STAT 227	Statistical Learning and High Dimensional Data Analysis	5
STAT 229	Advanced Bayesian Computation	5
STAT 243	Stochastic Processes	5
STAT 244	Bayesian Decision Theory	5
STAT 246	Probability Theory with Markov Chains	5

Students can take either STAT 205 or STAT 205B.

Writing, Research and/or Teaching Requirements

[Optional Catchall]

DATA SCIENCE DESIGNATED EMPHASIS

Introduction

The Data Science Designated Emphasis is a non-degree program housed in the Department of Statistics of Baskin Engineering at the University of California, Santa Cruz. The program aims to provide Ph.D. students from a wide swath of graduate degree programs across campus with the training required to apply state-of-the-art methods and tools from data wrangling, data visualization, statistical data analysis, machine learning, and artificial intelligence to their own research.

Requirements

Committee Composition and Departmental Approvals

Students must include one of the Data Science program faculty members that is not a member of their home department in their qualifying exam and dissertation committees. This faculty member is the “DE advisor” for purposes of the designated emphasis. This faculty member must be identified at the time the student applies to the program. A list of current program faculty can be found at the program faculty website.

The student must organize a preliminary meeting with the DE advisor, and agree on a plan for completion of the requirements. Once this plan has been designated, the student and the DE advisor must complete the Application for a Designated Emphasis in Data Science form. The completed application form should be signed by the student's home department advisor, the DE advisor, and the DE executive committee chair, and then filed with the Baskin Engineering Graduate Student Affairs Office (bsoe-ga@rt.ucsc.edu). This must be done before the student's advancement to candidacy.

Course Requirements

Required Courses

All students in the designated emphasis are required to complete 18 credits in mandatory courses covering the following topics:

Data Wrangling and Visualization

STAT 266A	Data Visualization and Statistical Programming in R	3
STAT 266C	Introduction to Data Wrangling	3

Statistical Data Analysis

STAT 204	Introduction to Statistical Data Analysis	5

Machine Learning

CSE 242	Machine Learning	5

Speaker Series

STAT 280B	Seminars in Statistics	2

Elective Courses

In addition to completing all required courses, all students must complete at least one five-credit elective from the list below. Students may not double-count a course that is required for their main program as an elective for the Data Science DE.

Applied Mathematics

AM 229	Convex Optimization	5
AM 230	Numerical Optimization	5
AM 250	An Introduction to High Performance Computing	5

Astonomy and Astrophysics

ASTR 234	Statistical Techniques in Astronomy	5

Computational Media

CMPM 243	Social Computing Research: Design, Algorithms, and Incentives	5
CMPM 268	Immersive Analytics	5

Computer Science and Engineering

CSE 243	Data Mining	5
CSE 248	Foundations of Data Science	5
CSE 261	Advanced Visualization	5

Economics

ECON 211A	Advanced Econometrics I	5
ECON 211B	Advanced Econometrics II	5
ECON 211C	Advanced Econometrics III	5

Electrical and Computer Engineering

ECE 237	Image Processing and Reconstruction	5
ECE 250	Digital Signal Processing	5
ECE 253	Introduction to Information Theory	5
ECE 256	Statistical Signal Processing	5

Environmental Studies

ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215B	Intermediate Geographic Information Systems	5

Ocean Sciences

OCEA 260	Introductory Data Analysis in the Ocean and Earth Sciences	5
OCEA 267	Applied Environmental Time Series Analysis	5

Psychology

PSYC 204	Quantitative Data Analysis	5
PSYC 205	Categorical Data Analysis	5
PSYC 214A	Multivariate Techniques for Psychology	5
PSYC 214B	Advanced Multivariate Techniques for Psychology	5

Statistics

STAT 203	Introduction to Probability Theory	5
STAT 205	Introduction to Classical Statistical Learning	5
STAT 207	Intermediate Bayesian Statistical Modeling	5
STAT 208	Linear Statistical Models	5
STAT 209	Generalized Linear Models	5
STAT 222	Bayesian Nonparametric Methods	5
STAT 223	Time Series Analysis	5
STAT 224	Bayesian Survival Analysis and Clinical Design	5
STAT 225	Multivariate Statistical Methods	5
STAT 226	Spatial Statistics	5
STAT 227	Statistical Learning and High Dimensional Data Analysis	5
STAT 229	Advanced Bayesian Computation	5

Writing, Research and/or Teaching Requirements

[Optional Catchall]

Technology and Information Management

Baskin Engineering
(831) 459-2158
engineering.ucsc.edu

PROGRAMS OFFERED

Technology Information Management B.S. (p. 648)

Technology Information Management Minor (p. 654)

Technology and Information Management (TIM) is a multi-disciplinary program that focuses on the integration of engineering, computer science, and economics for two purposes: the technology of management, which includes the design of information technology to solve business problems; and the management of technology, which includes the management, development, and commercialization of products, innovation, and entrepreneurship. The program offers a bachelor of science (B.S.) degree in technology and information management (TIM) as well as a minor in technology and information management (TIM).

TECHNOLOGY AND INFORMATION MANAGEMENT B.S.

Information and Policies

Introduction

Technology and Information Management (TIM) is a rigorous, challenging major for those students wanting to pursue careers in the management of information and technology. TIM students will receive a thorough grounding in the fundamental principles and practices of technology (in particular, computer science and computer engineering) and management, and the scientific, mathematics, and economics principles upon which they are built. In particular, they will become proficient in the following areas: strategy, planning, innovation, entrepreneurship, information technology, software design, product development, and supply-chain management.

The essence of the technology and information management major at the University of California, Santa Cruz is the integration of fundamental intellectual content from the disciplines of computer science, computer engineering, business management economics, and finance. TIM students learn how to apply the fundamentals of these diverse disciplines to solving problems that require the integration of management and technology, e.g., developing information technology systems to manage all activities and operations in a firm, e-commerce, managing and commercializing a new technology, and starting a new high-technology company.

To graduate with a B.S. in technology and information management, students normally complete 26 required courses (with two laboratories, totaling 133 quarter credits) plus three elective courses (15 quarter credits) for the technology and information management major program. Honors students are likely to find the rigorous management and leadership elements of the program of significant interest. Industrial interactions and projects are key features of this major.

Program Learning Outcomes

A technology and information management student completing the program will:

1. learn the fundamentals of the three core areas—mathematics, economics, and engineering—necessary to analyze and solve complex problems in technology and information management.
2. develop the ability to apply mathematics, economics, and engineering to fundamental issues and problems in TIM.
3. develop the ability to identify, formulate, and solve complex real-world problems in the two key multi-disciplinary domains of technology and information management: management of technology (MOT) or management science and engineering (MSE); and technology of management (TOM) or information science and engineering (ISE).
4. be able to communicate effectively in written form in papers and project reports related to TIM.

Academic Advising for the Program

The Baskin Engineering undergraduate advising office offers general advising for prospective and declared undergraduates majoring in Baskin Engineering programs. The office handles major declarations, transfer credits, course substitutions, articulations, and degree certifications. Undergraduate students obtain and submit all paperwork requiring departmental approval to the undergraduate advising office. Transfer students should also refer to the Transfer Information and Policy section.

Baskin Engineering Building, Room 225
bsoeadvising@ucsc.edu
(831) 459-5840

Getting Started in the Major: Frosh

The technology and information management major is intended for students with an interest in both technology and business. It is recommended that students intending to declare this major have completed four years of mathematics (through advanced algebra and trigonometry) and three years of science in high school. Completion of business-oriented computer literacy and basic programming courses is of benefit to students entering this major. Completion of any economics and/or business-related courses in high school is also beneficial, but the faculty realizes that these courses may not be available at many high schools. Completion of comparable college courses at other institutions serves to strengthen the preparation of a student for the technology and information management major.

This major is highly course intensive and sequential; students who intend to pursue this major must begin taking classes for the major in their first quarter at UC Santa Cruz.

Math placement is required for one or more of the foundation courses for this major. For more information, please review the Math Placement website.

Transfer Information and Policy

Transfer students who want to pursue the technology and information management major, must have applied and been admitted to UC Santa Cruz as a proposed Technology and Information Management major.

Transfer Admission Screening Policy

The requirements for transfer students are as follows:

1) Transfer students must have completed at least six of the lower-division courses from the list below
before declaring the TIM major. While the six courses can be chosen from any courses on the list, we strongly recommend that students take at least one Computer Science and Engineering course as one of the six classes.

2) A minimum cumulative GPA of 2.4 is required and is calculated based on all courses taken from the list below. Courses completed via exam credit will count toward the minimum six courses required but are not included in the minimum GPA. Only college-level courses will be included in the GPA calculation.
Students who wish to graduate in two years are strongly recommended to complete most of the general education requirements as well as all screening courses—except TIM 50, CSE 12, and CSE 13S—before coming to UC Santa Cruz.

Students should consult assist.org to determine which courses at other institutions in California are transferable to UC Santa Cruz.

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 16	Applied Discrete Mathematics	5
CSE 30	Programming Abstractions: Python	7
TIM 50	Business Information Systems	5
ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
ECON 10A	Economics of Accounting	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5
MATH 22	Introduction to Calculus of Several Variables	5
MATH 23A	Vector Calculus	5
AM 30	Multivariate Calculus for Engineers	5

Only one course from each of the following sets can be counted:

MATH 19A and MATH 20A

MATH 19B and MATH 20B

MATH 22 and MATH 23A and AM 30

Getting Started in the Major: Transfer Students

Transfer students should declare their major in their first quarter at UC Santa Cruz. If you satisfy the transfer admissions screening requirements, you are not required to take additional coursework in order to declare. Instructions for declaring a major in Baskin Engineering are on the Baskin Engineering undergraduate advising major declaration page.

Major Qualification Policy and Declaration Process

Major Qualification

Transfer students should refer to the transfer admission screening requirements.

In order to be admitted into the technology and information management major, students must be listed as a proposed major within Baskin Engineering. Please refer to the Baskin Engineering "Proposed Major Retention" and its "Declaring a Baskin Engineering Major" sections in the catalog for more information.

In addition, to be admitted to the TIM major after a student has entered UC Santa Cruz, students need to complete a total of six courses chosen from the following three topics. The three topics are Mathematics; Engineering; and Economics and Technology and Information Management. One course must be chosen from each topic, and the three additional courses can be from any topic. Only one course may be counted from the following sets: 1) MATH 19A and MATH 20A, 2) MATH 19B and 20B, and 3) MATH 22, MATH 23A, and AM 30.

Mathematics

At least one of the following:

	One of these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5
	or one of these courses	
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5
	or one of these courses	
MATH 22	Introduction to Calculus of Several Variables	5
MATH 23A	Vector Calculus	5
AM 30	Multivariate Calculus for Engineers	5
	or this course	
CSE 16	Applied Discrete Mathematics	5

Engineering

At least one course from the following:

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 30	Programming Abstractions: Python	7

Students with no prior programming will take CSE 20 before CSE 30 and CSE 12.

Economics and Technology and Information Management

At least one additional course must be chosen from the following:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
ECON 10A	Economics of Accounting	5
TIM 50	Business Information Systems	5

Eligibility to qualify for the major

Students in their first six quarters who have completed at least six qualifying courses in the TIM major will need to meet the following:

1. Their cumulative GPA is at least 2.4 in all of the major qualification courses attempted.

2. They have no more than 7 credits resulting in grades of C-, D+, D, D-, F or NP among all of the TIM major qualification courses attempted.

Appeal Process

Students who are informed that they do not qualify for the major may appeal this decision by submitting a letter to the undergraduate director through the Baskin Engineering undergraduate advising office within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision.

How to Declare a Major

There are four steps to declaring a Baskin Engineering (BE) major. For a detailed guide to this process, please consult the BE Undergraduate Advising Declare Your Major website.

Students should start the declaration of major process by completing Step One on the BE Undergraduate Advising Declare Your Major website as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed the major qualification courses.

Letter Grade Policy

All students admitted to a Baskin Engineering major, or seeking admission to a major, must take all courses required for that major for a letter grade. This policy includes courses required for these degrees that are sponsored by other departments.

Baskin Engineering Policies

Please refer to the Baskin Engineering section of the catalog for additional policies that apply to all Baskin Engineering programs. These policies include admission to the major and the need for UC Santa Cruz students to obtain pre-approval before taking courses elsewhere.

Course Substitution Policy

Undergraduate engineering students who wish to substitute a major course with a course from another department at UC Santa Cruz, or from another academic institution, must first consult the Baskin Engineering Undergraduate Advising Office. The advising office requires a Petition for Course Substitution be approved before credit for an alternate course can be applied to any Baskin Engineering major requirement.

Petition forms are available online at the Baskin Engineering Undergraduate Advising website.

Double Majors and Major/Minor Combinations Policy

Study Abroad

Honors

The TIM program awards honors to students whose academic performance is excellent. Students with a GPA 3.5 or higher but lower than 3.7 will be awarded honors. Students with a GPA of 3.7 or higher will be awarded highest honors. Students who have been found guilty of academic misconduct are not eligible for either honors or highest honors.

[Optional Catchall]

Requirements and Planners

Course Requirements

The Technology and Information Management B.S. consists of the following requirements. Some may be satisfied via exam credit.

Lower-Division Courses

Statistics

STAT 17	Statistical Methods for Business and Economics	5
	AND	
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Mathematics

One of the following options

	Either these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
	or these courses	
MATH 20A	Honors Calculus	5
MATH 20B	Honors Calculus	5

Plus one of the following

AM 30	Multivariate Calculus for Engineers	5
MATH 22	Introduction to Calculus of Several Variables	5
MATH 23A	Vector Calculus	5

Plus the following

One of these courses

AM 10	Linear Algebra for Engineers	5
	OR	
MATH 21	Linear Algebra	5

And one of these courses

AM 20	Ordinary Differential Equations for Engineers	5
	OR	
MATH 24	Ordinary Differential Equations	5

Economics

All of the following

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
ECON 10A	Economics of Accounting	5

Computer Science and Engineering

All of the following

CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7

CSE 16	Applied Discrete Mathematics	5
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7

Students with no prior programming will take CSE 20 before CSE 30 and CSE 12. Students with a prior programming course, exam credit, or clearing the "Test-out" bar will start with CSE 30 and CSE 12.

Plus these courses

TIM 50	Business Information Systems	5
TIM 58	Systems Analysis and Design	5

Upper-Division Courses

Computer Science and Engineering

All of the following:

CSE 150	Introduction to Computer Networks	7
TIM 170	Management of Technology Seminar	2
TIM 172A	Introduction to Management of Technology I	5
TIM 172B	Introduction to Management of Technology II	5
TIM 172P	Management of Technology Project I	3
TIM 172Q	Management of Technology Project II	3
TIM 175	Business Strategy and Information Systems	5
CSE 182	Introduction to Database Management Systems	5

Economics

One of the following courses

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus the following

ECON 113	Introduction to Econometrics	5

Electives

Two 5-credit Baskin Engineering courses

Students select two upper-division Baskin Engineering electives on the basis of their particular interests. These electives may be any 5-credit upper-division or graduate Baskin Engineering courses numbered 100-189 or 200-289. At most one of these could be replaced by a TIM independent or field study course (TIM 193, TIM 195, TIM 198, and TIM 199) with prior approval from the department.

The following limitations apply:

- Students may take STAT 131 or CSE 107, but not both;
- In cases in which a course has an associated lab, both are required to satisfy one elective.
- Classes that can be repeated for credit can only be used once to satisfy an elective requirement.

Plus one economics course

Students take one 5-credit, upper-division economics course numbered 100-189.

A list of suggested economics courses can be found on the Technology and Information curriculum chart on the Baskin Engineering Undergraduate Advising Major Curriculum page.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in technology and information management is satisfied by completing TIM 175.

TIM 175	Business Strategy and Information Systems	5

Comprehensive Requirement

Students complete the comprehensive requirement in two areas, the management of technology and the technology of management. The comprehensive requirement in the management of technology consists of two five-credit courses, TIM 172A and TIM 172B, and two three-credit project courses, TIM 172P and TIM 172Q. TIM 172A and TIM 172P need to be taken concurrently, as do TIM 172B and TIM 172Q. The comprehensive requirement in the technology of management consists of a five-credit project-intensive course, TIM 175.

TIM 172A addresses strategic, engineering, marketing, and financial processes and tools for the management, development, and commercialization of high-tech products.

TIM 172B addresses the development and application of processes and tools for the management, design, optimization, and operation of supply chain networks for high-tech products.

TIM 172P is the first of a two-course project sequence in which students apply the knowledge and skills gained in TIM 172A to complete the first part of a major quarter-long comprehensive team project in the management of technology. In this course, taken concurrently with TIM 172A, the team project focus is on the management, design, and commercialization of a new product within a high-tech company. TIM 172A and TIM 172P together form the first part of the required management of technology comprehensive requirement for the TIM B.S. major.

TIM 172Q is the second of a two-course project sequence in which students apply the knowledge and skills gained in TIM 172B to complete the second part of a major comprehensive team project in the management of technology. In this course, taken concurrently with TIM 172B, the team project focus is on the supply chain management for the new product developed in the project course TIM 172P. TIM 172B and

TIM 172Q together form the second part of the required management of technology comprehensive requirement for the TIM B.S. major.

TIM 175 requires that students understand and use a structured methodology to evaluate the competitive use of information systems within an enterprise. This is accomplished by a team project as well as by an individual project that involves researching and writing a comprehensive analytical term paper using a methodology taught as part of this course.

TIM 172A	Introduction to Management of Technology I	5
TIM 172B	Introduction to Management of Technology II	5
TIM 172P	Management of Technology Project I	3
TIM 172Q	Management of Technology Project II	3
TIM 175	Business Strategy and Information Systems	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the technology and information management major. Plan One is for first-year students, and Plan Two is designed for transfer students that have completed all general education requirements. Students completing the courses in the four-year planner will have satisfied the MF, PE and SR General Education requirements.

Four-Year Major Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 19A ECON 10A College 1	MATH 19B CSE 20 WRIT 1/WRIT 1E (if needed)	ECON 1 CSE 30 STAT 17 STAT 17L	
2nd (soph)	TIM 50 AM 10 WRIT 2*	ECON 2 MATH 22 or MATH 23A	ECON 100A TIM 170 CSE 12	
3rd (junior)	CSE 13S CSE 16	CSE 150 TIM 58	CSE 182 AM 20	
4th (senior)	TIM 172A TIM 172P ECON 113	TIM 172B TIM 172Q BE elective ECON elective	TIM 175 BE elective	

* WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Transfer Major Planner*

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	TIM 50 ECON 100A	TIM 58 CSE 12 STAT 17 STAT 17L	TIM 170 CSE 150 ECON 113	
2nd (senior)	TIM 172A TIM 172P	TIM 172B TIM 172Q	TIM 175	

BE elective	ECON elective	BE elective
CSE 13S		CSE 182

*This plan assumes that transfer students have completed all of their lower-division courses for the technology and information management major, with the exception of CSE 12, CSE 13S, STAT 17 and STAT 17L, TIM 50 and TIM 58, prior to attending UC Santa Cruz.

Curriculum charts for all BE majors are available at the Baskin Engineering Undergraduate Advising website.

TECHNOLOGY AND INFORMATION MANAGEMENT MINOR

Course Requirements

Below are the requirements for the Technology and Information Management Minor. Some courses may be satisfied via exam credit. Courses may be taken for a letter grade or pass/no pass.

Lower-Division Courses

Mathematics (2 Courses)

Math placement is required for one or more of the foundational courses for this minor. For more information, please review the Math Placement website.

One of the following

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 20A	Honors Calculus	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following

AM 11B	Mathematical Methods for Economists II	5
MATH 11B	Calculus with Applications	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 20B	Honors Calculus	5

Computer Science and Engineering (3 Courses)

One of the following

CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7

Clearing the CSE 20 "Test Out" bar will also satisfy this requirement.

Plus the following course

TIM 50	Business Information Systems	5

Plus one of the following options

TIM 58	Systems Analysis and Design	5
TIM 80C	Starting a New Technology Company	5

Upper-Division Courses

Mathematics (1 Course)

One of the following courses:

CSE 107	Probability and Statistics for Engineers	5
ECON 113	Introduction to Econometrics	5
STAT 131	Introduction to Probability Theory	5

Electives (4 Courses)

Four courses from the following list:

CSE 150	Introduction to Computer Networks	7
CSE 180	Database Systems I	5
CSE 182	Introduction to Database Management Systems	5
ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5
ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5
TIM 172A	Introduction to Management of Technology I	5
TIM 172B	Introduction to Management of Technology II	5
TIM 175	Business Strategy and Information Systems	5

Either CSE 180 or CSE 182

Either ECON 100A or ECON 100M

Either ECON 100B or ECON 100N

SOCIAL SCIENCES DIVISION

460 Humanities and Social Sciences Building
(831) 459-3212
http://socialsciences.ucsc.edu/

The Division of Social Sciences focuses on the study of human relationships and society. As global economic and political changes transform the world around us, social scientists help us meet the challenges and opportunities of the 21st century.

Our eight departments offer more than 30 undergraduate and graduate degree programs, including many that are interdisciplinary collaborations. Our faculty members conduct leading-edge research in their fields, frequently working with students in research clusters linking departments to our research centers. We also offer extensive opportunities for experiential learning through field studies.

Our research, teaching, and state-of-the-art facilities provide students with a comprehensive and rigorous education that prepares them for productive careers and further academic pursuits. For more information on the division, see our website.

Anthropology

361 Social Sciences 1 Building
(831) 459- 3320
https://anthro.ucsc.edu/

PROGRAMS OFFERED

Anthropology B.A. (p. 655)

Anthropology Minor (p. **Error! Bookmark not defined.**)

Anthropology Ph.D. (p. 662)

Anthropology Designated Emphasis (p. 669)

OTHER PROGRAMS OF INTEREST

Earth Sciences/Anthropology B.A. (p. 341)

Anthropology is the study of people throughout the world and through time. Because it covers a wide range of topics—biological evolution, material remains of the past, and the world that humans create through their ideas and practices in present-day societies—anthropology is an especially integrative discipline. The anthropology program at UC Santa Cruz offers courses that reflect the diversity of the field.

- Cultural anthropology explores the everyday lives, beliefs, activities, and movements of people, objects, and ideas in diverse societies. Cultural anthropology courses examine such topics as race and ethnicity, medicine, health, science, gender, sexuality, environment, religion, law, popular culture, politics, economics, and institutions.
- Archaeology uses the material evidence of human activities to understand past human lives. Archaeology at UCSC focuses on past people's interactions with one another at the local level and within their wider social and ecological contexts. Faculty research areas include the pre-colonial and early post-colonial history of West and East Africa, California, the Caribbean, the Near East, the Pacific Northwest, and South America.
- Biological anthropology traces the human journey from its beginnings in Africa over five million years ago. Biological anthropology courses look at fossil evidence, evolutionary theory, human variation, and the behavior of primate relatives in order to analyze biological, social, and cultural changes over time. Biological anthropology at UCSC has a methodological emphasis in innovative approaches to human and non-human primate ecology and diversity founded on our expertise in genomics, isotope biochemistry, as well as human osteology.

UCSC students have the opportunity to do independent library and field research in cultural anthropology, archaeology, and biological anthropology. Laboratory courses in archaeology and biological anthropology offer practical experience in the analysis of biological and cultural materials. In cultural anthropology courses, students learn to carry out anthropological research through interviews, participant observation, surveys, the collection of oral histories, analysis of textual, visual, and aural materials, and the interpretation of archival materials.

Because anthropology is concerned with understanding human interaction, it is a useful major for anyone planning a career that involves working with people, especially those from diverse cultures. Some UCSC anthropology graduates are in social work, many are in teaching, and others pursue careers in law, city planning, politics, medicine, public health, cultural resource management, and journalism. Students intending to specialize in anthropology usually go on to graduate school because professional employment in the field almost always demands an advanced degree.

A combined major in Anthropology and Earth and Planetary Sciences, leading to a bachelor of arts (B.A.) degree, is also offered; for that program description, see Earth and Planetary Sciences (p. 341).

Most anthropology faculty have their offices in Social Sciences 1 Building. Social Sciences 1 also houses laboratories for archaeology and biological anthropology where space is provided for laboratory and individual studies courses and for collections of human and non-human mammalian skeletal material, a variety of archaeological artifacts, and collaborative workspaces for cultural anthropology research.

The Anthropology Colloquium series showcases guest speakers and gives faculty and students an opportunity to discuss new approaches to anthropological questions. Students and faculty interested in archaeology also gather informally at the Archaeology/Biological Anthropology Lunch forum to share information on fieldwork and employment opportunities. There are various anthropology-themed student groups for those who wish to connect with fellow students interested in anthropology.

ANTHROPOLOGY B.A.

Information and Policies

Introduction

The anthropology bachelor of arts (B.A.) incorporates the three anthropological subfields of anthropological

archaeology, cultural anthropology, and biological anthropology, while providing undergraduates with a solid grounding in theory and methods.

Students do not declare an emphasis or concentration within the anthropology major. All students therefore are general anthropology majors and complete the same requirements. However, students can choose to take additional courses in a specific area of anthropology while completing the upper-division anthropology electives required for the major, or by choosing to take courses above and beyond what is required for the major.

Program Learning Outcomes

A student who graduates with a B.A. in anthropology has the following knowledge and skills.

Core Concepts in Anthropology

The student demonstrates understanding of the core concepts in three primary subfields of anthropology: cultural anthropology, archaeology, and biological anthropology.

Knowledge of Cultural Differences

The student demonstrates knowledge of cultural variation and the diversity of perspectives, practices, and beliefs found within each culture and across cultures.

Integration of Subfields

The student integrates cultural, biological, and archaeological perspectives on human bodies, behavior, materialities, and institutions.

Written Communication

The student demonstrates the ability to write clearly by formulating well-organized arguments that are grounded in supporting evidence while countering evidence that contradicts the student's claims.

Oral Communication

The student is able to organize ideas and information and articulate them effectively.

Research and Analytical Skills

The student demonstrates knowledge of the basic steps involved in scholarly research, including locating and critically evaluating scholarly and other information sources relevant to the chosen topic. The student can recognize and demonstrate a basic understanding of research methods used in the various subfields of anthropology, including—but not limited to— participant observation, thick description, laboratory and field analysis, and interviewing.

Understanding of Long-Term Changes in Human Behavior and Conditions in Deep Time

The student has a grasp of long-term changes in the conditions that have shaped humans and the environments they inhabit.

Academic Advising for the Program

For more information regarding department policies, please consult the undergraduate coordinator at the Anthropology Department undergraduate advising website.

All majors, including double majors, must prepare a program of study. This can be done in consultation with faculty or undergraduate coordinator. The Anthropology Department urges students to seek faculty advice early in planning for the major. Faculty hold regular office hours weekly and encourage students to come in to talk about their program, or coursework, and career and professional advising. Students planning to pursue graduate training should plan course schedules in close consultation with faculty advisors. Transfer students should consult the Transfer Information and Policy section of this program statement.

Peer Advisors

The Anthropology Department has instituted a peer advisor program as a supplement to academic advising offered by faculty members. The peer advisors are juniors and seniors who have been trained to help students with questions and general guidance through the anthropology major. Please consult the Anthropology Department undergraduate advising website for scheduling with the peer advisors.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Students may begin taking courses toward the major in the first year, but it is not required.

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to the University of California, Santa Cruz. Transfer students are strongly encouraged to complete ANTH 1, ANTH 2, and ANTH 3 before transferring to UC Santa Cruz, however, it is not required for admission.

Getting Started in the Major: Transfer Students

Transfer Credit Toward Major/Minor Requirements

Students may transfer courses equivalent to ANTH 1, ANTH 2, and ANTH 3 from California community colleges and universities with existing articulation agreements (www.assist.org).

Students may also petition to transfer courses equivalent to ANTH 1, ANTH 2, and ANTH 3 from other community colleges or from four-year institutions.

Students may petition up to 10 quarter credits (equivalent to two UC Santa Cruz courses) of upper-division transfer credit toward the elective requirements under the following circumstances:

- A student has taken an upper-division anthropology course at another four-year university (including

courses taken through study abroad) and wants to petition for the course to count toward the anthropology major or minor elective.

- A student was enrolled in an accredited Field School Program and wants to petition for the course to count toward the anthropology elective requirements.

Prior to Enrolling in Your First Quarter at UCSC

Complete Lower-Division Requirements

Most upper-division courses have one of the following lower-division introductory courses as a prerequisite:

- ANTH 1 Introduction to Biological Anthropology
- ANTH 2 Introduction to Cultural Anthropology
- ANTH 3 Introduction to Archaeology

Confirm Transfer Credit Has Been Processed

After you have been admitted to UCSC and all your final official transcripts from other colleges have been received, the Office of Admissions will evaluate your transfer credit. The evaluation shows which of your past courses are transferable to UCSC and how many credits you have accrued. It also shows which general education requirements you have satisfied, whether you have satisfied the Intersegmental General Education Transfer Curriculum (IGETC), and whether you have satisfied the University of California Entry Level Writing and American History and Institutions requirements. Students access this information through MyUCSC by viewing the Degree Progress Report from the My Academics area of the Student Center. If this information is not available for your first enrollment period, contact a college or major advisor to help you select appropriate classes. It is an excellent idea to keep an unofficial copy of your transcripts from your previous schools. You should take these documents with you to all academic advising appointments.

Confirm Transfer Credit Articulates with UCSC Courses

Courses taken at community colleges or four-year universities may be used to satisfy the lower-division requirements for the major. View the UC Articulation Agreements to determine which California community college courses are equivalent to our ANTH 1, ANTH 2 and ANTH 3. ***Please note that courses approved by the Office of Admissions for transfer credit do not necessarily satisfy major requirements. Courses must have an articulation agreement to count automatically toward major requirements.***

If your transfer credit course does not articulate with a UC Santa Cruz course, you may submit an Anthropology Coursework Petition which can be found on the Anthropology Department web site. ***Senate Faculty are not in service during summer, so fall admits will likely need to wait until after the beginning of fall quarter for coursework petitions to be approved.***

Enrolling in Your First Quarter at UCSC

We strongly recommended that transfer students take ANTH 150, Communicating Anthropology, during their first quarter at UCSC. This course is designed to provide transfer students with a transition to UCSC coursework. It emphasizes critical reading and writing skills and is an excellent foundation for further upper-division coursework. This class fulfills the anthropological theory core requirement.

We also recommend taking only one additional upper-division course in anthropology during your first quarter at UCSC. Most upper-division anthropology courses are offered only on an every-other-year basis. Transfer students are advised to plan accordingly.

"Free Quarter" for Transfer Students with Unarticulated, Lower-Division Courses

Any student who has taken a course analogous to ANTH 1, ANTH 2, or ANTH 3 will be issued a permission code by the undergraduate advisor for courses listing ANTH 1, ANTH 2, or ANTH 3 as a prerequisite (provided the class has not reached maximum enrollment) in their first quarter at UCSC. Students must provide unofficial transcripts as evidence that they have completed courses analogous to ANTH 1, ANTH 2, or ANTH 3.

If the student fails to petition for a course substitution during their first quarter, they must receive instructor permission to enroll in courses with ANTH 1, ANTH 2, or ANTH 3 as prerequisites thereafter until the prerequisite is satisfied either by taking the class or approved course substitution petition.

Major Qualification Policy and Declaration Process

Major Qualification

In order to qualify for the major, students must have received a "C/P" or better in at least one lower-division anthropology course (ANTH 1, ANTH 2, or ANTH 3) and have either received a "C/P" or better in a second lower-division anthropology course or be enrolled in a second lower-division anthropology course at the time of declaration. Transfer students should consult the Transfer Information and Policy section of this program statement.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the department chair within 15 days from the date the notification was mailed. Within 15 days of receipt of the appeal, the department will notify the student, college, and Office of the Registrar of the decision.

How to Declare a Major

Students should submit a petition to declare by completing the petition for major/minor declaration form as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with

conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

STEP 1: Make a copy of the UCSC Academic Planning Form.

STEP 2: Make an appointment in Slug Success to meet an anthropology peer adviser to review major requirements and start making your academic plan.

STEP 3: Share your Academic Planning Form Google Doc with the anthropology undergraduate adviser (anthugra@ucsc.edu). ***It is very important that you complete this step, as you will not be declared until you do so!***

STEP 4: Complete a Petition for Major/Minor Declaration (once you have completed Major Qualifications) in MyUCSC. If you are not logged into MyUCSC, you will need to navigate to your Student Homepage and select the Undergraduate Student eForms tile > Petition for Major/Minor to access the form.

Recommended: Meet with an Anthropology Senate faculty member to discuss your major plans and academic plan. It is best to meet with faculty during their quarterly office hours or email them to schedule an appointment. The Anthropology Department does not assign faculty advisers – we suggest that you meet with a faculty member whose work coincides with your interests. In addition to reviewing the required declaration paperwork, you should also talk with the faculty member about your intellectual and career interests, graduate school preparation, opportunities for experiential learning (e.g. internships or research), and options for satisfying the senior comprehensive requirement.

If you are a transfer student, you must provide the department with an unofficial copy of your transcript from any institution where you took anthropology courses that you would like to apply to the major requirements. *Please do this as soon as possible as it may effect your enrollment in anthropology courses that have prerequisites.*

Letter Grade Policy

Anthropology students can choose to take courses required for the major or minor for a Pass/No Pass (P/NP) grading option. Students receive a P (Pass) for work that is performed at C level or better. However, all students must abide by the campus policy that no more than 25% of their UCSC credits applied toward graduation may be graded on a Pass/No Pass basis. The Anthropology Department does not set any additional restrictions on how many required anthropology courses students can take for Pass/No Pass. However, it is recommended that students take very few of their upper-division anthropology courses for Pass/No Pass.

Course Substitution Policy

Courses from California Community Colleges

Courses taken at community colleges or four-year universities may be used to satisfy the lower-division requirements for the major. View the UC Articulation Agreements to determine which California community college courses are equivalent to our ANTH 1, ANTH 2, and ANTH 3.

Courses from Other Four-Year Universities

The Anthropology Department may also accept introductory anthropology courses equivalent to ANTH 1, ANTH 2 and ANTH 3 from other four-year universities but students must petition to have these courses count toward the anthropology major or minor requirements.

You may also apply up to 10 credits (two classes) of upper-division credit toward the major. These credits must be taken at four-year universities, through EAP, or through an approved field study program. The director of undergraduate studies must approve each course. For more information about the approval and waiver process, see the Anthropology Coursework Petition which can be found on the Anthropology Department web site.

Anthropology courses from other universities that are approved by the Anthropology Department will count toward the elective requirement. Students **must** complete the Anthropology Senior Comprehensive requirement at UCSC—course petitions will not be accepted for this requirement.

Coursework Petition Process

STEP 1: Initiate the Anthropology Coursework Petition which can be found on the Anthropology Department web site.

STEP 2: Complete and sign the form in DocuSign. It will be sent to the anthropology undergraduate advisor for review.

STEP 3: The Director of Undergraduate Studies reviews petitions to approve/deny to satisfy lower-division/upper-division elective major/minor requirements.

STEP 4: The undergraduate advisor processes coursework in MyUCSC and completes the petition, and the student saves the completed form for their records.

Approval of ANTH 1, ANTH 2, and/or ANTH 3

Anthropology undergraduate advisor processes "Other Credit Quick" to indicate satisfaction of the course prerequisite.

Anthropology Undergraduate Advisor processes "Requirement Waiver" in the Degree Progress Report in MyUCSC to indicate that the major/minor requirement is satisfied.

Approval for Upper-Division Elective Credit

If Admissions processed credit transferred from another institution, the anthropology undergraduate advisor processes the "Course Directive" in their Degree Progress Report in MyUCSC to indicate that one elective is satisfied.

If Admissions has not processed credit transferred from another institution, the anthropology undergraduate advisor processes "Requirement Waiver" in the Degree Progress Report to indicate that one elective is satisfied.

Independent Study

Independent study (or individual study) courses are opportunities for students to pursue personalized learning experiences under the guidance of a faculty member. These courses focus on either lab work (ANTH 197, Lab Tutorial), internships (ANTH 198, Independent Field Study), or general research (ANTH 199, Tutorial). We offer independent study courses for 2 credits (six hours of work per week) or 5 credits (15 hours of work per week). For more on the types of opportunities you can pursue through independent study, see our Experiential Learning page.

Enrollment Process

Step 1: Student meets with a faculty sponsor to outline the proposed work.

Step 2: Initiate the Anthropology Petition for Undergraduate Individual Studies on the Anthropology Department web site.

Step 3: Complete and sign the form in DocuSign. It will be sent to the faculty sponsor to review and e-sign.

Step 4: The student saves the completed form for their records and enrolls in class using the class number provided via MyUCSC.

Limitations

Undeclared students may not take more than 7 credits of independent study courses per quarter. Students who are declared in a major may only take more than 7 credits of independent study courses per quarter with authorization from the department. Only one 5-credit independent study course can count toward the major requirements as an elective. Independent study courses cannot count toward the minor requirements.

Double Majors and Major/Minor Combinations Policy

Study Abroad

Anthropology is a very international discipline: the classes and coursework in this department draw upon studies of many different places and peoples. Most anthropologists work in foreign countries and all engage with scholarship from around the world. Anthropology students are strongly encouraged to make study abroad part of their education and the department is currently developing a plan of study to enable students to conduct independent research abroad with which to write a senior thesis.

Anthropology students who participate in EAP can petition up to two upper-division anthropology courses taken abroad to count toward the anthropology major or minor requirements. When approved, these courses count toward major/minor requirements as upper-division electives.

Note: The Anthropology Department at most will accept up to **two** upper-division courses from another university—this includes universities throughout the country and courses taken abroad.

The Anthropology Department **does not** pre-approve EAP courses to count toward the major/minor requirements. Students must petition for EAP courses to count toward requirements after returning from abroad by completing the Coursework Petition Form found on the department web site. It is very important that students save all of their EAP coursework as it may be needed for the course petition. Syllabi that are submitted for course petitions must include detailed information about the course—brief descriptions of courses and syllabi written in languages other than English will not be accepted. It is the student's responsibility to ask for a more detailed course description if the EAP instructor does not provide it.

Only anthropology courses taken through EAP are normally eligible to count toward anthropology major/minor requirements; however, if a university abroad does not have an anthropology department, other related courses may be considered.

Again, **save all EAP coursework.** It is the student's responsibility to retain all relevant course materials for EAP programs. It can often be difficult to contact instructors after an EAP program has ended.

Honors

The Anthropology Department awards honors in the major and highest honors in the major based on a ranked departmental grade point average (GPA) that is calculated using all upper-division courses taken in the major with the exception that only one independent-study course can be used in this calculation. For students who have taken multiple independent-study courses in the department, the independent-study course that has the highest grade is used for the calculation. Approximately 15 percent of the graduating class is considered for honors based on their ranked departmental GPA through the quarter before graduation. The criteria for awarding highest honors in the major are overall superlative performance in the major (top 5 percent of ranked departmental GPA) and general breadth of excellence across the subfields of anthropology. Receiving honors on the senior comprehensive requirement is also considered as a factor in awarding highest honors, but is not always determinative.

Anthropology Website

The Anthropology website outlines information on department procedures and requirements, program planning, independent study, faculty interests, and campus resources for anthropology majors.

Requirements and Planners

Course Requirements

To graduate with an anthropology major, students must successfully complete the following courses:

Lower-Division Courses

ANTH 1	Introduction to Biological Anthropology	5

ANTH 2	Introduction to Cultural Anthropology	5
ANTH 3	Introduction to Archaeology	5

Upper-Division Courses

Ten upper-division courses

Five core requirements

- one course in anthropological theory
- one course in sociocultural anthropology
- one course in regional specialization
- one course in archaeology
- one course in biological, medical or environmental anthropology

Four anthropology electives (any additional upper-division anthropology courses)

Two-credit courses do not count toward the 10 upper-division courses required for the major. Only one 5-credit individual studies course (ANTH 197, ANTH 198, or ANTH 199) may be counted toward the 10 required upper-division courses. Theory courses can only be counted toward the theory requirement or an upper-division elective. See the section on Transfer Credit Toward Major/Minor Requirements for information on receiving credit for upper-division coursework taken at other institutions to be applied toward electives.

Students who are given permission to take a graduate seminar in anthropology may use the course to satisfy an upper division elective.

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. Anthropology's DC requirement aims especially at cultivating high-level skills in critical and ethnographic writing.

To satisfy the DC requirement students must complete a senior seminar series course or complete an independent senior thesis following the guidelines below.

Senior Seminar

Either a course in the ANTH 194 series or a course in the ANTH 196 series.

Senior Thesis

	Either these courses	
ANTH 195A	Biological Anthropology Senior Thesis Series: Research Design	5
ANTH 195B	Biological Anthropology Senior Thesis Series: Guided Laboratory Research	2
ANTH 195C	Biological Anthropology Senior Thesis Series: Thesis Writing	5
	or this course	
ANTH 195S	Senior Thesis	5

Students should only enroll in ANTH 195S during the quarter in which they intend to submit their thesis.

Comprehensive Requirement

Students can fulfill the senior comprehensive requirement in anthropology either by passing a senior seminar (ANTH 194/ANTH 196-series course) or by writing an acceptable independent senior thesis (ANTH 195S or ANTH 195A, ANTH 195B and ANTH 195C).

Senior seminars are small, writing-intensive classes focusing on advanced topics in anthropology. The prerequisite for admission to a senior seminar is successful completion of courses ANTH 1, ANTH 2, and ANTH 3; senior seminars are restricted to senior anthropology majors.

Students considering an independent thesis must arrange for the sponsorship and support of a faculty member before beginning research. An independent senior thesis (not written within a senior seminar) should be based on original research and reflect the student's understanding of fundamental theories and issues in anthropology. The thesis should be comparable in content, style, and length (generally 25–30 pages) to a professional journal article in its subfield. Students who wish to complete the senior comprehensive requirement through and independent thesis will enroll in a section of ANTH 195S supervised by their thesis sponsor or ANTH 195A, ANTH 195B and ANTH 195C series.

The senior comprehensive requirement can be satisfied in one of two ways:

Senior Seminar

Either a course in the ANTH 194 series or a course in the ANTH 196 series.

Senior Thesis

Students who are interested in completing their senior comprehensive requirement by independent thesis, rather than seminar, must arrange for the sponsorship and support of a faculty member before beginning research. An independent senior thesis should be based on original research and reflect the student's understanding of fundamental theories and issues in anthropology. The thesis should be comparable in content, style, and length (generally 25-30 pages) to a professional journal article in its subfield.

Students who plan to write an independent senior thesis must begin planning well in advance—typically three quarters before they plan to graduate. The senior thesis process usually takes about a full academic year and requires that students be highly self-motivated and committed to their thesis topic. Most students spend at least one quarter conducting research and one quarter writing the thesis.

Either this course

ANTH 195S	Senior Thesis or these courses	5
ANTH 195A	Biological Anthropology Senior Thesis Series: Research Design	5
ANTH 195B	Biological Anthropology Senior Thesis Series: Guided Laboratory Research	2
ANTH 195C	Biological Anthropology Senior Thesis Series: Thesis Writing	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans: (1) a four-year plan for frosh students as preparation for the anthropology B.A. major and (2) a two-year plan for transfer students for the anthropology B. A. major. ANTH 1 and ANTH 3 satisfy the SI general education requirement, and ANTH 2 satisfies the CC general education requirement.

Four-Year Plan

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	ANTH 1 College 1	ANTH 2 WRIT 1/WRIT 1E (if needed)	ANTH 3	
2nd (soph)	Bio/Med/Env WRIT 2**	Sociocultural	Archaeology	
3rd (junior)	Theory	Regional	Upper-division elective Upper-division elective	
4th (senior)	Upper-division elective	Upper-division elective	Senior Seminar *	

*Alternatives listed in the section Requirements of the B.A.

** WRIT 2 should be taken in or before spring quarter of the second year.

Students must complete all other GE requirements, some of which are satisfied by anthropology courses.

Two-Year Plan

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	Theory Upper-division elective	Regional Sociocultural	Archaeology Bio/Med/Env	
4th (senior)	Upper-division elective Upper-division elective	Upper-division elective	Senior Seminar*	

*Alternatives listed in the section Requirements of the B.A.

It is assumed that a student has completed ANTH 1, ANTH 2, and ANTH 3 before transferring to UCSC.

ANTHROPOLOGY PH.D.

Information and Policies

Note: The Anthropology Ph.D. Program is not accepting applications in the 2025-26 Academic Year.

Introduction

The anthropology doctoral program at UCSC consists of three tracks: cultural anthropology, anthropological archaeology, and biological anthropology.

Although applicants are accepted only for the doctor of philosophy (Ph.D.) program, students may obtain an en route master of arts (M.A.) degree after fulfilling specific requirements during the first two years.

The theme of emerging worlds—culture and power after progress—unites the research interests of faculty in the cultural anthropology graduate program.

Our concentration on “emerging worlds” and on the construction of anthropological knowledge is especially well suited for drawing together diverse scholars and specialists in challenging and enriching conversations. Rather than reproduce the boundaries among the traditional subfields of anthropology, we explore how recombination of these approaches can elucidate specific anthropological problems.

The Ph.D. program in anthropological archaeology focuses on the pre-colonial and early post-colonial history of Africa, the Caribbean, and western North America. It is distinctive in insisting that theories of power, production and exchange, human ecology, gender, ethnicity, and technological practice be explored through rigorous laboratory and field research methods.

The Ph.D. program in biological anthropology has a methodological emphasis in innovative approaches to human and non-human primate ecology and diversity founded on our expertise in genomics and isotope biochemistry, as well as a longstanding expertise in skeletal biology and its application in bioarchaeology and forensic anthropology.

Residency Requirement

In accordance with Senate Regulation 686, the minimum residence requirement for the Ph.D. degree is six quarters, three of which must be spent in residence at the University of California, Santa Cruz campus. Residence is established by the satisfactory completion of one course per quarter.

Good Academic Standing and Academic Notice

A duly registered graduate student is considered to be in good standing so long as the student's department determines that the student is making satisfactory progress toward a terminal degree. The department and the graduate dean review the academic progress of each continuing graduate student annually.

If the Anthropology Department deems a student's work unsatisfactory, the student may be placed on academic notice. A student whose academic progress has been found unsatisfactory in two successive annual reviews will be subject to dismissal from the university.

The letter recommending academic notice for a student will state:

1. Reason why (failed X class etc.)
2. Steps that must be taken to restore satisfactory academic standing
3. The timeline for completion of the required work

The letter to the student will also state that the failure to meet any one of the requirements may result in dismissal. No action for dismissal is taken until and unless the department recommends dismissal.

A student who has completed 12 or more quarters of full-time work in the same graduate program without advancing to candidacy for the Ph.D. is not considered to be making satisfactory progress. In such cases, the student will be recommended for dismissal or placed on academic notice until advancement is achieved. A student advanced to candidacy for more than nine quarters who has yet to complete the Ph.D. is not considered to be making satisfactory academic progress. Consult the Graduate Student Handbook for more information about academic progress, academic notice, dismissal, and the appeal process.

Consult the Graduate Division’s Graduate Student Handbook for more information about academic progress, academic notice, dismissal, and the appeal process.

Grading Policy

Satisfactory/Unsatisfactory Grading

All graduate students in graduate or undergraduate courses will be graded Satisfactory (S), Unsatisfactory (U) or Incomplete (I) (Academic Senate 13.1.1). A grade of U requires immediate resolution with the course instructor and/or director of Graduate Studies or the student will be brought up for review before the entire department.

Incomplete Grades

The Anthropology Department does not allow Incompletes in the first year graduate Core Courses and strongly discourages the issuing of Incompletes in other graduate courses. We also recommend that graduate students in anthropology not request Oncomplete grades for courses taken outside the department.

We understand that an Incomplete may be appropriate in some instances, particularly in cases of serious medical and personal emergencies. In such cases, the department strongly urges all graduate students to submit the required coursework to the instructor before the end of the sixth week of instruction in the quarter following the issuing of an Incomplete grade. In any case, per University policy, if the coursework is not completed within one calendar year, the Incomplete grade will automatically revert to an Unsatisfactory (U) for Pass/Fail courses and a Fail (F) for letter graded courses.

Failure to complete coursework in a timely manner can severely hamper a student's progress toward the degree and will reflect unfavorably on his/her performance during scheduled periodic reviews. For example:

1.
The current status of Incomplete grades is a factor in reviewing a student's first year dossier. A favorable review and recommendation for continuance in the program by the first year review committee is conditional upon the timely completion of all outstanding coursework.

2.
No student is allowed to advance to candidacy with outstanding Incomplete grades on their transcript.

3.
Any student who allows an Incomplete grade to revert to a U or F is subject to immediate review by the department. Receiving a U or F in an anthropology course is considered potential grounds for dismissal from the program.

Repeating Graduate Courses

Students may repeat a course in which they earn a grade of U. Degree credit for a repeated course will be granted only once and the most recently earned grade will be used to determine whether a degree requirement has been met.

Annual Reviews

At the end of each academic year, graduate students are expected to meet with their advisors to discuss their future plans and progress. For each of the first three years of the program, students have special instructions for completing the end-of-year review (which usually occurs in May).

First-Year Review

First year faculty advisors are assigned by the graduate director in consultation with department faculty. There is no expectation that you will keep your first-year advisor as your primary advisor after the first year. Students who wish to change advisors may do so at any point after the first-year review. Students need to obtain email approval from their new advisor before notifying their old advisor of the change. Students should then list their new advisor on their second-year review form.

Before the end of the first year, in consultation with their first-year advisor, students are expected to establish a Preliminary Committee made up of the first-year advisor and one other Anthropology faculty member. The student will submit a statement or progress and portfolio of work to their committee in May, and then meet with their committee before the department meets as a whole to discuss the progress of all first-years. It is the student’s responsibility to establish their committee and ensure that materials are in on time for their first year review.

Portfolios

First-year students will be asked to submit to their Preliminary Committee:

1. A short (2-3 page) statement of progress and plans
2. A portfolio containing all written work done during the current academic year

The portfolio and statement are due to the student's advisor and other Committee member at least two weeks before the first-year review meeting at the end of the Spring quarter. This meeting allows the preliminary committee to provide feedback on the student’s first year work with recommendations moving forward. The statement of progress and plans should include:

- a discussion of intellectual progress made during the previous year (courses taken, grants applied for, qualifying exam (QE) requirements met, etc.);
- detailed plans for the summer and following academic year (with respect to courses, grant/fellowship applications and deadlines, fieldwork, study off-campus, expected date of QE, etc.);
- any plans for later study, research, and writing;
- a concrete plan and timetable for completion of the language requirement.

Continuation in the Program

The purpose of this process is to support and assist students to be ready to take their qualifying exam in the third year of study, in accordance with university requirements for satisfactory academic progress as described above.

Students are responsible for submitting their portfolios and yearly statements to their Preliminary Committee in a timely fashion at the end of the year.

After the first-year review meeting, the Preliminary Committee will share their feedback at a departmental faculty meeting. Based on the report by the Preliminary Committee, the faculty as a whole will vote to recommend:

1. Continuation in the program and award the M.A. upon completion of requirements
2. Continuation in the program and award the M.A. upon completion of requirements with conditions and actions for remediation

Students will be notified of their status following this faculty meeting.

Upon completion of the first-year review, students will coordinate with their committee to submit a summary evaluation and first-year review form to the graduate program coordinator. (This form can be found on the Anthropology Department website.)

Second-Year Review

Second-year students should complete the Second-Year Review Form in early spring quarter of the second year. (This form can be found on the Anthropology Department website.) In consultation with their advisor, students are expected to put together a QE committee (subject to change), detail their timeline to the Qualifying Exam, and make progress on the language requirement. Students may attach a detailed letter to the form explaining their progress to date, including courses taken, work completed to advance the dissertation project (including pre-dissertation fieldwork), and schedule for taking the Qualifying Exam in their third year.

Third-Year Review

Students are expected to pass their Qualifying Exam and advance to candidacy by the summer of their third year.

Third-year students who will not pass their Qualifying Exam by the end of their third year are required to write a detailed letter to their advisor explaining their progress to date, why they do not plan to take their Qualifying Exam by the end of the third year, and establishing a firm timeline to advance to candidacy.

Students who have passed their Qualifying Exam do not have to submit a report but should discuss their plans for the coming year with their advisor.

Independent Study

Learn more about incorporating independent study into coursework through degree requirements. To plan for and enroll in independent study, follow the steps below.

Step 1	Step 2	Step 3	Step 4
Student meets with faculty sponsor and agree to an outline of the proposed work to be completed before filling out the petition.	Log in to your UCSC Google account and access the Graduate Individual Studies Petition through the department web site, enter your name, select your faculty sponsor, and complete all fields.	Complete the form in DocuSign. Once the student has signed the form, it will be sent to the faculty sponsor to review and e-sign.	Student saves the completed form for their records and enrolls via MyUCSC in ANTH 297, 298, or 299 using the class number provided in DocuSign.

Intercampus Exchange

If students wish to take advantage of the educational opportunities available at another UC campus, students may become an intercampus exchange graduate student there for one or more quarters. Students may take courses on more than one campus of the university during the same quarter. (Please note that UC Berkeley and UC Merced are on a semester system; all other UCs are on a quarter system.) Students should refer to the Fees and Registration section of the UCSC Graduate Handbook for authoritative guidance on Intercampus Exchange and may find the Application for the Intercampus Exchange Program for Graduate Students on the Graduate Division web site.

Advancement to Candidacy

Anthropology Ph.D. students are expected to advance to candidacy by the end of their third year in the program in order to maintain satisfactory academic progress.

Course Requirements

Both the department and the university define the major requirements for each stage of study. The first year of the program is geared toward giving students a theoretical foundation so that they may begin to formulate ideas for a research project. All graduate students are expected to be in residence (on campus) during their first year in the program. At the end of the first year, students will submit a portfolio of substantive work to their first-year committee.

Archaeology Track Requirements

Students are expected to pass a first-year review and have advanced to Ph.D. candidacy by the end of their third year. In order to advance to candidacy in archaeology, students must complete:

Two Core Theory Courses

Must be completed during first year in the program.

ANTH 270A	Archaeology Graduate Core Course: History of Archaeological Theory	5
ANTH 270B	Current Directions in Archaeological Theory	5

Two Research Methods/Laboratory Courses

Student may substitute courses in another department with advisor approval.

Note: Lecture and lab combinations count as a single course.

ANTH 202A	Skeletal Biology	5
ANTH 280	Advanced Ceramic Analysis	5
ANTH 283	Introduction to Geographic Information Systems for Anthropology	5
ANTH 285	Osteology of Mammals, Birds, and Fish	5

Two Courses on the Archaeology of a Geographical,

Temporal, or Topical Area

Student may substitute courses in another department with advisor approval.

ANTH 273	Origins of Farming	5
ANTH 274	Origins of Complex Societies	5
ANTH 275	Tutorial in African Archaeology	5
ANTH 276A	Advanced Topics in North American Archaeology	5
ANTH 276B	Mesoamerican Archaeology	5
ANTH 276G	Archaeology of Colonial Borderlands	5
ANTH 287	Advanced Topics in Archaeology	5
ANTH 287A	Advanced Topics: Indigenous Archaeology	5
ANTH 287B	Advanced Topics: Archaeology in the Age of Big Data	5

Two Additional Graduate Seminars

Students may substitute a graduate seminar in cultural or biological anthropology or in another department with advisor approval. Tutorials that are taught in conjunction with undergraduate courses do not count toward this requirement.

ANTH 225	The Anthropology of Things: Sign, Gift, Commodity, Tool	5
ANTH 279	Feminism and Gender in Archaeology	5
ANTH 282	Household Archaeology	5

One Course in Grant Writing or Research Design

ANTH 228	Grant Writing	5
ANTH 272	Advanced Archaeological Research	5

Quantitative Methods Requirement

Students in the archaeology Ph.D. track must demonstrate competency in statistical or computational analysis techniques appropriate to their specific dissertation research projects and professional goals. Plans for gaining and demonstrating this competency should be developed as part of the first-year review for each student, in consultation with their advisor and first-year committee and with the approval of the department. This competency must be demonstrated and approved by the department prior to taking the qualifying exam and advancing to candidacy.

Two Laboratory Apprenticeships

ANTH 298	Advanced Laboratory Apprenticeship	5

Cultural Track Requirements

Students are expected to pass a first-year review and have advanced to Ph.D. candidacy by the end of their third year. In order to advance to candidacy in cultural anthropology, students must complete:

Core Courses

Must be completed in fall/winter of the first year in the program.*

ANTH 200A	Cultural Graduate Core Course	5
ANTH 200B	Cultural Graduate Core Course	5

* ANTH 252, Survey of Cultural Anthropology, is recommended if the student comes from a non-anthropological background.

Graduate Colloquium

All first-year cultural track students are expected to enroll and participate in ANTH 292, Graduate Colloquium, for all three quarters.

ANTH 292	Graduate Colloquium	2

Ethnographic Writing Requirement

This requirement may be completed by passing Ethnographic Practice (ANTH 280A) or, upon approval from the department, through an independent research project in which the student engages in research based on participant observation or other ethnographic methodology and in which the student adequately translates that research experience into a written text.

Three Additional Cultural Anthropology Graduate Seminars

Grant Writing (ANTH 228), Colloquia (ANTH 292), Independent Study (ANTH 297/ANTH 299), and tutorials do not count toward this requirement. Tutorials that are taught in conjunction with undergraduate courses do not count toward this requirement.

Note: Not all of these courses are offered each year.

ANTH 208C	Design Anthropology	5
ANTH 220	Cartographies of Culture	5
ANTH 224	Anthropology of Secularism	5
ANTH 229	Constructing Regions	5
ANTH 233	Politics of Nature	5
ANTH 235	Language and Culture	5
ANTH 238	Advanced Topics in Cultural Anthropology	5
ANTH 241	Social Justice	5
ANTH 247	Critical Perspectives on Nutrition	5
ANTH 248	Shadowy Dealings: Anthropology of Finance, Money, and Law	5
ANTH 249	Ecological Discourses	5
ANTH 253	Advanced Cultural Theory	5
ANTH 255	Regulating Religion/Sex	5
ANTH 259	Race in Theory and Ethnography	5
SOCY 268A	Science and Justice: Experiments in Collaboration	5
SOCY 268B	Science and Justice Research Seminar	5

ANTH 269	Global History and the Longue Duree	5

Biological Anthropology Track Requirements

Students are expected to pass a first-year review and have advanced to Ph.D. candidacy by the end of their third year. In order to advance to candidacy in biological anthropology, students must complete:

Core Course

Must be completed in Fall/Winter of first year in program.

ANTH 295A	Scientific Method: Biological Anthropology	5

Ecology and Evolutionary Theory Requirement

Students in the biological anthropology Ph.D. track must demonstrate competency in ecology and evolutionary theory appropriate to their specific dissertation research projects and professional goals. Plans for gaining and demonstrating this competency should be developed during the first quarter in the program, in consultation with their advisor. This competency must be demonstrated and approved by the department by the end of the first year.

One Advanced Anthropological Methods and Research Course

Students in the biological anthropology Ph.D. track must demonstrate competency in advanced methods in human skeletal biology, forensics and bioarchaeology, molecular analysis (genetics), or stable isotope analysis . Plans for gaining and demonstrating this competency should be developed during the first quarter in the program, in consultation with their advisor. This competency must be demonstrated and approved by the department by the end of the first year.

One Additional Advanced Methods and Research Course

Must be completed by the end of the second year. Student may substitute courses in another department with advisor approval.

One Graduate Seminar in Archaeology or Cultural Anthropology

Tutorials that are taught in conjunction with undergraduate courses do not count toward this requirement.

Must be completed by the end of the second year.

Quantitative or Computational Requirement

Students in the biological anthropology Ph.D. track must demonstrate competency in statistical or computational analysis techniques appropriate to their specific dissertation research projects and professional goals. Plans for gaining and demonstrating this competency should be developed as part of the first-year review for each student, in consultation with their advisor and first-year committee and with the approval of the department. This competency must be demonstrated and approved by the department prior to taking the qualifying examination and advancing to candidacy.

Nine Quarters of Advanced Reading in Biological Anthropology

Students are expected to enroll in ANTH 294R, Advanced Readings in Biological Anthropology, every quarter prior to advancing to candidacy.

ANTH 294R	Advanced Readings in Biological Anthropology	5

Two Laboratory Apprenticeships

Students are required to enroll in ANTH 298, Advanced Laboratory Apprenticeship, or equivalent in another department.

ANTH 298	Advanced Laboratory Apprenticeship	5

Six Quarters of Methods in Biological Anthropology

Students are expected to enroll in ANTH 216, Methods in Biological Anthropology, in every quarter prior to advancing to candidacy starting their second year.

ANTH 216	Methods in Biological Anthropology	5

Nine Quarters of Seminar Series

Students are required to attend at least 8 talks per quarter in the Anthropology Colloquia, Arch-BioAnth Lunch Series, EEB Seminar Series, or EPS Seminar Series.

Comprehensive Exam

This must be completed prior to the end of the second year. Students must demonstrate knowledge in Ecological and Evolutionary Theory, expertise in at least two subfields of Biological Anthropology, and sufficient background in either Archaeology or Cultural Anthropology, especially Medical or Environmental Anthropology. The exam format is a written essay and a two-hour oral exam.

Students may satisfy both the oral and written requirement with a manuscript (worthy of submission to a professional journal) based on a research project undertaken in the second year with advisor approval. They have to be first author of this manuscript in order to satisfy the requirement.

First-Year Review

First-year faculty advisors are assigned by the graduate director in consultation with department faculty. Students who wish to change advisors may do so at any point after the first-year review.

Before the end of the first year, in consultation with their first-year advisor, students are expected to establish a Preliminary Committee made up of the first-year advisor and one other anthropology senate faculty member. The student will submit a statement or progress and portfolio of work to their Preliminary Committee in early-May, and then meet with their Preliminary Committee before the department meets as a

whole to discuss the progress of all first-year students. It is the student's responsibility to establish their committee and ensure that materials are submitted on time for their first-year review.

The purpose of this process is to ensure students are prepared for their Qualifying Exam in the third year of study, in accordance with university requirements for satisfactory academic progress as described above.

After the first-year review meeting, the Preliminary Committee will share its feedback at a departmental faculty meeting. Based on the report by the Preliminary Committee, the faculty as a whole will vote to recommend:

1. Continuation in the program and award the M.A. upon completion of requirements
2. Continuation in the program and award the M.A. upon completion of requirements with conditions and actions for remediation
3. Terminal M.A. degree upon completion of 45 credits.

Master of Arts in Anthropology

After students have passed their first-year review and completed 45 credits of graduate study, they may apply for their Master of Arts in Anthropology (Plan II: Capstone).

Foreign Language Requirements

The foreign language requirement must be fulfilled before taking the qualifying examination. A qualifying examination cannot be scheduled until the requirement has been met.

It is the responsibility of each graduate student to work with their advisor to identify the language competencies necessary for fieldwork and scholarship and to initiate study toward meeting these needs. To meet the language requirement, competency in one language must be formally demonstrated. Each student's advisor will recommend how this requirement should be met, as well as what additional skills should be sought. Generally accepted ways of meeting the language requirement include:

- passing a standardized test at a predetermined level;
- taking and passing a translation examination administered by a UCSC language instructor or an outside assessor approved by the advisor. If necessary (i.e. for uncommon languages), a translation examination may be administered by a UCSC faculty member who is not a language instructor.
- taking and passing a series of language courses at a specified advanced level at UCSC or elsewhere, again, to be determined in consultation with the advisor.

In some cases, the language in which a relevant scholarly literature exists will be the logical language of examination. In other cases, the language in which fieldwork will be conducted will be the most logical language for examination.

In the case of non-native English speakers who plan to undertake research in their own native language, English can meet the foreign language requirement. In the case of English native speakers who plan to do research in their native language, the requirement should be met by another language relevant to the field research or scholarly resources.

In cases where a foreign language is not necessary for field research nor for scholarly work, and learning a foreign language would significantly delay progress to degree and/or conflict with time needed to learn other necessary technical skills, students may apply to the department for an Exemption to Policy for the foreign language requirement. (The exemption form may be found on the Anthropology Department website.)

Pre-Qualifying Requirements

Biological Anthropology Track students must present a seminar on proposed research.

Qualifying Examination

All anthropology graduate students are required to pass the Qualifying Exam (QE) to advance to candidacy and continue toward the doctoral degree.

Timing of the Exam

Students are required to take their QE by the end of their third year. A student’s second year review form should indicate in which quarter students expect to take the QE.

Students must be enrolled during the quarter in which the Qualifying Exam is scheduled. In cases of a summer QE, students do not need to be enrolled for summer courses so long as they were enrolled in the preceding spring quarter. However, faculty are not required to serve on Qualifying Exam committees during summer, when they are not in service.

See the graduate program coordinator to schedule a room and time for your exam. The Graduate Division mandates that students must submit their QE nomination form and schedule their exam time at least 30 days prior to the date of the examination. A student who does not take the QE by the end of the third year is required to submit an explanatory letter to their advisor requesting a deferral. The student should send duplicate copies to the graduate director and graduate coordinator. This letter should clearly state the student's projected schedule for taking the exam. The department will review the request and send a written response to the student with the department's decision. Please keep in mind that deferrals will be granted on a case-by-case basis. A student who does not pass the QE by the end of the fourth year may be asked to leave the program. At the end of the fourth year, the Financial Aid office will automatically put a hold on the loans and fellowships of any student who has not advanced to candidacy.

Note: Students may not schedule the QE until any Incompletes have been removed from their academic record.

Qualifying Exam Committee

In all cases, the QE Committee should be formed before the end of the fall quarter of the third year or in the quarter before taking the QE, whichever comes first.

The Graduate Division sets the general structure of the QE Committee based on Academic Senate Policy: https://senate.ucsc.edu/manual/santacruz-division-manual/part-three-appendices/appendix-d/index.html. The QE Committee should be made up of at least three faculty members from the department–including a QE committee chair and the primary advisor–and one outside member. The Graduate Division will have to approve committees with two departmental faculty members and two external members. The QE committee chair (who will write the QE report for the Graduate Division) cannot be the student's primary advisor (who will also eventually serve as dissertation advisor/chair). Both the outside member of the QE committee and the QE chair must be tenured.

The outside member may be a UCSC faculty from another department/discipline, or an anthropology faculty member from another campus. (**Note:** Travel expenses of QE Committee members are not covered by either the Graduate Division or the Anthropology Department, and students are responsible for travel expenses and lodging of committee members from other campuses. It is possible for the outside committee member to join the QE exam via Zoom.)

Members of the QE Committee are chosen by the student in consultation with their faculty advisor and already appointed committee members, then approved by the department and officially appointed by the graduate dean.

In order to take the QE, the student must submit a Nomination Form to the graduate program coordinator confirming the composition of the QE Committee a minimum of 30 days prior to the exam date.

Structure of the Exam

The Qualifying Exam consists of two parts: a written file and a three-hour oral examination with the QE Committee during which the student presents and discusses the file.

1. The student must submit the written file to the committee six weeks prior to the date of the exam (for archaeology students, this file must have already been signed off by the faculty advisor and one other committee member).

The advisor will meet with the student to transmit comments two weeks later. At this point, a decision is made as to whether the student can proceed with the exam and, if so, the date of the exam will be confirmed with the Graduate Division.

The student then has a further two weeks to revise the QE materials before final delivery of the file to the committee two weeks prior to the exam date.

QE File

For cultural track students, the file comprises:

1. A dissertation research prospectus that is theoretically focused and also includes a methods section (approximately 18-25 pages, double-spaced, actual length to be determined by QE committee).
2. Two field statements on two anthropological topics selected and developed in consultation with the QE committee. Field statements typically review fields of literature that have (a) an area/regional focus and (b) a thematic/theoretical focus (approximately 18-25 pages, double-spaced, each; actual length to be determined by QE committee).

For archaeology track students, the file comprises:

1. A theoretically focused dissertation research prospectus (approximately 18-25 pages, double-spaced, actual length to be determined by the QE Committee).
2. Three field statements reviewing literature of 18-25 pages each on (a) a geographic cultural area, (b) a set of research methods, and (c) a theoretical tradition or theme

For biological anthropology track students, the file comprises:

1. A theoretically focused dissertation research prospectus (approx. 18-25 pages, double-spaced, actual length to be determined by the QE Committee).

Oral Examination

The oral examination is a three-hour meeting in which the student presents and defends their work to the committee. Although the committee will decide on the form of the oral exam, it typically begins with a presentation by the student outlining the proposed research and elaborating on critical theoretical and empirical aspects of the project. The meeting will then normally move to a detailed discussion of the student's file.

Toward the end of the oral exam, the student will be asked to leave the room. At this point the committee will review the entire QE and decide on one of three actions: Pass, Conditional Pass (requiring revisions to be submitted according to a specified timetable), and No Pass/Fail (leading to the student's termination in the program). **Note:** Students who earn a Conditional Pass will not formally advance to candidacy until acceptable revisions are submitted.

The QE Exam is open to all faculty members. Students are encouraged to attend, but may do so only with the permission of the examinee.

Report on Qualifying Exam

Following the examination, the QE committee chair will write a formal report on the QE for the Graduate Division, summarizing the student's performance in written and oral portions of the exam and outlining any recommendations

from the committee. The student will receive a copy of the report.

Students may find Report on Qualifying Examination Forms here

Following the exam and the completion of any revisions, the student is required to submit a copy of their QE file to the graduate program coordinator.

Post QE

Once students have submitted the Report on the Qualifying Exam and Nominations for Dissertation Committee to the graduate program coordinator, students will be Advanced to Candidacy during the following quarter for which they are registered. An "Advancement to Candidacy fee" will be applied to students' accounts.

The Division of Graduate Studies requires that students be registered for at least one quarter after the Advancement to Candidacy and prior to awarding the degree. It does not mean the student has to physically be at UCSC.

Formation of Dissertation Committee

The Graduate Division requires that students who have passed their Qualifying Exams form their Dissertation Reading Committee before they are considered Advanced to Candidacy.

The Dissertation Committee must include a minimum of three faculty members, one of whom must be designated as the dissertation advisor. Normally these readers are selected from the QE Committee, but this is not required.

At least two of these readers must be members of the UCSC Anthropology Department. A majority of committee members must be part of the UCSC Academic Senate. It is highly recommended that you have at least one member from another campus.

Students must submit the Nominations for Dissertation Committee Members Form after passing the Qualifying Exam. Students may find the Nominations for Dissertation Committee Members Form here.

Students have the option of changing their dissertation committee composition at a later date. To make changes to the dissertation committee, students must simply resubmit the Nominations for Dissertation Reading Committee form to the graduate program coordinator.

Post-Qualifying Requirements

Biological Anthropology Track students must complete two quarters as a teaching assistant. Archaeology and Cultural Anthropology Track students must complete one quarter as a teaching assistant. This requirement may be satisfied pre- or post-qualifying exam.

Dissertation

Ph.D. candidates must prepare and submit a dissertation that is based on original research and meets the requirements of their dissertation reading committee.

Students are required to conduct research, typically field/lab work and/or archival work, after Advancement to Candidacy. Students should enroll in at least 5 credits of dissertation research (ANTH 299A) per quarter with their dissertation advisor. If a student's dissertation advisor is on leave, the student is responsible for arranging for another member of the faculty to supervise the dissertation research during that quarter. The graduate program coordinator will provide the class number and permission code.

Once students Advance to Candidacy, they are not required to register as full-time students. However, students who are employed as a TA, GSR, or teaching fellow must register as full-time students. Students who have Advanced to Candidacy need only to register for 5 credits per quarter to be considered full-time.

Please see the graduate program coordinator if you are unsure of your status.

Dissertation Defense

Applying for Graduation

The Application for the Doctor of Philosophy Degree form must be completed with all necessary signatures obtained and submitted to the Division of Graduate Studies. Application deadlines are posted in the Academic and Administrative Calendar.

Students may request an extension for submission of their dissertation until June 30 with approval of their advisor. To request an extension from the Graduate Division, contact the Anthropology Graduate Program coordinator.

If the student does not complete all the requirements for the degree, including submission of the dissertation by the deadline date, a new application form must be filed for the quarter in which the student will complete the requirements.

Summer Dissertation Submission

Students who are registered for spring quarter or on approved leave of absence may submit their dissertation to the Division of Graduate Studies during the summer. Students who plan on submitting their dissertation during the summer need not register for Summer Session or apply for filing fee status unless they were not enrolled or on approved leave of absence in spring quarter; however, students must submit an Application for the Doctor of Philosophy.

ANTHROPOLOGY DESIGNATED EMPHASIS

Introduction

A designated emphasis (DE) denotes a broadening of training that comes from adding course work, training, and/or research work from an external department, degree-granting program, or cross-departmental grouping of faculty who together offer a designated emphasis.

Requirements

Committee Composition and Departmental Approvals

One member of the student's qualifying examination committee must be Senate Faculty appointed in the Department of Anthropology. In addition, Senate Faculty appointed in the Department of Anthropology must serve on the student's doctoral thesis committee.

Prospective students must complete a form to declare their intention to pursue the designated emphasis. Please contact the Anthropology Graduate Program Coordinator (adgc@ucsc.edu) for more information.

Course Requirements

The student must take four graduate courses in the Department of Anthropology. An independent study with a faculty member of the Anthropology Department may count as only one of the four courses. Grant Writing (ANTH 228) may not be counted toward these requirements. Tutorials that are taught in conjunction with undergraduate courses do not count toward these requirements.

Writing, Research and/or Teaching Requirements

At the time of the qualifying examination, the student must submit to the Anthropology Department a full statement, up to five pages, summarizing the pre-qualifying examination work done in anthropology (courses, papers, research projects, independent studies) and characterizing how that work and the dissertation to follow draw from and contribute to anthropological and ethnographic inquiry. The dissertation research will normally include a fieldwork component.

In the quarter prior to announcing candidacy for graduation, the student must contact the graduate program coordinator to review their progress and confirm that all course and committee requirements have been met for the designated emphasis. In the quarter in which the student announces candidacy for graduation, the faculty member from the anthropology department serving on the student's doctoral thesis committee will evaluate the depth of engagement with anthropology displayed in the doctoral thesis and decide whether the thesis fulfills the requirement to contribute to anthropological and ethnographic inquiry.

Academic Progress

[Optional Catchall]

ANTHROPOLOGY COURSE LIST

Anthropology Course Lists

Course Lists

Anthropological Theory Courses

Note: Each course may only be used to satisfy a single major requirement. Courses cannot be double-counted for requirements within the anthropology major. Students may not substitute coursework from another program or institution for core requirements.

ANTH 100	History and Theory of Biological Anthropology	5
ANTH 150	Communicating Anthropology	5
ANTH 152	Survey of Cultural Anthropological Theory	5
ANTH 170	History of Archaeological Theory	5

Sociocultural Anthropology Courses

Note: Each course may only be used to satisfy a single major requirement. Courses cannot be double-counted for requirements within the anthropology major. Students may not substitute coursework from another program or institution for core requirements. Not all of these courses are offered each year.

ANTH 119	Indigenous Visual Culture	5
ANTH 125	Magic, Science, and Religion	5
ANTH 126	Contraband: Shadow Economies and the Law	5
ANTH 129	Beyond Borders: Other Globalizations and Histories of Interconnection	5
ANTH 131	Gender in Cross-Cultural Context	5
ANTH 132	Food, Culture, and Justice in Israel/Palestine	5
ANTH 134	Medical Anthropology: An Introduction	5
ANTH 135A	Cities	5
ANTH 136	The Biology of Everyday Life	5
ANTH 137	Consuming Culture	5
ANTH 138	Political Anthropology	5
ANTH 139	Language and Culture	5
ANTH 140	The Body in Rain: Environmental and Medical Intersections	5
ANTH 142	Anthropology of Law	5
ANTH 143	Performance and Power	5
ANTH 144	Anthropology of Poverty and Welfare	5
ANTH 145X	Special Topics in Socio-Cultural Anthropology	5
ANTH 146	Anthropology and the Environment	5
ANTH 147	Anthropology and the Anthropocene	5
ANTH 148	Gender and Global Development	5
ANTH 149	Anthropology of Activism	5
ANTH 151	Workshop in Ethnography	5
ANTH 157	Modernity and Its Others	5

ANTH 158	Feminist Ethnographies	5
ANTH 159	Race and Anthropology	5
ANTH 160	Reproductive and Population Politics	5
ANTH 161	The Anthropology of Food	5
ANTH 161S	Anthropology of Food, Abroad	6
ANTH 163	Kinship	5

Regional Specialization Courses

Note: Each course may only be used to satisfy a single major requirement. Courses cannot be double-counted for requirements within the anthropology major. Students may not substitute coursework from another program or institution for core requirements. Not all of these courses are offered each year.

ANTH 130A	Anthropology of Africa.	5
ANTH 130C	Politics and Culture in China	5
ANTH 130D	The Cultural Aspects of the Israeli-Palestinian Conflict	5
ANTH 130E	Culture and Politics of Island Southeast Asia	5
ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
ANTH 130G	Asian Americans in Ethnography and Film	5
ANTH 130H	Ethnography of Russia and Eastern Europe	5
ANTH 130I	Cultures of India	5
ANTH 130IG	Cultures of India Abroad	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130M	Inside Mexico	5
ANTH 130O	Native Feminisms, Gender, and Settler Colonialism	5
ANTH 130P	Ethnography of Southern Cone Chile and Argentina	5
ANTH 130S	Ethnography of Russia and Eastern Europe, Abroad	5
ANTH 130T	Religion and Politics in the Muslim World	5
ANTH 130U	Central America	5
ANTH 130V	Ethnography of Russia	5
ANTH 130W	Ethnography of Eastern Europe	5
ANTH 130X	Special Topics in Ethnography	5
ANTH 130Y	Health, Illness, & Medicines in Muslim Worlds	5
ANTH 175	African Archaeology	5
ANTH 176A	North American Archaeology	5
ANTH 176B	Meso-American Archaeology	5
ANTH 176C	Archaeology of the American Southwest	5
ANTH 176D	Colonial Encounters in the Americas	5
ANTH 176E	Archaeology of the Pacific Northwest	5
ANTH 176F	California Archaeology	5
ANTH 176G	Andean Archaeology	5

Archaeology Courses

Note: Each course may only be used to satisfy a single major requirement. Courses cannot be double-counted for requirements within the anthropology major. Students may not substitute coursework from another program or institution for core requirements. Not all of these courses are offered each year.

ANTH 107E	Methods And Research In Biological Anthropology: Lithic Technology	5
ANTH 171	Materials and Methods in Historical Archaeology	5
ANTH 172	Archaeological Research Design	5
ANTH 173	Origins of Farming	5
ANTH 174	Origins of Complex Societies	5
ANTH 175	African Archaeology	5
ANTH 176A	North American Archaeology	5
ANTH 176B	Meso-American Archaeology	5
ANTH 176C	Archaeology of the American Southwest	5
ANTH 176D	Colonial Encounters in the Americas	5
ANTH 176E	Archaeology of the Pacific Northwest	5
ANTH 176F	California Archaeology	5
ANTH 176G	Andean Archaeology	5
ANTH 177	Environmental Archaeology	5
ANTH 178	Historical Archaeology: A Global Perspective	5
HIS 158C	Slavery in the Atlantic World: Historical and Archaeological Perspectives	5
ANTH 180	Ceramic Analysis in Archaeology	5
ANTH 181X	Special Topics in Archaeology	5
ANTH 183	Introduction to Geographic Information Systems for Anthropology	5
ANTH 184	Zooarchaeology	5
ANTH 185	Osteology of Mammals, Birds, and Fish	5
ANTH 187	Cultural Heritage in Colonial Contexts	5
ANTH 187B	Cultural Resource Management	5
ANTH 189	Archaeology Field Methods	5
ANTH 189A	Archaeological Field Techniques	5

or 6 credits of Practicum in Archaeology (ANTH 188A/ANTH 188B/ ANTH 188C)

ANTH 188A	Practicum in Archaeology A	2
ANTH 188B	Practicum in Archaeology B	2
ANTH 188C	Practicum in Archaeology C	2

Biological/Medical/Environmental Anthropology

Courses

Note: Each course may only be used to satisfy a single major requirement. Courses cannot be double-counted for requirements within the anthropology major. Students may not substitute coursework from another program or institution for core requirements. Not all of these courses are offered each year.

Biological Anthropology

Note: Not all of these courses are offered each year.

ANTH 100	History and Theory of Biological Anthropology	5
ANTH 101	Human Evolution	5
ANTH 104	Human Variation and Adaptation	5
ANTH 105	Human Paleopathology	5
ANTH 106	Primate Behavior and Ecology	5
ANTH 108	Neanderthals	5
ANTH 111	Human Ecology	5
ANTH 190X	Special topics in Biological Anthropology	5

Medical Anthropology

Note: Not all of these courses are offered each year.

ANTH 134	Medical Anthropology: An Introduction	5
ANTH 136	The Biology of Everyday Life	5
ANTH 140	The Body in Rain: Environmental and Medical Intersections	5

Environmental Anthropology

Note: Not all of these courses are offered each year.

ANTH 140	The Body in Rain: Environmental and Medical Intersections	5
ANTH 146	Anthropology and the Environment	5
ANTH 147	Anthropology and the Anthropocene	5
ANTH 177	Environmental Archaeology	5

Anthropology At-Large Courses

Note: Not all of these courses are offered each year.

Anthropology At-Large courses may be used as electives for completing upper-division course requirements. These courses do not count as anthropological theory, sociocultural anthropology, regional specialization, or biological anthropology and archaeology courses.

ANTH 110A	Public Life and Contemporary Issues	5
ANTH 110B	From Indiana Jones to Stonehenge: Archaeology as Popular Culture	5
ANTH 110C	California Pasts	5
ANTH 110D	Tourism Imaginaries and Encounters	5
ANTH 110E	Anthropology of Global Environmental Change	5
ANTH 110F	Evolution of Human Diet	5
ANTH 110G	Westside Stories: Race, Place and the California Imaginary	5
ANTH 110H	Brazilian Amazon Cultures and Environments	5
ANTH 110I	Cultures of Sustainability and Social Justice	5
ANTH 110IG	Cultures Of Sustainability And Social Justice Abroad	5
ANTH 110J	Emerging Humanity	5
ANTH 110K	Culture Through Food	5
ANTH 110L	The Human Ocean	5
ANTH 110M	Cultures of Mental Health	5
ANTH 110N	Anthropology of Food	5
ANTH 110O	Postcolonial Britain and France	5
ANTH 110P	India and Indian Diaspora through Film	5
ANTH 110Q	Queer Sexuality in Black Popular Culture	5
ANTH 110R	Discourses in American Religions and Their Role in Public Life	5
ANTH 110S	Evolution of Democracy	5
ANTH 110T	Motherhood in American Culture	5
ANTH 110U	Histories and Cultures of Piracy	5
ANTH 110V	American Capitalism	5
ANTH 110W	Land and Waterscapes Entropology	5
ANTH 110Y	Feeding California	5
ANTH 110Z	Introduction to Disability Studies	5

Laboratory Methods Courses

Note: Not all of these courses are offered each year.

These courses are designed for students interested in pursuing graduate research or careers that require specialized training in laboratory methods.

Biological Anthropology Laboratory Methods

Note: Not all of these courses are offered each year.

The biological anthropology laboratory methods courses may be used to satisfy upper-division electives. These courses do not count toward the anthropological theory, sociocultural anthropology, regional specialization, or biological/medical/environmental anthropology core requirements.

ANTH 102A	Human Skeletal Biology	5
ANTH 103	Forensic Anthropology	5
ANTH 107A	Methods and Research in Biological Anthropology: Genetics	5

ANTH 107B	Methods and Research in Biological Anthropology: Stable Isotopes	5
ANTH 107C	Methods and Research in Biological Anthropology: Chimpanzee Behavior and Culture	5
ANTH 107D	Methods and Research in Biological Anthropology– Computational Population Genetics	5
ANTH 107E	Methods And Research In Biological Anthropology: Lithic Technology	5

or 6 credits of Chimpanzee Behavior and Culture Practicum (ANTH 106A/ANTH 106B/ANTH106C)

ANTH 106A	Chimpanzee Behavior and Culture A	2
ANTH 106B	Chimpanzee Behavior and Culture	2
ANTH 106C	Chimpanzee Behavior and Culture	2

Archaeology Laboratory Methods

Note: Not all of these courses are offered each year.

Archaeology laboratory methods courses may be used to satisfy the archaeology core requirement or upper-division electives.

ANTH 107E	Methods And Research In Biological Anthropology: Lithic Technology	5
ANTH 171	Materials and Methods in Historical Archaeology	5
ANTH 180	Ceramic Analysis in Archaeology	5
ANTH 183	Introduction to Geographic Information Systems for Anthropology	5
ANTH 184	Zooarchaeology	5
ANTH 185	Osteology of Mammals, Birds, and Fish	5
ANTH 189	Archaeology Field Methods	5
ANTH 189A	Archaeological Field Techniques	5

Senior Seminars

Note: Not all of these courses are offered each year.

ANTH 194A	Anthropology of Dead Persons	5
ANTH 194B	Chimpanzees: Biology, Behavior, and Evolution	5
ANTH 194C	Feminist Anthropology	5
ANTH 194F	Memory	5
ANTH 194H	Paleoanthropology	5
ANTH 194I	Consumption and Consumerism	5
ANTH 194J	Histories of Forests and Other Wild Places	5
ANTH 194K	Reading Ethnographies	5
ANTH 194L	Archaeology of the African Diaspora	5
ANTH 194M	Medical Anthropology	5
ANTH 194N	Comparison of Cultures	5
ANTH 194O	Masculinities	5
ANTH 194S	Hearing Culture: The Anthropology of Sound	5
ANTH 194T	Poverty and Inequality	5
ANTH 194U	Environmental Anthropology: Nature, Culture, Politics	5
ANTH 194V	Who Owns the Past? Ethical and Political Dimensions of Contemporary Archaeology	5
ANTH 194X	Women in Politics: A Third World Perspective	5
ANTH 194Y	Archaeologies of Space and Landscape	5
ANTH 194Z	Emerging Worlds	5
ANTH 196D	Food and Medicine	5
ANTH 196F	The Anthropology of Things: Gift, Sign, Commodity, Tool	5
ANTH 196G	Queer Worlds: Sexuality, Intimacy and Power in Contemporary Ethnography	5
ANTH 196H	Global History and the Longue Duree	5
ANTH 196J	Imagining America	5
ANTH 196K	Settler Colonialism	5
ANTH 196L	Archaeology of the American Southwest	5
ANTH 196M	Modernity and its Others	5
ANTH 196N	The Body, Narrative, and Creative Practice	5
ANTH 196O	Gender and Politics	5
ANTH 196P	Disability and Difference	5
ANTH 196Q	Property	5
ANTH 196R	Design Anthropology	5
ANTH 196T	Archaeology of Technology	5
ANTH 196U	Historical Anthropology	5
ANTH 196V	Radical Craft	5
ANTH 196W	Anthropology of Weather and Exposure	5
ANTH 196X	Medicines for the Soul	5

Community Studies

213 Oakes Academic Building
(831) 459-2371
https://communitystudies.ucsc.edu/

PROGRAMS OFFERED

Community Studies B.A. (p. 674)

Founded in 1969, community studies is the oldest interdisciplinary academic program at the University of California, Santa Cruz. The hallmarks of community studies are its focus on social justice and its distinctive pedagogy integrating classroom learning and extended field study. Community studies was a national pioneer in experiential

education and its curricular model has been emulated widely. Community studies also was a pioneer in addressing principles of social justice, specifically inequities arising from race, class and gender dynamics in society at large, and in critically engaging with strategies for achieving social change.

Community studies alumni pursue a wide variety of professional careers in health care, K-12 education, public policy, social work, urban planning, higher education, and law. According to a 2005 alumni survey, more than 100 alumni have founded non-profit social justice organizations and many more have served on non-profit boards and/or in executive director positions. The phrase “we are everywhere” is an apt description of the myriad contributions community studies alumni make to society through their work and in their everyday lives.

COMMUNITY STUDIES B.A.

Information and Policies

Introduction

Community studies is an undergraduate B.A.-granting program in which students and faculty seek to understand how social change happens in theory and practice. Founded in 1969, community studies is only available at UC Santa Cruz. But it has earned a global reputation for its critical approach to understanding social justice and community-based experiential learning.
The heart of community studies is a six-month field study in which students are embedded within and work with social change organizations. Students work closely with faculty to choose their field study site, to navigate the experience of an internship at the site and to finally analyze their organization’s approaches and strategies for achieving social justice. Community studies students have worked with organizations dedicated to labor and economic justice, feminist and queer liberation, racial justice, Indigenous sovereignty, food justice, climate justice, abolition and opposition to war, homelessness, and domestic violence. They are supported to find an organization that speaks to their own personal passions. Though their focus is on a single site, community studies students develop ways to understand how our overlapping social and ecological injustices and crises are deeply interconnected. Following their field study, each student draws from the critical social theory in our courses to craft an independent research paper and poster, which they present, analyzing their experiences.

On campus, students complete a core curriculum examining the histories and contemporary dynamics of the social movements, the nonprofit sector organizations, and public policies aimed at affording people greater capacity to live flourishing lives. The core curriculum works in tandem with a wide variety of topical electives, to give students a deeper understanding of the particular conditions their field site seeks to address.

Students graduate from community studies having engaged with the world through a mix of critical thinking and analysis and direct experience interning with a social change organization. Through our distinct curricular design, students develop a mix of intellectual, professional and social/emotional skills that prepare them for a wide variety of careers in the nonprofit, human services, education, policy and research fields, as well as the theoretically informed vision and practical wisdom necessary to help co-create a liberated, fair, democratic, and ecologically sustainable planet.

Program Learning Outcomes

Community studies identifies eight Program Learning Outcomes (PLOs) that capture exciting cross currents within the major. The PLOs combine classroom and experiential learning related to the social justice domains of health equity and economic justice. They also enumerate expectations for student achievement in social science research and writing and communication skills within a diverse society.

Critical Analysis

Students earning a B.A. in community studies will be able to:

1. demonstrate deep knowledge of the history, causes, and contemporary manifestations of specific social justice issues related to health and economic inequality;
2. deconstruct institutional power residing in private enterprise, government, the media, and/or the non--profit sector;
3. analyze how communities attempt to overcome problems associated with inequality, cultural stigma, prejudice, and discrimination;
4. articulate research questions, methods, and findings appropriate to social science inquiry; and
5. demonstrate analytical writing ability that effectively integrates theoretical and experiential knowledge about social justice.

Community Engagement

Students earning a B.A. in community studies will be able to:

1. identify, analyze, and help to construct strategies for social change through participation in the social justice work of an organization;
2. exhibit ethnographic observation skills by maintaining a regular record of detailed field notes;
3. demonstrate effective communication with the diverse constituencies involved in social justice work.

Academic Advising for the Program

Rachel Carson College Academic Building
200 Heller Dr.
Santa Cruz, CA 95064-1011
(831) 459-2371

To receive advising for the community studies major, students should schedule an appointment via slug success, email or call the program adviser. Full contact information is available on

the program webpage. Our office is located on the first floor of the Rachel Carson College Academic Building in room 128. The office telephone number is 831-459-2371. Students are encouraged to meet early on with the program adviser to develop an academic plan enabling them to take full advantage of the many learning opportunities available at UC Santa Cruz.

Transfer students should also consult the Transfer Information and Policy section.

Getting Started in the Major: Frosh

Students interested in pursuing the community studies major should communicate with the program adviser to learn about the program's distinctive curriculum and requirements. This is a moderately course-intensive sequential program, and students who intend to pursue this major should begin taking classes for the major in their first or second year at UC Santa Cruz. Completing lower-division general education courses that build an understanding of and engagement with social justice issues is a great way to satisfy university requirements while building a solid foundation for the upper-division coursework required in the community studies major. The sequence of required courses for the major is:

Lower-Division Requirements:

- CMMU 10 Introduction to Community Activism

Upper-Division Requirements:

- CMMU 101 Communities, Social Movements, and the Third Sector
- CMMU 102 Preparation for Field Studies
- Three upper-division topical courses (see major requirements) from the approved list. Completion of the writing requirements before taking the first upper-division topical is strongly encouraged.

Field Placement:

- CMMU 105A Field Study
- CMMU 105B Field Study
- CMMU 105C Field Study
- CMMU 107 Analysis of Field Materials

Transfer students should consult the Transfer Information and Policy section for specific recommendations to prepare for the major.

Transfer Information and Policy

Transfer Admission Screening Policy

Prospective students are encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or to complete all UC Santa Cruz general education requirements before matriculation. The community studies program can easily accommodate students who transfer to UCSC for the fall quarter.

Transfer students who plan to major in community studies will also find it useful to obtain a background in politics, sociology, psychology, anthropology, or community action and service. Prior to their first quarter at UC Santa Cruz, transfer students should meet with the program advisor to prepare a program of study. Once on campus, they should meet with the community studies program adviser to discuss the focus of their academic and field study plans.

Getting Started in the Major: Transfer Students

Transfer students are strongly encouraged to participate in the campus orientation program and connect with the community studies program adviser to develop an academic plan prior to their fall course enrollment.

All the requirements above also apply to transfer students**.** Students must successfully complete both **CMMU 10**, Introduction to Community Activism (offered only in the summer and fall quarters) and one topical course (see the Community Studies website). This should be done in either Summer Edge or during their first fall term in order to declare the major by the transfer student university deadline. Major qualification courses must be taken for a letter grade. Satisfactory completion is defined by a grade of C or better in both of these major qualifying courses.

As part of the declaration process, transfer students meet with the program director and/or staff adviser to review their academic plan for the major, including a discussion of field study possibilities and appropriate courses to meet topical requirements. Students must submit their approved academic plan and declaration petition to the community studies staff adviser.

Winter transfers, like all community studies majors, are required to complete CMMU 10. However, this course is only offered in the summer and fall. Students may petition for articulation of equivalent coursework.

Significant changes to the student's academic plan must be approved by the program director.

Major Qualification Policy and Declaration Process

Major Qualification

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first. Students qualify to declare the community studies major by satisfactorily completing CMMU 10, Introduction to Community Activism, and at least one upper-division topical course from the approved list of courses. Major qualification courses must be taken for a letter grade. Satisfactory completion is defined by a grade of C or better in both major qualifying courses. Students must declare prior to enrolling in CMMU 102, Preparation for Field Study.

Students can file a petition to declare the major while still enrolled in major qualification courses if they are approaching their campus declaration deadline (i.e., in their sixth quarter, if admitted as frosh).

Transfer students should also consult the Transfer and Information Policy Section.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter addressed to the community studies program director within 15 days from the date of notification. Appeal letters should be submitted via email to the community studies program adviser. Within 15 days of receipt of the appeal, the program will notify the student and college of the decision.

How to Declare a Major

As part of the declaration process, students meet with the program director and/or staff adviser to review their academic plan for the major, including discussion of field study possibilities and appropriate courses to meet topical requirements. Students must submit their approved academic plan and declaration petition to the community studies staff adviser. Significant changes to the student's academic plan must be approved by the program director.

Letter Grade Policy

All courses for the major must be taken for a letter grade. Satisfactory completion of all major course requirements (core curriculum and topical courses) is defined by a grade of C or higher.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Many students combine community studies with another major. Students wishing to pursue community studies and a second major (i.e., "double major") should consult with the program adviser as early as possible to plan their course work to satisfy all their degree requirements.

Community Studies does not offer a minor.

Study Abroad

Participation in the Education Abroad Program (EAP) and other off-campus programs is strongly encouraged but requires advanced planning. Students considering EAP should schedule a meeting with the community studies adviser to determine the best quarter(s) for participation in such programs. Students may petition to have EAP coursework satisfy one (1) of their topical courses for the major if the EAP course work clearly relates to the student's academic plan in the major. Petitions will be evaluated on a case by case basis. Students are encouraged to learn more about study abroad and other opportunities on UC Santa Cruz's Global Learning website.

Honors

Honors in the community studies major are awarded to graduating seniors whose performance, including coursework, field study, and the senior capstone, is judged by a faculty committee to have achieved excellence. Highest honors in the major are reserved for students with consistently outstanding academic performance in all areas.

[Optional Catchall]

Requirements and Planners

Course Requirements

Community studies majors are required to take a total of 11 courses (one lower-division course in preparation for the major; seven upper-division core classes, two of which are 15 credits each; and three topical classes). In addition, they must successfully complete the senior capstone prior to graduation.

Lower-Division Courses

Students are advised to complete CMMU 10 as early as possible. The course is only offered in the summer and fall quarters and is one of two required courses to declare the major.

CMMU 10	Introduction to Community Activism	5

Upper-Division Courses

Community Studies core curriculum courses follow a sequential pattern and are only offered during specific academic quarters. Therefore it is very important to develop an academic plan as early as possible that takes the core curriculum sequence into account.

In addition to the core curriculum, students must successfully complete three topical courses to develop expertise in specific areas. Students are required to take all three topical courses prior to their field study (CMMU 105, CMMU 105B, and CMMU 105C, full-time Field Study, 15 credits per quarter, completed in the summer and fall)

CMMU 101	Communities, Social Movements, and the Third Sector	5
CMMU 100	Preparation for Field Studies	5
CMMU 105A	Field Study	5
CMMU 105B	Field Study	5
CMMU 105C	Field Study	5
CMMU 107	Analysis of Field Materials	5

Topical Courses

Students must complete three upper-division courses on topics related to health equity, economic justice, or other fields relevant to community studies from the available approved courses. The program director also may approve other courses as appropriate. Topical courses are an essential component of the community studies major because they help define the focus of students’ overall academic plan and their work on full-time Field Study. The topical courses also permit students to work across academic disciplines by taking courses from community studies affiliate faculty. Note that not all topical

courses are offered every academic year. Check the program website for current academic year offerings.

Topical courses for the major must be taken for a letter grade and satisfactory completion of the topical courses is defined by a grade of C or higher. All three topical courses must be completed before a student begins full-time field study (CMMU 105A-B-C).

Community Studies

CMMU 130	Community Organizing Principles and Practice	5
CMMU 132	American Cities and Social Change	5
CMMU 133	Making California: Landscapes, People, Politics, Economy	5
CMMU 134	No Place Like Home	5
CMMU 137	Communities and Climate Change	5
CMMU 141	Economic Justice in Theory and Practice	5
CMMU 143	Wal-Mart Nation	5
CMMU 145	Global Capitalism: a History of the Present	5
CMMU 148	The Problem with Solutions	5
CMMU 149	Political Economy of Food and Agriculture	5
CMMU 151	Sex, Race, and Globalization	5
CMMU 156	Politics of Food and Health	5
CMMU 157	Ageism and Activism	5
CMMU 160	Public Health	5
CMMU 161	Gender Health and Justice	5
CMMU 162	Community Gardens and Social Change	5
CMMU 163	Health Care Inequalities	5
CMMU 164	Health Justice in Conflict	5
CMMU 165	Community Analysis for Global Health	5
CMMU 167	Special Topics in Health Equity	5
CMMU 186	Food and Agriculture Social Movements	5

Anthropology

ANTH 134	Medical Anthropology: An Introduction	5
ANTH 136	The Biology of Everyday Life	5
ANTH 153	Medicine and Colonialism	5
ANTH 194P	Space, Place, and Culture	5

Education

EDUC 135	Gender and Education	5
EDUC 173	Seminar in Critical Pedagogy	5
EDUC 181	Race, Class, and Culture in Education	5

Environmental Studies

ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 158	Political Ecology and Social Change	5

History of Art and Visual Culture

HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HAVC 141O	Sex, Lies, and Surveillance: Contemporary Documentary Arts	5
HAVC 142	Contemporary Art and Ecology	5

History

HIS 123	Immigrants and Immigration in U.S. History	5

Latin American and Latino Studies

LALS 175	Migration, Gender, and Health	5

Oakes College

OAKS 153	Community Mapping	5

Politics

POLI 120C	State and Capitalism in American Political Development	5
POLI 122	Politics, Labor, and Markets	5
POLI 124	Economic Inequality in America	5
GCH 186	Global Health Politics	5

Psychology

PSYC 147A	Psychology and Law	5
PSYC 147B	Psychology and Law	5
PSYC 149	Community Psychology: Transforming Communities	5
PSYC 153	The Psychology of Poverty and Social Class	5
PSYC 155	Social-Community Psychology in Practice	5
PSYC 159H	Community-Based Interventions	5

Sociology

SOCY 122	The Sociology of Law	5
SOCY 127	Drugs in Society	5
SOCY 131	Media, Marketing, and Culture	5
SOCY 176A	Work and Inequality	5
SOCY 177	Urban Sociology	5
SOCY 177E	Eco-Metropolis: Research Seminar in Urban and Environmental Studies	5
SOCY 177G	Global Cities	5

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division DC requirement. The community studies program’s model of experiential pedagogy relies heavily on writing

instruction to develop students' analytical, reflexive, and communication skills. Although students in the major develop disciplinary writing skills throughout the core curriculum, they fulfill the DC requirement with two courses:

CMMU 100	Preparation for Field Studies	5
CMMU 107	Analysis of Field Materials	5

Comprehensive Requirement

Senior Capstone Requirement

In addition to the full-time field study, another distinctive feature of the major is the emphasis placed on the capstone. Each student must fulfill this requirement whether through a Capstone Analytic Essay, a senior thesis, or a student-directed seminar. For a thesis or student-directed seminar, the student must work directly with a faculty adviser.

Capstone Analytic Essay

All students complete a Capstone Analytic Essay that incorporates field study observations and contextualizes their findings historically and theoretically. The minimum length is 25 pages, plus bibliography. The Capstone Analytic Essay is completed entirely in CMMU 107 Analysis of Field Materials.

CMMU 107	Analysis of Field Materials	5

Senior Thesis

Outstanding students may choose to complete a senior thesis, which is comprised of field-study observations, historical and theoretical contextualizations of the field study, and deeper analysis of the social justice issues and histories at the heart of the field study. The thesis also involves post-field-study research; typical length is 40–50 pages, including bibliography. The Capstone Analytic Essay completed during CMMU 107 will become the foundation for the thesis, whether as a template to be elaborated or as one or more chapters of the completed thesis. Students electing to write a senior thesis must have a faculty thesis adviser and under direction of the adviser, may enroll in the following courses for variable units in order to complete the thesis.

CMMU 195A	Senior Thesis	5
CMMU 195B	Senior Thesis	5
CMMU 195C	Senior Thesis	5

Student-Directed Seminar (SDS)

The SDS capstone option is reserved for exceptional students with a clear vision of a unique lower-division course they would like to offer other UC Santa Cruz students. Under the direction of a faculty adviser, the student develops and teaches a CMMU 42 course related to the student's field study and academic coursework and submits a seminar completion report. Student-directed seminars required considerable advance planning; a proposal for the SDS must be completed before beginning the field study, i.e., a full year before the seminar would be offered. All proposed SDS courses must be reviewed and approved by the campus Academic Senate's Committee on Courses of Instruction.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Suggested Major Planning Table

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	CMMU 10 College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	Topical course 1 WRIT 2*		Topical course 2	
3rd (junior)	Topical course 3	CMMU 101	CMMU 102 DC REQ part 1	CMMU 105 (15 credits)
4th (senior)	CMMU 105 (15 credits)	CMMU 107 DC REQ part 2 COMP REQ		

* WRIT 2 should be taken in or before spring quarter of the second year.

If CMMU 10 is not taken in the fall of the first year, it can be taken one year later. Likewise, the topical courses need not be taken in the quarters indicated as long as they are completed before CMMU 105. *Students in their third year can still begin and complete the major as shown in the sample transfer planner (below).* In addition to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education and degree requirements.

Sample Transfer Planner

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	CMMU 10	CMMU 101	CMMU 102	CMMU 105 (15 credits)
	Topical course 1	Topical course 2	DC REQ part 1	
			Topical course 3	
4th (senior)	CMMU 105 (15 credits)	CMMU 107		
		DC REQ part 2		
		COMP REQ		

Economics

401 Engineering 2
(831) 459-2743
https://economics.ucsc.edu/

PROGRAMS OFFERED

Economics B.A. (p. 690)

Business Management Economics B.A. (p. 680)

Global Economics B.A. (p. 696)

Economics/Mathematics Combined B.A. (p. 702)

Economics Minor (p. 707)

Quantitative Economics and Finance M.S. (p. 708)

Bachelor's/Master's Contiguous Pathway in Quantitative Economics and Finance (p. 712)

Economics Ph.D. (p. 712)

OTHER PROGRAMS OF INTEREST

Environmental Studies/Economics B.A.

An understanding of economics is a vital component of a liberal arts education and a necessity for anyone interested in how the economic system actually works. Subject areas include business, environmental policy, economic development, immigration, educational reform, international competitiveness and trade, economic inequality, and transformations in the global economy.

The programs offered by the UC Santa Cruz Economics Department are designed to acquaint students with a broad range of economic issues and with the tools economists use.

UNDERGRADUATE PROGRAM

The economics curriculum begins at the introductory level; no specific high school preparation is required. All economics majors study a substantial core of economic theory and mathematical and statistical methods, and then choose among a wide variety of upper-division electives.

Economics majors may combine their upper-division elective choices in a variety of ways to achieve specialization in a number of possible areas, including environmental economics, public policy, political economy, international economics, economic development, and quantitative methods.

GRADUATE PROGRAM

The Department of Economics offers programs leading to the Ph.D. degree in economics and M.S. degree in quantitative economics and finance.

The Ph.D. program in economics provides students with training in modern microeconomics, macroeconomics, and econometrics, combined with specialized training in the fields of international finance and international trade and options to pursue specializations in economic development, monetary economics, applied microeconomics, experimental economics and other areas. The core emphasis of the program is on

international trade and finance, and the program offers more intensive course work in these areas, as well as greater faculty depth in various aspects of international economics, than do traditional Ph.D. programs in economics that offer international economics as a single subfield. However, the department is also home to a large number of internationally recognized faculty whose work is outside of international and who regularly supervise Ph.D. students. Graduates of the program have conducted research on a wide variety of topics; examples include monetary economics, experimental economics, environmental economics, and economic growth and development as well as international economics.

Past graduates of the Ph.D. program have gone on to successful careers in the academic and research sectors with placements at a diverse range of companies and institutions, including Central Banks, Federal Reserve Board of Governors, Facebook, Microsoft, Amazon, UBER, Middlebury College, Occidental College, IMPAQ International, California State University, University of Wisconsin, Purdue University, Bank of International Settlements and many more.

The M.S. program in quantitative economics and finance is designed for students who wish to supplement their undergraduate work in economics with analytical graduate training that prepares them for careers in business, international and domestic banking, consulting firms, government, and nonprofit organizations. The program combines theory with meaningful applications that students are likely to face in their professional careers. The program is more practical than a typical M.A. program and provides more training in economics and statistics than most MBA programs.

Past graduates of this program have gone on to successful careers in the private and public sectors with placements at a diverse range of companies and institutions, including ADM Associates, Inc., Anderson Tax, SoFi, Cisco Systems, Seagate Technology, Google, Sony Computer Entertainment, Plantronics, Wells Fargo, Securities and Exchange Commission, all of the big four accounting firms, McKesson Corp., Pepsi Corp., Visa, Square Trade, the California Franchise Tax Board, Guardian News (UK), Blue Cross, the World Bank, Stanford University, and the Bank of Japan. Other graduates have gone on to earn Ph.D.s in economics.

BUSINESS MANAGEMENT ECONOMICS B.A.

Information and Policies

Introduction

The business management economics major provides students who are interested in careers in business or management with a foundation in economics and a selection of applied fields related to business management. This course of study prepares students for entrance into the business world or admission to graduate programs—either the master's program in applied economics and finance at UCSC or graduate programs in business and management at other universities.

The program provides a business and management education embedded within a broader economics and liberal arts context and is closely related to the economics and global economics majors and the technology and information management major. The department also offers a series of accounting courses that prepare students interested in certified public accountant (CPA) licensure. Students in the business management economics major have the option of adding an accounting concentration designation on their transcripts, provided they meet the curricular criteria. Electing to complete the accounting course sequence will prepare students for the Uniform Certified Public Accountants' Exam and the credits will count toward exam eligibility. It will assist students in documenting their concrete expertise in accounting and thus help them compete for entry- level accounting positions in industry and public accounting as well as secure internship opportunities. For the concentration the eight (8) required courses include: ECON 110: Managerial Cost Accounting and Control, ECON 111A: Intermediate Accounting I, ECON 111B: Intermediate Accounting II, ECON 111C: Intermediate Accounting III, ECON 112: Audit, ECON 116: Advanced Topics in Accounting and Ethics, ECON 117A: Tax Factors for Individuals, and ECON 117B: Tax Factors for Business. Students electing the accounting concentration may also reduce their computer literacy requirements by one course (from two to one).

This major has several important elements. First, it combines the strong analytic approach of economics with the technical aspects of management. Second, it recognizes that computing is intrinsic to business and is an essential skill for those who wish to enter this field. Students in this major gain knowledge about using computing as a tool of analysis for economic, statistical, and financial data. Third, the major offers field placements (arranged with the economics advisors) which provide an excellent way to apply students' academic knowledge of economics, business, and management to issues and problems in the real world; they provide marketable skills as well as important job contacts.

Students who are committed to the major early in their academic career should plan to complete ECON 1, ECON 2, ECON 10A, ECON 10B, AM 11A, AM 11B, STAT 17 and STAT 17L and preferably ECON 100A, ECON 100B, and ECON 113 no later than the end of their sophomore year.

Program Learning Outcomes

Program learning outcomes for economics, economics and mathematics, business management economics, and global economics majors:

Critical Thinking Skills: Students are expected to be able to apply economic analysis to everyday problems in real world situations, to understand current events and evaluate specific policy proposals, and to evaluate the role played by assumptions in arguments that reach different conclusions to a specific economic or policy problem.

Quantitative Reasoning Skills: Students are expected to understand how to use empirical evidence to evaluate the validity of an economic argument, use statistical

methodology, interpret statistical results, and conduct appropriate statistical analysis of data.

Problem-Solving Skills: Students are expected to be able to solve problems that have clear solutions and to address problems that do not have clear answers and explain conditions under which these solutions may be correct.

Specialized Knowledge and Application of Skills: Students are expected to develop critical and quantitative thinking skills specific to business and accounting.

Communication Skills: Students are expected to be able to communicate effectively in written, oral, and graphical form about specific issues, and to formulate well-organized written arguments that state assumptions and hypotheses supported by evidence.

Academic Advising for the Program

The Economics Department office is located at 401 Engineering 2. There are four staff undergraduate advisors, peer advisors (except summer), a field study coordinator, as well as a faculty director for each of the Economics Department's undergraduate programs. Our faculty, staff advisors and peer advisors play an important role in advising on all aspects of the major and assisting you to maximize your educational opportunities. Please check the department website for more information about drop-in hours.

Getting Started in the Major: Frosh

The economics curriculum begins at the introductory level: no specific high school preparation is required.

This is a course-intensive and sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at the University of California, Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

All majors study a substantial core of economic theory and statistical methods and they then choose among a wide variety of subfields.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

One of the following:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus both of the following:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Getting Started in the Major: Transfer Students

The department requests that new transfer students send unofficial transcripts of any previously completed coursework to econ_ugrad_coor@ucsc.edu. For coursework completed outside of a California community college submitting course syllabi for articulation purposes is required. The advisors will then be able to make course recommendations for fall quarter or summer session courses prior to the first fall quarter.

All transfer students must complete the three-course senior comprehensive requirement (ECON 100A, ECON 100B, ECON 113) and the Disciplinary Communication (DC) requirement (ECON 104 or ECON 197) at UC Santa Cruz. Business management economics majors must take at least three of their upper-division economics electives at UCSC. Courses taken for credit elsewhere may not be repeated for credit here.

Students who were admitted under a different proposed major and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major. Admission to the major is not guaranteed.

Major Qualification Policy and Declaration Process

Major Qualification

The Economics Department administers four undergraduate majors: economics, business management economics, global economics, and economics/mathematics.

Students must complete three courses, with combined GPA of 2.8 or higher, to qualify for entry to the business management economics major:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

And one of the following calculus courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Appeal Process

Students who have a grade point average (GPA) lower than 2.8 in ECON 1, ECON 2, and the calculus course are not eligible to declare an economics major. Students not eligible for the economics majors may appeal by submitting a letter to the Economics Department. The appeal letter must be filed no later than the first quarter of their junior year. Please check

the "Appeals" area on the department web site for further information on declaring a major or appealing ineligibility and deadlines.

How to Declare a Major

Students can initiate the major declaration process by completing the Petition for Major/Minor Declaration and the Academic Planning forms and by supplying evidence of their grades in the three pre-major courses. Candidates must meet major qualifications listed above under "Major Qualification" prior to declaring the major.

Declaration sessions are mandatory for those seeking to declare the major/minor. If you cannot attend a workshop, you must meet with an economics peer advisor first before obtaining signatures from a staff advisor. Workshop schedules and drop-in advising hours are available online, on our bulletin board outside the office, and in the department office. All students are advised to bring verification of their grades, which can be printed off the student portal, to the declaration of major advising session. Students who do not bring in verification of their grades could have the approval of their petition for major declaration delayed by up to two working days.

Letter Grade Policy

All classes included for major qualification determination must be taken for a letter grade. If students have not taken a letter grade, they must appeal by submitting a letter to the Economics Department.

The Economics Department allows classes toward major requirements taken for the Pass/No Pass (P/NP) grade notification. We recommend no more than two courses in the major be taken P/NP. Overall no more than 25 percent of a student's UC Santa Cruz classes can be taken P/NP.

[Optional Catchall]

Course Substitution Policy

For courses not already articulated through assist.org, students must present their transfer credit summary (available on the student portal) and course syllabi or descriptions to an Economics Department advisor. The department approves courses applicable for economics prerequisites and major requirements. The course substitution form can be found on the department website under "Forms for students".

Double Majors and Major/Minor Combinations Policy

Study Abroad

UC Education Abroad Program (UCEAP) is the University of California's official study abroad program and a global leader in international education for over 50 years. All the benefits of home—UC credit, grades, and financial aid—travel with you. Approximately 600 UC Santa Cruz students study abroad on UCEAP every year.

Students can petition UCEAP courses to count toward their major or minor requirements. In addition, there are scholarships available and financial aid can be applied to UCEAP programs. UCEAP provides opportunities in:

- 46 countries around the world
- 420 summer quarter, semester or yearlong programs
- Internships, volunteer work, and research programs

Economics at the Autonomous University of Barcelona--Direct Exchange Program

Located in Spain, the Autonomous University of Barcelona (UAB) is an institution known for its excellent research and teaching. Unlike UCEAP, this direct exchange program through the UC Santa Cruz Economics Department offers the opportunity for students to enroll in three courses that will fulfill economics major requirements and one course outside of economics. Students must take a total of four courses and will receive transfer credit for all courses. Along with enrolling in courses, students may enjoy the renowned architecture, food, and art. This program is open to students who are economics majors in junior or senior class standing and have a 3.0 cumulative GPA or above. Students must also be in good academic standing and 18 years of age or older at the time of departure to Barcelona. Economics courses at UAB may also be taken in Spanish if students have completed two years of university-level Spanish with a minimum GPA of 2.85 in those language courses.

Honors

The Economics Department awards honors and highest honors to students who have completed a major program with superior or exceptional academic work. All students are reviewed for honors during the quarter in which they graduate. Honors decisions are made based on performance in upper-division economics courses with particular emphasis on performance in the three core courses (ECON 100A, ECON 100B, and ECON 113). Typically, honors are awarded to between 10 and 15 percent of each year's graduating class.

[Optional Catchall]

Independent Study

Students are encouraged to petition for independent study on topics of special interest to them. ECON 199, Tutorial, may be used as only one of the upper-division courses required for the major or minor.

Field-Study Program

The Economics Department offers its majors the opportunity to integrate their academic knowledge with career-related work in areas connected to economics or business. Students secure field-study internships under the supervision of a faculty sponsor and a professional at the workplace. Students can participate in a wide variety of field-study opportunities such as with accounting firms, community non-profits, government agencies, brokerage firms, marketing agencies, banks, and businesses in Santa Cruz and beyond. Students

apply for field-study a quarter in advance. Participation in the field-study program requires at least junior standing, completion of courses ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), and ECON 113 as well as good academic standing. Students may earn a maximum of 10 academic credits and complete up to two quarters in a field placement. A 5-credit field study requires 12-14 hours per week spent working on internship duties (a 2-credit field study requires 5-6 hours per week spent on internship duties) and completion of an academic project supervised by a faculty sponsor. Time spent toward the academic requirements set by the faculty sponsor is not included in the 12-14 internship hours spent at the field placement.

Along with the training and supervision by a professional at the workplace, students receive guidance from a faculty sponsor who directs their academic project. Students earn credit through the completion of this project and the job supervisor's evaluation of performance. Economics field-study courses do not satisfy any upper-division requirements for the major and are available as Pass/No Pass only.

Interested students should make an appointment or email econintern@ucsc.edu for assistance.

Combined Majors

The Economics Department offers the following combined majors: economics/mathematics and environmental studies/economics. Requirements for these majors may be reviewed under their separate entries in this catalog.

General Business Management Economics Major

Course Requirements

ECON 1 and ECON 2, ECON 10A, ECON 10B, AM 11A, AM 11B, STAT 17 and STAT 17L, ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), ECON 113 or equivalent courses are required for all business management economics majors and are prerequisites for most upper-division courses. Students are urged to complete these courses as soon as possible. Students who are committed to the major early in their academic career, should plan to complete at least ECON 1, ECON 2, AM 11A, AM 11B, STAT 17 and STAT 17L and preferably ECON 100A, ECON 100B, and ECON 113 by the end of their sophomore year. Students are also encouraged to choose the letter grade option when taking these courses.

Students who major in business management economics are required to take the following courses:

Lower-Division Courses

All of the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
ECON 10A	Economics of Accounting	5
ECON 10B	Economics of Accounting	5

Plus one of the following mathematics content options:

	Either these courses	
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 11A	Calculus with Applications	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
AM 11B	Mathematical Methods for Economists II	5

MATH 11A, MATH 11B, MATH 23A may be taken to satisfy the mathematics content only by petition via the Mathematics Department.

Plus the following statistics courses:

STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Enrollment in STAT 17 requires concurrent enrollment in STAT 17L (2-credit lab). Any transfer credit for STAT 17 and STAT 17L will be evaluated on a case-by-case basis. Students should contact the undergraduate advisors by emailing econ_ugrad_coor@ucsc.edu.

Computer literacy requirement

Students in the general major complete two courses from the following list:

Note: Lecture/lab combinations count as one course.

Students with no prior programming experience are encouraged to take CSE 5J, CSE 10 or CSE 20. With department approval, a student may substitute other computing courses.

(CSE 10 is not offered regularly.)

CSE 5J	Introduction to Programming in Java	5
CSE 10	Introduction to Computer Science	5
CSE 12	Computer Systems and Assembly Language and Lab	7
CSE 13S	Computer Systems and C Programming	7
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
CSE 80N	Introduction to Networking and the Internet	5
ECE 13	Computer Systems and C Programming	7
ECON 22P	Introduction to Python for Data Science	5
TIM 50	Business Information Systems	5
TIM 58	Systems Analysis and Design	5

CSE 20 has a test out option which counts as one of the two required courses.

Upper-Division Courses

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Plus one of the following disciplinary communication (DC) courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Upper-division electives

Students are required to take five additional courses: one in finance, three in business management and one other economics elective. See the lists below for options.

Students may only use one of ECON 130, ECON 159, ECON 160A, or ECON 160B. No course may satisfy both an elective and another requirement of the major.

Finance Electives (choose one)

ECON 101	Managerial Economics	5
ECON 133	Security Markets and Financial Institutions	5
ECON 135	Corporate Finance	5

Business Management Electives (choose three)

ECON 101	Managerial Economics	5
ECON 110	Managerial Cost Accounting and Control	5
ECON 111A	Intermediate Accounting I	5
ECON 111B	Intermediate Accounting II	5
ECON 111C	Intermediate Accounting III	5
ECON 112	Auditing and Attestation	5
ECON 115	Introduction to Management Sciences	5
ECON 117A	Income Tax Factors for Individuals	5
ECON 117B	Tax Factors of Business and Investment	5
ECON 119	Advanced Accounting	5
ECON 124	Machine Learning for Economists	5
ECON 130	Money and Banking	5
ECON 131	International Financial Markets	5
ECON 133	Security Markets and Financial Institutions	5
ECON 135	Corporate Finance	5
ECON 136	Business Strategy	5
ECON 138	The Economics and Management of Technology and Innovation	5
ECON 139A	The Economics of Electronic Commerce	5
ECON 139B	E-Commerce Strategy	5
ECON 159	The Economics of Organizations	5
ECON 160A	Industrial Organization	5
ECON 160B	Government and Industry	5
ECON 161A	Marketing	5
ECON 161B	Marketing Research	5
ECON 164	Economics and the Telecommunications Industry	5

ECON 188	Management in the Global Economy	5
ECON 194	Advanced Topics in Management	5

Economics Electives (choose one)

ECON 105	Topics in Macroeconomics	5
ECON 114	Advanced Quantitative Methods	6
ECON 120	Development Economics	5
ECON 121	Economic Growth	5
ECON 125	Economic History of the U.S	5
ECON 128	Poverty and Public Policy	5
ECON 130	Money and Banking	5
ECON 140	International Trade	5
ECON 141	International Finance	5
ECON 142	Advanced Topics in International Economics	5
ECON 143	Policy Issues in the International Economy	5
ECON 149	The Economies of East and Southeast Asia	5
ECON 150	Public Finance	5
ECON 156	Health Economics and Policy	5
ECON 159	The Economics of Organizations	5
ECON 160A	Industrial Organization	5
ECON 160B	Government and Industry	5
ECON 165	Economics as an Experimental Science	5
ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5
ECON 169	Economic Analysis of the Law	5
ECON 170	Environmental Economics	5
ECON 171	Natural Resource Economics	5
ECON 175	Energy Economics	5
ECON 180	Labor Economics	5
ECON 182	Unemployment	5
ECON 183	Women in the Economy	5
ECON 190	Senior Proseminar	5

Field-study

One quarter of field study is strongly recommended. Participation and credit for course ECON 193 are arranged through the economics field-study coordinator. See above under field-study program description.

Electives

Disciplinary Communication (DC) Requirement

All undergraduate majors must satisfy the campus' disciplinary communication (DC) requirement. The DC requirement in economics is satisfied by completing one of the following courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Comprehensive Requirement

The comprehensive requirement is satisfied by passing the following intermediate core courses with grades of C/P or better here at UC Santa Cruz:

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Frosh Planner

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	ECON 1	ECON 2	
		AM 11A	AM 11B	
		WRIT 1/WRIT 1E (if needed)		
2nd (soph)	ECON 100A	ECON 100B	ECON 113	
	ECON 10A	STAT 17	ECON 10B	

		STAT 17L		(optional)
	WRIT 2*			
3rd (junior)	Econ elective	Business Management elective Computer Course	Business Management elective	
4th (senior)	Business Management elective Computer course	ECON 104 or ECON 197 ECON 101, ECON 133 or ECON 135 (Business Management elective) Field Study internship (optional)	Field Study (optional)	

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses shown above satisfy the MF, PE, and SR and, if ECON 193 is completed, then the PR general education requirements. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education requirements as well as credit requirements.

Sample Transfer Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge
3rd (junior)	AM 11B ECON elective ECON 10A	ECON 100A Computer course ECON 10B	ECON 100B Business Management elective STAT 17 STAT 17L	
4th (senior)	ECON 113 Business Management elective	Business Management elective ECON 101, ECON 133 or ECON 135 (Business Management elective) ECON 104 or ECON 197	Field Study (optional) Computer Course	

This planner assumes that a student has completed the major preparation requirements (ECON 1, ECON 2 and at least first calculus course) before coming to UC Santa Cruz. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UCSC general education requirements as well as credit requirements. Transfer students are encouraged to complete "core courses," ECON 100A, ECON 100B and ECON 113 by fall of their fourth year. Core courses are offered every summer.

Business Management with Accounting Concentration

Only students in the business management economics major have the option of adding an accounting concentration designation on their transcripts, provided they meet the curricular criteria. Electing to complete the accounting course sequence will prepare students for the Uniform Certified Public Accountants' Exam and the credits will count toward exam eligibility. It will assist students in documenting their

concrete expertise in accounting and thus help them compete for entry-level accounting positions in industry and public accounting as well as secure internship opportunities. For the concentration the eight (8) required courses include: ECON 110: Managerial Cost Accounting and Control, ECON 111A: Intermediate Accounting I, ECON 111B: Intermediate Accounting II, ECON 111C: Intermediate Accounting III, ECON 112: Audit, ECON 116: Advanced Topics in Accounting and Ethics, ECON 117A: Tax Factors for Individuals, and ECON 117B: Tax Factors for Business. Students electing the accounting concentration may also reduce their computer literacy requirements by one course (from two to one).

Course Requirements

ECON 1 and ECON 2, ECON 10A, ECON 10B, AM 11A, AM 11B, ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), ECON 113, and STAT 17 STAT 17L or equivalent courses are required for all business management economics majors and are prerequisites for most upper-division courses. Students are urged to complete these courses as soon as possible. Students who are committed to the major early in their academic career, should plan to complete at least ECON 1, ECON 2, AM 11A, AM 11B, and preferably ECON 100A, ECON 100B, and ECON 113 by the end of their sophomore year. Those students interested in the accounting concentration should also complete ECON 10A and ECON 10B by the end of their sophomore year. Students are also encouraged to choose the letter grade option when taking these courses.

Students who major in business management economics with the accounting concentration are required to take the following courses:

Lower-Division Courses

All of the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
ECON 10A	Economics of Accounting	5
ECON 10B	Economics of Accounting	5

Plus one of the following mathematics options:

	Either these courses	
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 11A	Calculus with Applications	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
AM 11B	Mathematical Methods for Economists II	5

MATH 11A, MATH 11B, MATH 23A may be taken to satisfy the mathematics content only by petition via the Mathematics Department.

Plus the following statistics courses:

STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Enrollment in STAT 17 requires concurrent enrollment in STAT 17L (2-credit lab). Any transfer credit for STAT 17 and STAT 17L will be evaluated on a case-by-case basis. Students should contact the undergraduate advisors by emailing econ_ugrad_coor@ucsc.edu.

Computer literacy requirement

Students in the accounting concentration complete one course from the following list:

Note: Lecture/lab combinations count as one course.

Students with no prior programming experience are encouraged to take CSE 5J, CSE 10 or CSE 20. With department approval, a student may substitute other computing courses.

(CSE 10 is not offered regularly.)

CSE 5J	Introduction to Programming in Java	5
CSE 10	Introduction to Computer Science	5
CSE 12	Computer Systems and Assembly Language and Lab	7

CSE 13S	Computer Systems and C Programming	7
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
CSE 80N	Introduction to Networking and the Internet	5
ECE 13	Computer Systems and C Programming	7
ECON 22P	Introduction to Python for Data Science	5
TIM 50	Business Information Systems	5
TIM 58	Systems Analysis and Design	5

CSE 20 has a test out option which may count as the required course.

Upper-Division Courses

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Plus one of the following disciplinary communication (DC) courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Plus one of the following finance courses:

ECON 101	Managerial Economics	5
ECON 133	Security Markets and Financial Institutions	5
ECON 135	Corporate Finance	5

Plus the following accounting courses:

ECON 110	Managerial Cost Accounting and Control	5
ECON 111A	Intermediate Accounting I	5
ECON 111B	Intermediate Accounting II	5
ECON 111C	Intermediate Accounting III	5
ECON 112	Auditing and Attestation	5
ECON 116	Advanced Topics in Accounting and Ethics	5
ECON 117A	Income Tax Factors for Individuals	5
ECON 117B	Tax Factors of Business and Investment	5

Plus one economics elective from the following:

Courses ECON 191, ECON 192, ECON 193, ECON 193F may not be used to meet major requirements. Either course ECON 195 or ECON 199 may be used to fill the upper-division economics elective.

ECON 105	Topics in Macroeconomics	5
ECON 114	Advanced Quantitative Methods	6
ECON 120	Development Economics	5
ECON 121	Economic Growth	5
ECON 125	Economic History of the U.S	5
ECON 128	Poverty and Public Policy	5
ECON 130	Money and Banking	5
ECON 140	International Trade	5
ECON 141	International Finance	5
ECON 142	Advanced Topics in International Economics	5
ECON 143	Policy Issues in the International Economy	5
ECON 149	The Economies of East and Southeast Asia	5
ECON 150	Public Finance	5
ECON 156	Health Economics and Policy	5
ECON 159	The Economics of Organizations	5
ECON 160A	Industrial Organization	5
ECON 160B	Government and Industry	5
ECON 165	Economics as an Experimental Science	5
ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5
ECON 169	Economic Analysis of the Law	5
ECON 170	Environmental Economics	5
ECON 171	Natural Resource Economics	5
ECON 175	Energy Economics	5
ECON 180	Labor Economics	5
ECON 182	Unemployment	5
ECON 183	Women in the Economy	5

Field Study

One quarter of field study is strongly recommended. Participation and credit for course ECON 193 are arranged through the economics field study coordinator. See above under field study program description. ECON 193 also fulfills the PR general education requirement.

Electives

Disciplinary Communication (DC) Requirement

All undergraduate majors must satisfy the campus' Disciplinary Communication (DC) requirement. The DC requirement in economics is satisfied by completing one of the following courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Comprehensive Requirement

The comprehensive requirement is satisfied by passing the following intermediate core courses with grades of C/P or better at UC Santa Cruz:

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Frosh Planner

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	ECON 1	ECON 2	
	Writing course	AM 11A	AM 11B	
	College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	ECON 100A	ECON 100B	ECON 113	
	ECON 10A	ECON 10B	ECON 110	
	WRIT 2**	STAT 17 STAT 17L	Computer Literacy course	
3rd (junior)	ECON 111A	ECON 111B	ECON 111C	
	ECON elective	ECON 112	ECON 116	
		Ethics course (optional)*		
4th (senior)	ECON 117B	ECON 117A		
	Field Study internship (optional)	ECON 104 or ECON 197	Field Study (optional)	
		ECON 101, ECON 133 or ECON 135		

*Not required for the concentration, but required for California CPA Licensure. At the time of publication, a total of 15 qualified units in ethics is required for the California CPA licensure, 10 of which are satisfied by required courses ECON 112 and ECON 116.

** WRIT 2 should be taken in or before spring quarter of the second year.

The courses shown above satisfy the MF, PE, and SR and, if ECON 193 is completed, then the PR general education requirements. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education requirements as well as credit requirements.

Sample Transfer Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T
				Summe

			r Edge (optiona l)
3rd (junior)	AM 11B	ECON 100A	ECO N 100B
	ECON 111A	ECON 111B	ECO N 111C
	Comput er literacy course	Ethics course (optional)*	STA T 17 STA T 17L
4th (senior)	ECON 113	ECON 101, ECON 133 or ECON 135	ECO N 110
	ECON 117B	ECON 117A	ECO N 116
	ECON UD elective	ECON 112	ECO N 104 or ECO N 197 (DC)

*Not required for the concentration, but required for California CPA Licensure. At the time of publication, a total of 15 qualified units in ethics is required for the California CPA licensure, 10 of which are satisfied by required courses ECON 112 and ECON 116.

This planner assumes that a student has completed ECON 10A, ECON 10B and major preparation requirements (ECON 1, ECON 2 and at least first calculus course) before coming to UC Santa Cruz. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UCSC general education requirements as well as credit requirements. Transfer students are encouraged to complete "core courses," ECON 100A, ECON 100B and ECON 113 by fall of their fourth year. Core courses are offered every summer.

ECONOMICS B.A.

Information and Policies

Introduction

Economics studies how individuals, firms, governments, and other organizations within our society make choices, and how these choices affect the society's use of its available resources. Economists study a wide range of questions such as: How do individuals make decisions in the face of uncertainty? What are the causes of the Great Recession of 2009? Why do Europeans work fewer hours than Americans? Why have health care and education costs risen so much? What are the consequences of government deficits? Why has the gap between rich and poor in many countries risen? Why have some poor countries grown faster than many rich countries in recent years?

Economics majors study a substantive core of theory and mathematical and statistical methods that aid in addressing these questions. This required core can be combined with electives that emphasize specialized areas such as international economics, finance, public policy, applied microeconomics, law and economics, economic development, quantitative methods, macroeconomics, game theory and behavioral economics. A focus on core theory as well as mathematical and quantitative tools provides a foundation for graduate studies in economics. Selecting a range of electives to sample the broad domain of economics offers an excellent background for students who plan to enter careers in the private sector, in public service, the non-profit sector or to attend law school or other professional schools.

Program Learning Outcomes

Program learning outcomes for economics, economics and mathematics, business management economics, and global economics majors:

Critical Thinking Skills: Students are expected to be able to apply economic analysis to everyday problems in real world situations, to understand current events and evaluate specific policy proposals, and to evaluate the role played by assumptions in arguments that reach different conclusions to a specific economic or policy problem.

Quantitative Reasoning Skills: Students are expected to understand how to use empirical evidence to evaluate the validity of an economic argument, use statistical methodology, interpret statistical results, and conduct appropriate statistical analysis of data.

Problem-Solving Skills: Students are expected to be able to solve problems that have clear solutions and to address problems that do not have clear answers and explain conditions under which these solutions may be correct.

Specialized Knowledge and Application of Skills: Students are expected to develop critical and quantitative thinking skills specific to business and accounting.

Communication Skills: Students are expected to be able to communicate effectively in written, oral, and graphical form about specific issues, and to formulate well-organized written arguments that state assumptions and hypotheses supported by evidence.

Academic Advising for the Program

The Economics Department office is located at 401 Engineering 2. There are four staff undergraduate advisors, peer advisors (except summer), a field study coordinator, as well as a faculty director for each of the Economics Department's undergraduate programs. Our faculty, staff advisors and peer advisors play an important role in advising on all aspects of the major and assisting you to maximize your educational opportunities. Please check the department website for more information about drop-in hours.

Getting Started in the Major: Frosh

The economics curriculum begins at the introductory level: no specific high school preparation is required. This is a course-intensive and sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at the University of California, Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

All majors study a substantial core of economic theory and statistical methods and they then choose among a wide variety of subfields.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

One of the following courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus both of these courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Getting Started in the Major: Transfer Students

The department requests that new transfer students send unofficial transcripts of any previously completed coursework to econ_ugrad_coor@ucsc.edu. For coursework completed outside of a California community college, submitting course syllabi for articulation purposes is required. The advisors will then be able to make course recommendations for fall quarter or summer session courses prior to the first fall quarter.

All transfer students must complete the three-course comprehensive requirement (ECON 100A, ECON 100B, ECON 113) and the disciplinary communication requirement (ECON 104 or ECON 197) at UC Santa Cruz. Economics majors must take at least three of their upper-division economics electives at UCSC. Courses taken for credit elsewhere may not be repeated for credit here.

Students who were admitted under a different proposed major and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major. Admission to the major is not guaranteed.

Major Qualification Policy and Declaration Process

Major Qualification

The Economics Department administers four undergraduate majors: economics, business management economics, global economics, and economics/mathematics.

(Qualifications for the environmental/economics combined major differ from above; see environmental studies for details.) Students should declare the major as soon as they have completed these requirements.

Students must complete three courses, with combined GPA of 2.8 or higher, to qualify for entry to the economics major:

Take the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

And one of the following calculus courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Appeal Process

Students who have a grade point average (GPA) lower than 2.8 in ECON 1, ECON 2, and the calculus course are not eligible to declare an economics major. Students not eligible for the economics majors may appeal by submitting a letter to the Economics Department. The appeal letter must be filed no later than the first quarter of their junior year. Please check the "Appeals" area on the department web site for further information on declaring a major or appealing ineligibility and deadlines.

How to Declare a Major

Students can initiate the major declaration process by completing the Petition for Major/Minor Declaration and the Academic Planning forms and by supplying evidence of their grades in the three pre-major courses**.** Candidates must meet major qualifications listed above under "Major Qualification" prior to declaring the major.

Declaration sessions are mandatory for those seeking to declare the major/minor. If you cannot attend a workshop, you must meet with an economics peer advisor first before obtaining signatures from a staff advisor. Workshop schedules and drop-in advising hours are available online, on our bulletin board outside the office and in the department office. All students are advised to bring verification of their grades, which can be printed off the student portal, to the declaration of major advising session. Students who do not bring in verification of their grades could have the approval of their petition for major declaration delayed by up to two working days.

Letter Grade Policy

All classes included for major qualification determination must be taken for a letter grade. If students have not taken a letter grade, they must appeal by submitting a letter to the Economics Department.

The Economics Department allows classes toward major requirements taken for the pass/no pass (P/NP) grade notification. We recommend no more than two courses in the major be taken P/NP. Overall no more than 25 percent of a student's UC Santa Cruz classes can be taken P/NP.

[Optional Catchall]

Course Substitution Policy

For courses not already articulated through assist.org, students must present their transfer credit summary (available on the student portal) and course syllabi or descriptions to an Economics Department advisor. The department approves courses applicable for economics prerequisites and major requirements. The course substitution form can be found on the department website under "Forms for students".

Double Majors and Major/Minor Combinations Policy

Study Abroad

UC Education Abroad Program (UCEAP) is the University of California's official study abroad program and a global leader in international education for more than 50 years. All the benefits of home—UC credit, grades, and financial aid—travel with you. Approximately 600 UC Santa Cruz students study abroad on UCEAP every year.

Students can petition UCEAP courses to count toward their major or minor requirements. In addition, there are scholarships available and financial aid can be applied to UCEAP programs. UCEAP provides opportunities in:

- 46 countries around the world
- 420 summer quarter, semester or year-long programs
- Internships, volunteer work, and research programs

Economics at the Autonomous University of Barcelona -- Direct Exchange Program
Located in Spain, the Autonomous University of Barcelona (UAB) is an institution known for its excellent research and teaching. Unlike UCEAP, this direct exchange program through the UC Santa Cruz Economics Department offers the opportunity for students to enroll in three courses that will fulfill economics major requirements and one course outside of economics. Students must take a total of four courses and will receive transfer credit for all courses. Along with enrolling in courses, students may enjoy the renowned architecture, food, and art. This program is open to students who are economics majors in junior or senior class standing and have a 3.0 cumulative GPA or above. Students must also be in good academic standing and 18 years of age or older at the time of departure to Barcelona. Economics courses at UAB may also be taken in Spanish if students have completed two years of university-level Spanish with a minimum GPA of 2.85 in those language courses.

Honors

The Economics Department awards honors and highest honors to students who have completed a major program with superior or exceptional academic work. All students are reviewed for honors during the quarter in which they graduate. Honors decisions are made based on performance in upper-division economics courses with particular emphasis on performance in the three core courses (ECON 100A, ECON 100B, and ECON 113). Typically, honors are awarded to between 10 and 15 percent of each year's graduating class.

[Optional Catchall]

Independent Study

Students are encouraged to petition for independent study on topics of special interest to them. ECON 199, Tutorial, may be used as only one of the upper-division courses required for the major or minor.

Field-Study Program

The Economics Department offers its majors the opportunity to integrate their academic knowledge with career-related work in areas connected to economics or business. Students secure field-study internships under the supervision of a faculty sponsor and a professional at the workplace. Students can participate in a wide variety of field-study opportunities such as with accounting firms, community non-profits, government agencies, brokerage firms, marketing agencies, banks, and businesses in Santa Cruz and beyond. Students apply for field-study a quarter in advance. Participation in the field-study program requires at least junior standing, completion of courses ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), and ECON 113 as well as good academic standing. Students may earn a maximum of 10 academic credits and complete up to two quarters in a field placement. A 5-credit field study requires 12-14 hours per week spent working on internship duties (a 2-credit field study requires 5-6 hours per week spent on internship duties) and completion of an academic project supervised by a faculty sponsor. Time spent toward the academic requirements set by the faculty sponsor is not included in the 12-14 internship hours spent at the field placement.

Along with the training and supervision by a professional at the workplace, students receive guidance from a faculty sponsor who directs their academic project. Students earn credit through the completion of this project and the job supervisor's evaluation of performance. Economics field-study courses do not satisfy any upper-division requirements for the major and are available as Pass/No Pass only.

Interested students should make an appointment or email econintern@ucsc.edu for assistance.

Combined Majors

The Economics Department offers the following combined majors: economics/mathematics and environmental studies/economics. Requirements for these majors may be reviewed under their separate entries in this catalog.

Requirements and Planners

Course Requirements

ECON 1 and ECON 2, AM 11A, AM 11B, ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), ECON 113, and STAT 17 and STAT 17L or equivalent courses are required for all economics majors and are prerequisites for most upper-division courses. Students are urged to complete these courses as soon as possible. Students who are committed to the major early in their academic career, should plan to complete at least ECON 1, ECON 2, AM 11A, AM 11B, STAT 17 and STAT 17L and preferably ECON 100A, ECON 100B, and ECON 113 by the end of their sophomore year. Students are also encouraged to choose the letter grade option when taking these courses.

Students who major in economics are required to take the following courses:

Lower-Division Courses

All of the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Plus one of the following mathematics content options:

	Either these courses	
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 11A	Calculus with Applications	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
AM 11B	Mathematical Methods for Economists II	5

MATH 11A, MATH 11B, MATH 23A may be taken to satisfy the mathematics content only by petition via the Mathematics Department.

Plus the following statistics courses:

STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Enrollment in STAT 17 requires concurrent enrollment in STAT 17L (2-credit lab). Any transfer credit for STAT 17 and STAT 17L will be evaluated on a case-by-case basis. Students should contact the undergraduate advisors by emailing econ_ugrad_coor@ucsc.edu.

Upper-Division Courses

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Plus one of the following disciplinary communication

(DC) courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Plus five economics electives:

Students take five additional economics electives from the following three lists. At least three courses must come from the General Economics Electives list. No more than two courses may come from the Finance Electives list. No more than one course may come from the Business Management Electives.

General Economics Electives

ECON 105	Topics in Macroeconomics	5
ECON 114	Advanced Quantitative Methods	6
ECON 120	Development Economics	5
ECON 121	Economic Growth	5
ECON 124	Machine Learning for Economists	5
ECON 125	Economic History of the U.S	5
ECON 128	Poverty and Public Policy	5
ECON 130	Money and Banking	5
ECON 140	International Trade	5
ECON 141	International Finance	5
ECON 142	Advanced Topics in International Economics	5
ECON 143	Policy Issues in the International Economy	5
ECON 149	The Economies of East and Southeast Asia	5
ECON 150	Public Finance	5
ECON 156	Health Economics and Policy	5
ECON 159	The Economics of Organizations	5
ECON 160A	Industrial Organization	5
ECON 160B	Government and Industry	5
ECON 165	Economics as an Experimental Science	5
ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5
ECON 169	Economic Analysis of the Law	5
ECON 170	Environmental Economics	5
ECON 171	Natural Resource Economics	5
ECON 175	Energy Economics	5
ECON 180	Labor Economics	5
ECON 182	Unemployment	5
ECON 183	Women in the Economy	5
ECON 190	Senior Proseminar	5

Finance Electives

ECON 131	International Financial Markets	5
ECON 133	Security Markets and Financial Institutions	5
ECON 135	Corporate Finance	5

Business Management Electives

ECON 101	Managerial Economics	5
ECON 110	Managerial Cost Accounting and Control	5
ECON 111A	Intermediate Accounting I	5
ECON 111B	Intermediate Accounting II	5
ECON 111C	Intermediate Accounting III	5
ECON 112	Auditing and Attestation	5
ECON 115	Introduction to Management Sciences	5
ECON 117A	Income Tax Factors for Individuals	5
ECON 117B	Tax Factors of Business and Investment	5
ECON 119	Advanced Accounting	5
ECON 136	Business Strategy	5
ECON 138	The Economics and Management of Technology and Innovation	5
ECON 139A	The Economics of Electronic Commerce	5
ECON 139B	E-Commerce Strategy	5
ECON 161A	Marketing	5
ECON 161B	Marketing Research	5
ECON 164	Economics and the Telecommunications Industry	5
ECON 188	Management in the Global Economy	5
ECON 194	Advanced Topics in Management	5

Electives

Disciplinary Communication (DC) Requirement

All undergraduate majors must satisfy the campus' disciplinary communication (DC) requirement. The DC requirement in economics is satisfied by completing one of the following courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Comprehensive Requirement

The comprehensive requirement is satisfied by passing the following intermediate core courses with grades of C/P or better at UC Santa Cruz:

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Frosh Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	Course MATH 3 or AM 3 College 1	Course ECON 1 AM 11A WRIT 1/WRIT 1E (if needed)	Course ECON 2 AM 11B	
2nd (soph)	ECON 100A WRIT 2*	ECON 100B STAT 17 STAT 17L	ECON 113	
3rd (junior)	ECON elective ECON elective	ECON elective Field Study (Internship) *optional*	ECON elective Field Study *optional*	
4th (senior)	ECON elective	ECON 104 or ECON 197	ECON elective	

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses shown above satisfy the MF, PE, and SR and, if ECON 193 is completed, then the PR general education requirements. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education requirements as well as credit requirements.

Sample Transfer Planner

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	AM 11B ECON elective	ECON 100A	ECON 100B ECON elective STAT 17 STAT 17L	
4th (senior)	ECON 113	ECON elective	Field Study *optional*	

ECON elective	ECON 104 or ECON 197 (DC) Field Study (Internship) *optional*	ECON elective

This planner assumes that a student has completed the major preparation requirements (ECON 1, ECON 2 and at least first calculus course) before coming to UC Santa Cruz. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UCSC general education requirements as well as credit requirements. Transfer students are encouraged to complete "core courses," ECON 100A, ECON 100B and ECON 113 by fall of their fourth year. Core courses are offered every summer.

GLOBAL ECONOMICS B.A.

Information and Policies

Introduction

Global economics is an economics major focusing on global issues with an interdisciplinary element. It is designed to prepare students to understand and participate in the global economy; the program aims to deepen the student's knowledge of economics within a culturally and linguistically diverse world. The major is particularly useful to students contemplating careers at home or overseas in international relations, in international business, or with international organizations. Hence the major requires overseas study, regional area study, and second-language proficiency in addition to the basic economics requirements and additional emphasis in international economics.

Program Learning Outcomes

Program learning outcomes for economics, economics and mathematics, business management economics, and global economics majors:

Critical Thinking Skills: Students are expected to be able to apply economic analysis to everyday problems in real world situations, to understand current events and evaluate specific policy proposals, and to evaluate the role played by assumptions in arguments that reach different conclusions to a specific economic or policy problem.

Quantitative Reasoning Skills: Students are expected to understand how to use empirical evidence to evaluate the validity of an economic argument, use statistical methodology, interpret statistical results, and conduct appropriate statistical analysis of data.

Problem-Solving Skills: Students are expected to be able to solve problems that have clear solutions and to address problems that do not have clear answers and explain conditions under which these solutions may be correct.

Specialized Knowledge and Application of Skills: Students are expected to develop critical and quantitative thinking skills specific to business and accounting.

Communication Skills: Students are expected to be able to communicate effectively in written, oral, and graphical form about specific issues, and to formulate well-organized written arguments that state assumptions and hypotheses supported by evidence.

Academic Advising for the Program

The Economics Department office is located at 401 Engineering 2. There are four staff undergraduate advisors, peer advisors (except summer), a field study coordinator, as well as a faculty director for each of the Economics Department's undergraduate programs. Our faculty, staff advisors and peer advisors play an important role in advising on all aspects of the major and assisting you to maximize your educational opportunities. Please check the department website for more information about drop-in hours.

Getting Started in the Major: Frosh

The economics curriculum begins at the introductory level: no specific high school preparation is required.

This is a course-intensive and sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at the University of California, Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

This major requires students to complete a language of their choosing through level 6 (two year equivalent). Students interested in this major should start taking language courses in their first year at UC Santa Cruz. For more information, please review Language Placement.

All majors study a substantial core of economic theory and statistical methods and they then choose among a wide variety of subfields.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

One of the following:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Plus both of the following:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Getting Started in the Major: Transfer Students

The department requests that new transfer students send unofficial transcripts of any previously completed coursework to econ_ugrad_coor@ucsc.edu. For coursework completed outside of a California community college submitting course syllabi for articulation purposes is required. The advisors will then be able to make course recommendations for fall quarter or summer session courses prior to the first fall quarter.

This major requires students to complete a language of their choosing through level 6 (two-year equivalent). Students with prior knowledge in a foreign language need to contact the language department for assessment of their language skills. For more information, please review Language Placement.

All transfer students must complete the three-course comprehensive requirement (ECON 100A, ECON 100B, ECON 113) and the disciplinary communication requirement (ECON 104 or ECON 197) at UC Santa Cruz. Global economics majors must take at least two of their upper-division economics electives at UC Santa Cruz. Courses taken for credit elsewhere may not be repeated for credit here.

Students who were admitted under a different proposed major and have advanced standing when they come to UCSC require permission from the department to change into the major. Admission to the major is not guaranteed.

Major Qualification Policy and Declaration Process

Major Qualification

The Economics Department administers four undergraduate majors: economics, business management economics, global economics, and economics/mathematics.

(Qualifications for the environmental/economics combined major differ from above; see environmental studies for details.) Students should declare the major or minor as soon as they have completed these requirements.

Students must complete three courses, with combined GPA of 2.8 or higher, to qualify for entry to the global economics major:

Take these courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Plus one of the following calculus courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Appeal Process

Students who have a grade point average (GPA) lower than 2.8 in ECON 1, ECON 2, and the calculus course are not eligible to declare an economics major. Students not eligible for the economics majors may appeal by submitting a letter to the Economics Department. The appeal letter must be filed no later than the first quarter of their junior year. Please check the "Appeals" area on the department web site for further information on declaring a major or appealing ineligibility and deadlines.

How to Declare a Major

Students can initiate the major declaration process by completing the Petition for Major/Minor Declaration and the Academic Planning forms and by supplying evidence of their grades in the three pre-major courses. Candidates must meet major qualifications listed above under "Major Qualification" prior to declaring the major.

Declaration sessions are mandatory for those seeking to declare the major/minor. If you cannot attend a workshop, you must meet with an economics peer advisor first before obtaining signatures from a staff advisor. Workshop schedules and drop-in advising hours are available on the department's website, on our bulletin board outside the office, and in the department office. All students are advised to bring verification of their grades, which can be printed from the student portal, to the declaration of major advising session. Students who do not bring in verification of their grades could have the approval of their petition for major declaration delayed by up to two working days.

Letter Grade Policy

All classes included for major qualification determination must be taken for a letter grade. If students have not taken a letter grade, they must appeal by submitting a letter to the Economics Department.

The Economics Department allows classes toward major requirements taken for the Pass/No Pass (P/NP) grade notification. We recommend no more than two courses in the major be taken P/NP. Overall no more than 25 percent of a student's UC Santa Cruz classes can be taken P/NP.

[Optional Catchall]

Course Substitution Policy

For courses not already articulated through assist.org, students must present their transfer credit summary (available on the student portal) and course syllabi or descriptions to an Economics Department advisor. The department approves courses applicable for economics prerequisites and major requirements. The course substitution form can be found on the department website under "Forms for students."

Double Majors and Major/Minor Combinations

Policy

Study Abroad

UC Education Abroad Program (UCEAP) is the University of California's official study abroad program and a global leader in international education for over 50 years. All the benefits of home—UC credit, grades, and financial aid—travel with you. Approximately 600 UC Santa Cruz students study abroad on UCEAP every year.

Students can petition UCEAP courses to count toward their major or minor requirements. In addition, there are scholarships available and financial aid can be applied to UCEAP programs. UCEAP provides opportunities in:

- 46 countries around the world
- 420 summer quarter, semester or yearlong programs
- Internships, volunteer work, and research programs

Economics at the Autonomous University of Barcelona -- Direct Exchange Program

Located in Spain, the Autonomous University of Barcelona (UAB) is an institution known for its excellent research and teaching. Unlike UCEAP, this direct exchange program through the UC Santa Cruz Economics Department offers the opportunity for students to enroll in three courses that will fulfill economics major requirements and one course outside of economics. Students must take a total of four courses and will receive transfer credit for all courses. Along with enrolling in courses, students may enjoy the renowned architecture, food, and art. This program is open to students who are economics majors in junior or senior class standing and have a 3.0 cumulative GPA or above. Students must also be in good academic standing and 18 years of age or older at the time of departure to Barcelona. Economics courses at UAB may also be taken in Spanish if students have completed two years of university-level Spanish with a minimum GPA of 2.85 in those language courses.

Honors

The Economics Department awards honors and highest honors to students who have completed a major program with superior or exceptional academic work. All students are reviewed for honors during the quarter in which they graduate. Honors decisions are made based on performance in upper-division economics courses with particular emphasis on performance in the three core courses (ECON 100A, ECON 100B, and ECON 113). Typically, honors are awarded to between 10 and 15 percent of each year's graduating class.

[Optional Catchall]

Independent Study

Students are encouraged to petition for independent study on topics of special interest to them. ECON 199, Tutorial, may be used as only one of the upper-division courses required for the major or minor.

Field-Study Program

The Economics Department offers its majors the opportunity to integrate their academic knowledge with career-related work in areas connected to economics or business. Students secure field-study internships under the supervision of a faculty sponsor and a professional at the workplace. Students can participate in a wide variety of field-study opportunities such as with accounting firms, community non-profits, government agencies, brokerage firms, marketing agencies, banks, and businesses in Santa Cruz and beyond. Students apply for field-study a quarter in advance. Participation in the field-study program requires at least junior standing, completion of courses ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), and ECON 113 as well as good academic standing. Students may earn a maximum of 10 academic credits and complete up to two quarters in a field placement. A 5-credit field study requires 12-14 hours per week spent working on internship duties (a 2-credit field study requires 5-6 hours per week spent on internship duties) and completion of an academic project supervised by a faculty sponsor. Time spent toward the academic requirements set by the faculty sponsor is not included in the 12-14 internship hours spent at the field placement.

Along with the training and supervision by a professional at the workplace, students receive guidance from a faculty sponsor who directs their academic project. Students earn credit through the completion of this project and the job supervisor’s evaluation of performance. Economics field-study courses do not satisfy any upper-division requirements for the major and are available as Pass/No Pass only.

Interested students should make an appointment or email econintern@ucsc.edu for assistance.

Combined Majors

The Economics Department offers the following combined majors: economics/mathematics and environmental studies/economics. Requirements for these majors may be reviewed under their separate entries in this catalog.

Requirements and Planners

Course Requirements

ECON 1 and ECON 2, AM 11A, AM 11B, ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), ECON 113, and STAT 17 STAT 17L or equivalent courses are required for all economics majors and are prerequisites for most upper-division courses. Students are urged to complete these courses as soon as possible. Students who are committed to the major early in their academic career, should plan to complete at least ECON 1, ECON 2, AM 11A, AM 11B, STAT 17 STAT 17L, and preferably ECON 100A, ECON 100B, and ECON 113 by the end of their sophomore year. Students are also encouraged to choose the letter grade option when taking these courses.

Students who major in global economics are required to take the following courses:

Lower-Division Courses

Take the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Plus one of the following mathematics content options:

	Either these courses	
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 11A	Calculus with Applications	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
AM 11B	Mathematical Methods for Economists II	5

Plus the following statistics courses:

STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Enrollment in STAT 17 requires concurrent enrollment in STAT 17L (2-credit lab). Any transfer credit for STAT 17 and STAT 17L will be evaluated on a case-by-case basis. Students should contact the undergraduate advisors by emailing econ_ugrad_coor@ucsc.edu.

Foreign Language Study

The global economics major requires a foreign language since students who plan to work in the larger world must have fluency in a language other than English. This language should be relevant to their regional area of interest. Students can meet this requirement be completing level 6 of a language course offered at UC Santa Cruz or its equivalent. For languages not offered at UCSC, or languages not offered through level 6, contact the department.

Upper-Division Courses

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Plus one of the following disciplinary communication (DC) courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Plus four electives:

Students complete four additional upper-division electives as follows:

Students must take three from the following list:

ECON 120	Development Economics	5
ECON 121	Economic Growth	5
ECON 131	International Financial Markets	5
ECON 140	International Trade	5
ECON 141	International Finance	5
ECON 142	Advanced Topics in International Economics	5
ECON 143	Policy Issues in the International Economy	5
ECON 149	The Economies of East and Southeast Asia	5
ECON 156	Health Economics and Policy	5
ECON 188	Management in the Global Economy	5

Plus one additional economics course:

The fourth elective may be any additional 5-credit economics course numbered 100-189.

Area Study

The major requires students to take two additional courses selected from the offerings of departments other than economics in order to learn about the history, political economy, or culture of some other part of the world. These can be lower- or upper-division courses; the courses must focus on the area of the student's language study and overseas study. The Economics Department provides a list of approved courses as a reference. The area studies course plan must be pre-approved by an economics advisor. Substitute courses are welcomed when they are part of the student's overseas program or from other UC Santa Cruz departments, but must be approved by an advisor for the global economics major.

Study Abroad

All students are required to spend at least one term abroad in an approved course of study in their regional area of concentration; students may also choose a year-long program. Typically, a student will do this through the UC Education Abroad Program (UCEAP). Numerous overseas study sites are available through UCEAP. Students desiring to fulfill their required study abroad through UCEAP must apply directly to the UCEAP office for the selected program and are subject to the admission requirements determined by UCEAP. In countries and at universities where UCEAP programs are not available, students may make their own arrangements for study with the permission of the director of the program. Students may use the time abroad to further their language study, to meet the area study course requirements, to meet some of the upper-division economics course requirements, or to take courses unrelated to the major. Students who are not accepted to an overseas program or who cannot meet the language or area course requirements are advised to complete the general economics major as an alternative.

Electives

Disciplinary Communication (DC) Requirement

All undergraduate majors must satisfy the campus' disciplinary communication (DC) requirement. The DC requirement in economics is satisfied by completing one of the following courses:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Comprehensive Requirement

The comprehensive requirement is satisfied by passing the following intermediate core courses with grades of C/P or better here at UC Santa Cruz:

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Students may elect to complete a senior thesis with consent of an instructor in addition to completing the intermediate core courses.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Frosh Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3 Language College 1	ECON 1 AM 11A Language WRIT 1/WRIT 1E (if needed)	ECON 2 AM 11B Language	
2nd (soph)	ECON 100A Language WRIT 2*	ECON 100B STAT 17 STAT 17L Langua	ECON 113 Language	

		ge	
3rd (junior)	**Study abroad for at least one quarter.** Students can apply up to two courses from study abroad toward major requirements. Could be upper-division ECON electives or Area Studies or a combination of both.		
4th (senior)	ECON elective	ECON 104 or ECON 197	ECON elective
	ECON elective	ECON elective	Field Study (optional)
	Area Study	Field Study Internship (optional)	Area Study

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses shown above satisfy the MF, PE, and SR and, if ECON 193 is completed, then the PR general education requirements. In addition, to the specific courses shown in these planners, a student must complete courses satisfying all UC Santa Cruz general education requirements.

Sample Transfer Planner

	Fall	Winter	Spring	Summer
Entering				**Study abroad** (or fall quarter senior year). Students can apply up to two courses from study abroad toward major requirements. Could be upper-division ECON electives or Area Studies or a combination of both. KRSG 1T Summer Edge (optional)
3rd (junior)	AM 11B	ECON 100A	ECON 100B	
	ECON elective	Area Study	ECON elective	
	STAT 17 STAT 17L		Area Study	
4th (senior)	ECON 113	ECON elective	Field Study (optional)	
	ECO	ECON		

N elect ive	104 or ECON 197 Field Study interns hip (optio nal)

This planner assumes that a student has completed two years of foreign language study, and major preparation requirements (ECON 1, ECON 2 and at least first calculus course) before coming to UC Santa Cruz. In addition, to the specific courses shown in these planners, a student must complete courses satisfying the UCSC general education requirements. Transfer students are encouraged to complete "core courses," ECON 100A, ECON 100B and ECON 113 by fall of their fourth year. Core courses are offered every summer.

ECONOMICS/MATHEMATICS COMBINED B.A.

Information and Policies

Introduction

The major in economics and mathematics is designed to meet the needs of undergraduate students who plan to pursue doctoral study in economics or business, or who wish to pursue a career as an actuary or other professional requiring a sophisticated understanding of economics and mathematics. The major combines the main undergraduate content of both economics and mathematics within a programmatic structure that joins the two disciplines. It provides a coursework combination required to prepare for an economics doctoral (Ph.D.) program, or for a group of technically demanding professional careers.

Program Learning Outcomes

Program learning outcomes for economics, economics and mathematics, business management economics, and global economics majors:

Critical Thinking Skills: Students are expected to be able to apply economic analysis to everyday problems in real world situations, to understand current events and evaluate specific policy proposals, and to evaluate the role played by assumptions in arguments that reach different conclusions to a specific economic or policy problem.

Quantitative Reasoning Skills: Students are expected to understand how to use empirical evidence to evaluate the validity of an economic argument, use statistical methodology, interpret statistical results, and conduct appropriate statistical analysis of data.

Problem-Solving Skills: Students are expected to be able to solve problems that have clear solutions and to address problems that do not have clear answers and explain conditions under which these solutions may be correct.

Specialized Knowledge and Application of Skills: Students are expected to develop critical and quantitative thinking skills specific to business and accounting.

Communication Skills: Students are expected to be able to communicate effectively in written, oral, and graphical form about specific issues, and to formulate well-organized written arguments that state assumptions and hypotheses supported by evidence.

Academic Advising for the Program

The Economics Department office is located at 401 Engineering 2. There are four staff undergraduate advisors, peer advisors (except summer), a field study coordinator, as well as a faculty director for each of the Economics Department's undergraduate programs. Our faculty, staff advisors and peer advisors play an important role in advising on all aspects of the major and assisting you to maximize your educational opportunities. Please check the department website for more information about drop-in hours.

Getting Started in the Major: Frosh

The economics curriculum begins at the introductory level: no specific high school preparation is required.

This is a course-intensive and sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at the University of California, Santa Cruz.

Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website.

All majors study a substantial core of economic theory and statistical methods and they then choose among a wide variety of subfields.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

One of these courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Students with credit in MATH 11A or AM 11A as their first calculus course must have a grade of "B" or better in order to qualify for the next calculus course in the sequence for this major, MATH 19B.

And both of these courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Getting Started in the Major: Transfer Students

The department requests that new transfer students send unofficial transcripts of any previously completed coursework to econ_ugrad_coor@ucsc.edu. For coursework completed outside of a California community college, submitting course syllabi for articulation purposes is required. The advisors will then be able to make course recommendations for fall quarter or summer session courses prior to the first fall quarter.

All transfer students must complete the three-course senior comprehensive requirement (ECON 100A, ECON 100B, ECON 113) and the DC requirement at UC Santa Cruz. Economics/mathematics majors must take at least one of their upper-division economics electives at UC Santa Cruz. Courses taken for credit elsewhere may not be repeated for credit here.

Students who were admitted under a different proposed major and have advanced standing when they come to UCSC require permission from the department to change into the major. Admission to the major is not guaranteed.

Students who have met all lower-division requirements through articulations before transferring will need at least six economics and five mathematics upper-division courses at UC Santa Cruz to complete the major.

Major Qualification Policy and Declaration Process

Major Qualification

The Economics Department administers four undergraduate majors: economics, business management economics, global economics, and economics/mathematics. The qualification requirements for major declaration are the same for all four.

Students must complete three courses, with combined GPA of 2.8 or higher, to qualify for entry to the economics/mathematics major:

Take all of the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Appeal Process

Students who have a grade point average (GPA) lower than 2.8 in ECON 1, ECON 2, and the calculus course are not eligible to declare an economics major. Students not eligible for the economics majors may appeal by submitting a letter to the Economics Department. The appeal letter must be filed no later than the first quarter of their junior year. Please check the "Appeals" area on the department website for further information on declaring a major or appealing ineligibility and deadlines.

How to Declare a Major

Students can initiate the major declaration process by completing the Petition for Major/Minor Declaration and the Academic Planning forms and by supplying evidence of their grades in the three pre-major courses. Candidates must meet major qualifications listed above prior to declaring the major.

Declaration sessions are mandatory for those seeking to declare the major or minor. If you cannot attend a workshop, you must meet with an economics peer advisor first before obtaining signatures from a staff advisor. Workshop schedules and drop-in advising hours are available online, on our bulletin board outside the office, and in the department office. All are advised to bring in verification of their grades, which can be printed off the student portal, to the declaration of major advising session. Students who do not bring in verification of their grades could have the approval of their petition for major declaration delayed by up to two working days.

Letter Grade Policy

All classes included for major qualification determination must be taken for a letter grade. If students have not taken a letter grade, they must appeal by submitting a letter to the Economics Department.

The Economics Department allows classes toward major requirements taken for the Pass/No Pass (P/NP) grade notification. We recommend no more than two courses in the major be taken P/NP. Overall no more than 25 percent of a student's UC Santa Cruz classes can be taken P/NP.

[Optional Catchall]

Course Substitution Policy

For courses not already articulated through assist.org, students must present their transfer credit summary (available on the student portal) and course syllabi or descriptions to an Economics Department advisor. The department approves courses applicable for economics prerequisites and major requirements. The course substitution form can be found on the department website under "Forms for students."

Double Majors and Major/Minor Combinations Policy

Study Abroad

UC Education Abroad Program (UCEAP) is the University of California's official study abroad program and a global leader in international education for more than 50 years. All the benefits of home—UC credit, grades, and financial aid—travel with you. Approximately 600 UC Santa Cruz students study abroad on UCEAP every year.

Students can petition UCEAP courses to count toward their major or minor requirements. In addition, there are scholarships available and financial aid can be applied to UCEAP programs. UCEAP provides opportunities in:

- 46 countries around the world
- 420 summer quarter, semester or yearlong programs
- Internships, volunteer work, and research programs

Economics at the Autonomous University of Barcelona--Direct Exchange Program

Located in Spain, the Autonomous University of Barcelona (UAB) is an institution known for its excellent research and teaching. Unlike UCEAP, this direct exchange program through the UC Santa Cruz Economics Department offers the opportunity for students to enroll in three courses that will fulfill economics major requirements and one course outside of economics. Students must take a total of four courses and will receive transfer credit for all courses. Along with enrolling in courses, students may enjoy the renowned architecture, food, and art. This program is open to students who are economics majors in junior or senior class standing and have a 3.0 cumulative GPA or above. Students must also be in good academic standing and 18 years of age or older at the time of departure to Barcelona. Economics courses at UAB may also be taken in Spanish if students have completed two years of university-level Spanish with a minimum GPA of 2.85 in those language courses.

Honors

The Economics Department awards honors and highest honors to students who have completed a major program with superior or exceptional academic work. All students are reviewed for honors during the quarter in which they graduate. Honors decisions are made based on performance in upper-division economics courses with particular emphasis on performance in the three core courses (ECON 100A, ECON 100B, and ECON 113). Typically, honors are awarded to between 10 and 15 percent of each year's graduating class.

[Optional Catchall]

Independent Study

Students are encouraged to petition for independent study on topics of special interest to them. ECON 199, Tutorial, may be used as only one of the upper-division courses required for the major or minor.

Field-Study Program

The Economics Department offers its majors the opportunity to integrate their academic knowledge with career-related work in areas connected to economics or business. Students secure field-study internships under the supervision of a faculty sponsor and a professional at the workplace. Students can participate in a wide variety of field-study opportunities such as with accounting firms, community non-profits, government agencies, brokerage firms, marketing agencies, banks, and businesses in Santa Cruz and beyond. Students apply for field-study a quarter in advance. Participation in the field-study program requires at least junior standing, completion of courses ECON 100A (or ECON 100M), ECON 100B (or ECON 100N), and ECON 113 as well as good academic standing. Students may earn a maximum of 10 academic credits and complete up to two quarters in a field placement. A 5-credit field study requires 12-14 hours per week spent working on internship duties (a 2-credit field study requires 5-6 hours per week spent on internship duties) and completion of an academic project supervised by a faculty sponsor. Time spent toward the academic requirements set by the faculty sponsor is not included in the 12-14 internship hours spent at the field placement.

Along with the training and supervision by a professional at the workplace, students receive guidance from a faculty sponsor who directs their academic project. Students earn credit through the completion of this project and the job supervisor's evaluation of performance. Economics field-study courses do not satisfy any upper-division requirements for the major and are available as Pass/No Pass only.

Interested students should make an appointment or email econintern@ucsc.edu for assistance.

Combined Majors

The Economics Department offers the following combined majors: economics/mathematics and environmental studies/economics. Requirements for these majors may be reviewed under their separate entries in this catalog.

Requirements and Planners

Course Requirements

Lower-Division Courses

Economics Required Courses

Take the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Mathematics Required Courses

Take the following courses:

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 21	Linear Algebra	5

Plus one of the following options:

	Either this course	
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 23A	Vector Calculus	5

MATH 23B	Vector Calculus	5

Plus the following statistics courses:

STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Enrollment in STAT 17 requires concurrent enrollment in STAT 17L (2-credit lab). Any transfer credit for STAT 17 and STAT 17L will be evaluated on a case-by-case basis. Students should contact the undergraduate advisors by emailing econ_ugrad_coor@ucsc.edu.

Upper-Division Courses

Economics Required Courses

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Mathematics Required Courses

Take both of these courses:

MATH 100	Introduction to Proof and Problem Solving	5
MATH 105A	Real Analysis	5

Electives

Students complete five electives. Two courses in economics and three in mathematics, as follows:

Economics Electives

Choose two from the following:

ECON 101	Managerial Economics	5
ECON 114	Advanced Quantitative Methods	6
ECON 115	Introduction to Management Sciences	5
ECON 120	Development Economics	5
ECON 121	Economic Growth	5
ECON 124	Machine Learning for Economists	5
ECON 125	Economic History of the U.S	5
ECON 128	Poverty and Public Policy	5
ECON 130	Money and Banking	5
ECON 131	International Financial Markets	5
ECON 133	Security Markets and Financial Institutions	5
ECON 135	Corporate Finance	5
ECON 136	Business Strategy	5
ECON 138	The Economics and Management of Technology and Innovation	5
ECON 139A	The Economics of Electronic Commerce	5
ECON 139B	E-Commerce Strategy	5
ECON 140	International Trade	5
ECON 141	International Finance	5
ECON 142	Advanced Topics in International Economics	5
ECON 149	The Economies of East and Southeast Asia	5
ECON 150	Public Finance	5
ECON 156	Health Economics and Policy	5
ECON 159	The Economics of Organizations	5
ECON 160A	Industrial Organization	5
ECON 160B	Government and Industry	5
ECON 161A	Marketing	5
ECON 164	Economics and the Telecommunications Industry	5
ECON 165	Economics as an Experimental Science	5
ECON 166A	Game Theory and Applications I	5
ECON 166B	Game Theory and Applications II	5
ECON 169	Economic Analysis of the Law	5
ECON 170	Environmental Economics	5
ECON 171	Natural Resource Economics	5
ECON 175	Energy Economics	5
ECON 180	Labor Economics	5
ECON 182	Unemployment	5
ECON 183	Women in the Economy	5
ECON 188	Management in the Global Economy	5

Mathematics Electives

Choose three three from the following:

Note: Lecture/lab combinations (i.e., MATH 145 and MATH 145L, MATH 148 and MATH 148L) count as one course.

AM 114	Introduction to Dynamical Systems	5
AM 147	Computational Methods and Applications	5
MATH 105B	Real Analysis	5
MATH 106	Systems of Ordinary Differential Equations	5
MATH 107	Partial Differential Equations	5
MATH 114	Introduction to Financial Mathematics	5
MATH 115	Graph Theory	5

MATH 116	Combinatorics	5
MATH 117	Advanced Linear Algebra	5
MATH 124	Introduction to Topology	5
MATH 134	Cryptography	5
MATH 140	Industrial Mathematics	5
MATH 145	Introductory Chaos Theory	5
MATH 145L	Introductory Chaos Laboratory	1
MATH 148	Numerical Analysis	5
MATH 148L	Numerical Analysis Laboratory	1
MATH 152	Programming for Mathematics	5
STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

Disciplinary Communication (DC) Requirement

All undergraduate majors must satisfy the campus' Disciplinary Communication (DC) requirement. The DC requirement in the economics/mathematics combined major is satisfied by completing one of the following options:

Option 1: Economics

Take one of the following:

ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 197	Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy	5

Option 2: Mathematics

Take this course

MATH 100	Introduction to Proof and Problem Solving	5

Plus one of the following courses:

MATH 194	Senior Seminar	5
MATH 195	Senior Thesis	5

Comprehensive Requirement

The comprehensive requirement is satisfied by passing the following intermediate core courses with grades of C/P or better here at UC Santa Cruz:

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Frosh Planner

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 19A College 1 WRIT 2*	MATH 19B ECON 1 WRIT 1/WRIT 1E (if needed)	ECON 2	
2nd (soph)	MATH 23A MATH 21	ECON 100A MATH 23B	ECON 100B MATH 100	
3rd (junior)	MATH 105A STAT 17 STAT 17L	ECON 113 Math elective	Econ elective Math elective	
4th (senior)	Econ elective	Math elective ECON 104 or	Field Study (optional)	

				ECON 197
				Field Study internship (optional)

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses shown above satisfy the MF, PE, and SR and, if ECON 193 is completed, then the PR general education requirements. In addition, to the specific courses shown in these planners, a student must complete courses satisfying all UC Santa Cruz general education requirements as well as credit requirements.

Sample Transfer Planner One

	Fall	Winter	Spring	Summer
Entering				KRSG 1T
				Summer Edge (optional)
3rd (junior)	MATH 19B	MATH 22 or MATH 23A	MATH 23B*	
	MATH 21	MATH 100	Math elective	
	Econ elective			
4th (senior)	ECON 100A	ECON 113	ECON 100B	
	MATH 105A	Econ elective	Math elective	
	STAT 17 STAT 17L	Math elective	ECON 104 or ECON 197	

*If MATH 23A is taken in the winter term, otherwise ECON 100A

This planner assumes that a student has completed the following major requirements: ECON 1, ECON 2, MATH 19A. In addition, to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education requirements as well as credit requirements.

Sample Transfer Planner Two

	Fall	Winter	Spring	Summer
3rd (junior)	ECON 100A	ECON 100B	ECON 113	
	MATH 23B	MATH 21	MATH 100	
		STAT 17 STAT 17L		
4th (senior)	MATH 105A	Econ elective	Econ elective	
	Math elective	ECON 104 or ECON 197	Math elective	
		Math elective	Field Study (optional)	

This planner assumes that the student has completed the following major requirements: ECON 1, ECON 2, MATH 19A, MATH 19B, MATH 23A. In addition to the specific courses shown in these planners, a student must complete courses satisfying the UC Santa Cruz general education requirements as well as credit requirements. Transfer students are encouraged to complete "core courses," ECON 100A, ECON 100B and ECON 113 by fall of their fourth year. Core courses are offered every summer.

ECONOMICS MINOR

Course Requirements

Students earn a minor in economics by completing the following requirements. Courses may be taken for a letter grade or pass/no pass, but any courses taken pass/no pass cannot later be used toward an economics major since majors require letter grades. For that reason, taking courses for a letter grade is encouraged, but not required.

Lower-Division Courses

Take these courses

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5

Plus one of the following options

	Either these courses	
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
MATH 22	Introduction to Calculus of Several Variables	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
AM 30	Multivariate Calculus for Engineers	5
	or these courses	
MATH 11A	Calculus with Applications	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
AM 11B	Mathematical Methods for Economists II	5

Plus the following statistics courses:

STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Enrollment in STAT 17 requires concurrent enrollment in STAT 17L (2-credit lab). Any transfer credit for STAT 17 and STAT 17L will be evaluated on a case-by-case basis. Students should contact the undergraduate advisors by emailing econ_ugrad_coor@ucsc.edu.

Upper-Division Courses

Choose one of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus one of the following courses:

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5

Plus the following course:

ECON 113	Introduction to Econometrics	5

Plus three economics electives

Students complete three additional 5-credit electives chosen from ECON 100-189, excluding ECON 104. No course may satisfy more than one requirement of the minor.

QUANTITATIVE ECONOMICS AND FINANCE M.S.

Introduction

The M.S. program in quantitative economics and finance is a one-year Plan II (capstone) master's program that provides analytical graduate training designed to prepare students for careers in business, international and domestic banking, consulting firms, government, and nonprofit organizations. The program combines core training in economic theory with meaningful applications that students are likely to face in their professional careers. Students have an option to choose one of three tracks: quantitative economics, finance or general emphasis. Compared to a typical M.A. in economics, our program has a more applied orientation. Compared to most M.B.A. programs, our program provides more training in economics, statistics, and econometrics. The curriculum stresses mastery of core principles in micro and macroeconomics and finance. In addition, each student learns how to solve practical problems and to communicate the results clearly. The emphasis of the program, and perhaps its greatest strength, is exposing students to cutting edge data analytics approaches, advanced econometric techniques, statistical and data analysis software packages (R, Stata, Python), and large-scale financial and microeconomic data sets throughout their coursework.

International students in the M.S. program are eligible to apply for optional practical training (OPT) through the Global Engagement Division. Our M.S. program in applied economics and finance is also eligible for the OPT STEM Extension. For more information please visit the International Student Services and Programming (ISSP) website.

Past graduates of this program have gone on to successful careers in the private and public sectors with placements at a diverse range of companies and institutions, including tech giants such as Apple, Amazon, Google, Twitter; smaller tech firms such as ZipRecruiter, Zillow, Expedia; biotech and industrial companies including Genentech and Toyota; financial companies including traditional such as Bloomberg, Citigroup, Morgan Stanley, new such as SoFi, as well as regional and foreign commercial banks; all of the "Big Four" accounting firms; and government and regulatory institutions such as Federal Reserve, the California Franchise Tax Board, State Bar of California, and local governments and agencies. Other graduates have gone on to earn Ph.D. degrees in economics.

Requirements

Course Requirements

All M.S. students take the same courses in the fall quarter. In winter and spring, course requirements will vary based on the track that the student pursues. The three tracks offered are quantitative economics, finance, and general emphasis. Please refer to the capstone sections for your chosen track, listed in the table below, when selecting winter and spring courses. Students may also take additional classes if they desire.

Courses by Track and Quarter:

	Quantitative Econ	Finance	General
Fall	ECON 186 (pre-fall) ECON 200 ECON 216 ECON 233 ECON 294A	ECON 186 (pre-fall) ECON 200 ECON 216 ECON 233 ECON 294A	ECON 186 (pre-fall) ECON 200 ECON 216 ECON 233 ECON 294A
Winter	ECON 217 ECON 294A ECON 294B Elective Elective	ECON 217 or ECON 114 ECON 294A ECON 294B Elective Elective	ECON 217 or ECON 114 ECON 294A ECON 294B Elective Elective
Spring	ECON 202 ECON 294B Elective Elective	ECON 202 ECON 294B Elective Elective	ECON 202 ECON 294B Elective Elective
Electives (5 credits)	ECON 201, 259B+ others	ECON 231, 234, 235, 236+ others	ECON 201, 236+ others
Capstone Sections	4 from:ECON 200 ECON 201 ECON 216 ECON 217 ECON 259B	4 from:ECON 231 ECON 233 ECON 234 ECON 235 ECON 236	All:ECON 200 ECON 201 ECON 233 ECON 236

Courses and Program Requirements

Fall

ECON 186	Mathematical Methods for Economic Analysis	5
ECON 200	Microeconomic Analysis	5
ECON 216	Applied Econometric Analysis I	5
ECON 233	Finance I	5
ECON 294A	Applied Economics and Finance Laboratory	2

ECON 186 Note: M.S. students are required to enroll in and attend the in-person ECON 186 mathematics course, which is highly beneficial to students' success in the program. ECON 186 is offered as an accelerated short course taught over the three-week period immediately before the formal start of fall quarter. Students may test out of taking ECON 186 by passing an exam at any time after June 15 and by July 31.

Winter

ECON 217	Applied Econometric Analysis II	5
ECON 294A	Applied Economics and Finance Laboratory	2

ECON 294B	Applied Economics and Finance Seminar	2
	Master's elective (5 credits)	
	Master's elective (5 credits)	

Students need a minimum of 19 credits in winter quarter. UCSC students who have already taken some of the pre-approved master's elective courses as an undergraduate can use those elective courses to fulfill the master's course requirements, if they already have enough course credits to satisfy the requirements of the bachelor's degree. Students who use elective courses they have already taken previously to fulfill the requirements of the master's degree must comply with campus-wide policy which states that a minimum of 35 credits must be completed as a master's student, after the student has completed the bachelor's degree. We will follow existing campuswide policy stating that courses used to satisfy the requirements for a bachelor's major must include a minimum of 40 upper-division credits (UCSC Senate Manual 10.4.3) that are not used to satisfy the required courses or minimum credits for any other major (or in this case the master's degree). Courses used to satisfy the requirements for the master's degree cannot be used to satisfy the minimum 40 upper-division credits for the bachelor's degree.

Students who choose the general or finance track for their capstone may take ECON 114 (6 credits) instead of ECON 217.

Electives for the finance track may include ECON 231, ECON 234, ECON 235, and ECON 236. Electives for the quantitative economics track may include ECON 201 and ECON 259B. Students on the general track may choose any combination of the electives. Students on all tracks may also choose any electives from the approved electives list, but need to make sure they take the electives necessary for the capstone exam.

Please refer to capstone sections for your chosen track when selecting winter courses.

Master's elective courses must be at least 5 credits (see list of "Pre-approved M.S. Electives").

Spring

ECON 202	Macroeconomic Analysis	5
ECON 294B	Applied Economics and Finance Seminar	2
	Master's elective (5 credits)	
	Master's elective (5 credits)	

Students need a minimum of 17 credits in spring quarter. UCSC students who have already taken some of the pre-approved master's elective courses as an undergraduate can use those elective courses to fulfill the master's course requirements, if they already have enough course credits to satisfy the requirements of the bachelor's degree. Students who use elective courses they have already taken previously to fulfill the requirements of the master's degree must comply with campuswide policy which states that a minimum of 35 credits must be completed as a master's student, after the student has completed the bachelor's degree. We will follow existing campus-wide policy stating that courses used to satisfy the requirements for a bachelor's major must include a minimum of 40 upper-division credits (UCSC Senate Manual 10.4.3) that are not used to satisfy the required courses or minimum credits for any other major (or in this case the master's degree). Courses used to satisfy the requirements for the master's degree cannot be used to satisfy the minimum 40 upper-division credits for the bachelor's degree.

Electives for the finance track may include ECON 231, ECON 234, ECON 235, and ECON 236. Electives for the quantitative economics track may include ECON 201 and ECON 259B. Students on the general track may choose any combination of the electives. Students on all tracks may also choose any electives from the approved electives list, but need to make sure they take the electives necessary for the capstone exam.

Please refer to capstone sections for each track when selecting spring courses.

Master's elective courses must be at least 5 credits (see list of "Pre-approved M.S. Electives").

Electives

Students may satisfy the elective requirements by taking approved courses within the Economics Department or from another discipline. The department has assembled a list of pre-approved master's electives (curricular offerings are subject to change annually). Students will need to file a departmental petition for review and approval of courses that are not on the pre-approved elective list.

Pre-Approved M.S. Electives

Please note courses are not offered every quarter or every year.

Economics

ECON 111A	Intermediate Accounting I	5
ECON 111B	Intermediate Accounting II	5
ECON 111C	Intermediate Accounting III	5
ECON 114	Advanced Quantitative Methods	6
ECON 124	Machine Learning for Economists	5
ECON 188	Management in the Global Economy	5
ECON 201	Applications in Microeconomics	5
ECON 211C	Advanced Econometrics III	5
ECON 222	Data Science and Applied Microeconomics	5
ECON 231	International Financial Management	5
ECON 234	Financial Institutions and Markets	5
ECON 235	Corporate Finance	5
ECON 236	Financial Engineering	5
ECON 238	Market Design: Theory and Pragmatics	5
ECON 259B	Public Policy Analysis	5

Enrollment in these ECON courses requires permission of instructor: ECON 111A, ECON 111B, ECON 111C, ECON 211C.

Applied Mathematics

AM 216	Stochastic Differential Equations	5

Computer Science and Engineering (CSE)

CSE 20	Beginning Programming in Python	5
CSE 101	Introduction to Data Structures and Algorithms	5
CSE 102	Introduction to Analysis of Algorithms	5
CSE 182	Introduction to Database Management Systems	5

CSE 20 Note: As it is a lower-division course, CSE 20 does not count toward the 35 credits required by the university to obtain a master's degree. However, since it broadens the skill-set of students in the program, we allow for it as a master's elective to satisfy department requirements. Before enrolling in this course, students should take care to ensure that they will have 35 eligible credits for graduation.

CSE Pre-Approved course electives (require permission of instructor)

CSE 111	Advanced Programming	5
CSE 142	Machine Learning	5
CSE 201	Analysis of Algorithms	5
CSE 202	Combinatorial Algorithms	5
CSE 243	Data Mining	5
CSE 270B	Management of Technology II	5
CSE 271	E-Business Technology and Strategy	5
CSE 272	Information Retrieval	5
CSE 277	Random Process Models in Engineering	5

Enrollment in these computer science and engineering courses requires permission of instructor: CSE 111, CSE 142, CSE 201, CSE 202, CSE 243, CSE 270B, CSE 271, CSE 272, CSE 277.

Environmental Studies

ENVS 140	National Environmental Policy	5

Statistics

STAT 206	Applied Bayesian Statistics	5
STAT 206B	Intermediate Bayesian Inference	5
STAT 207	Intermediate Bayesian Statistical Modeling	5
STAT 208	Linear Statistical Models	5
STAT 226	Spatial Statistics	5

Capstone Requirements by Track

Students must pass a comprehensive capstone requirement in their selected track to receive their degree.

To complete the capstone exam requirement, students must declare the intended emphasis for the capstone **prior to May 1** in spring quarter.

This capstone requirement consists of a comprehensive examination, which will take place on the Friday of week nine of spring quarter. The capstone exam sections for spring courses may only include material from the first five weeks of these courses. Students who do not pass the May examination may take it again at a date scheduled by the department. Further attempts at passing the comprehensive examination will be approved by the master's committee on an appeal-only basis, with appeals only given for extraordinary or extenuating circumstances.

The comprehensive exam consists of four sections, with each section corresponding to one course required for the track. For students in the general emphasis track, the four courses are fixed, while students in the quantitative economics and finance tracks can choose four of five listed courses. Please refer to the capstone sections in the Courses by Track and Quarter table at the top.

Academic Progress

Along with enrolling in the necessary number of credits, students are expected to maintain satisfactory academic standing during their time at UC Santa Cruz. Students not making satisfactory progress will be placed on academic notice, and students will be dismissed from the program if

they do not remove their notice status within one quarter. For example, if a student is placed on notice starting in the winter quarter, they must improve to the extent that their notice status is removed by the beginning of the spring quarter.

Specifically, a student will be placed on academic notice if they fail any of the core (i.e., non-elective), 5-credit courses in the program. Students will be dismissed from the program if they fail core courses in consecutive quarters. The core courses are: ECON 200, ECON 202, ECON 216, ECON 233, and ECON 217 OR ECON 114.

Note that notice and dismissal can only be formally issued by the Graduate Division (under recommendation from the Economics Department). More details on these procedures, as well as student's right to appeal such decisions, can be found in the Graduate Division Handbook.

Applying for Graduation

By the end of the second week of instruction in the quarter you intend to graduate, you must file an "Application for Degree" form with the Division of Graduate Studies.

Optional Catchall

BACHELOR'S/MASTER'S CONTIGUOUS PATHWAY IN QUANTITATIVE ECONOMICS AND FINANCE

The Economics Department offers a Plan II (Capstone) Contiguous Bachelor's/Master's pathway in Quantitative Economics and Finance. The contiguous bachelor's/master's pathway provides highly motivated undergraduate majors the opportunity to earn separate bachelor's and master's degrees in five years. Students apply to be accepted into the contiguous bachelor's/master's pathway in consultation with their faculty undergraduate advisor, no later than the end of spring quarter of the junior year.

To be accepted to the path, students will need to prepare an application and plan for their pathway, providing evidence of solid academic performance in general and in their undergraduate major. The application should be submitted no later than June 1 of the junior year, and should include:

- A one-page personal statement describing a) the student's motivation and academic preparation for entering the pathway, b) the student's goals for the pathway, and c) future professional goals.
- A copy of unofficial transcripts. Applicants should possess an overall GPA of 3.0 or above.
- A course planner which lists when the student plans to complete the core Economics courses ECON 1, ECON 2, and ECON 100A.
- A letter of recommendation from any UC Santa Cruz faculty member attesting to the student's promise for a M.S. degree.

Students accepted to the contiguous bachelor's/master's pathway will, in their senior year, be able to apply to the Quantitative Economics and Finance M.S. through a streamlined process in the Graduate Division's admissions portal. They will be required to submit:

- A copy of unofficial transcripts. Applicants need an overall GPA of 3.0 or above.
- One letter of recommendation from any UC Santa Cruz faculty member attesting to the student's promise for a M.S. degree. The letter for admission into the pathway and the letter for the M.S. application package can be from the same faculty member, but the content of the letters must be different from each other.
- An application fee of $135 which will be reimbursed if the student enrolls in the program.

Students in the bachelor's/master's pathway who use undergraduate elective courses to fulfill the requirements of the master's degree must comply with campuswide policy which states that a minimum of 35 credits must be completed as a master's student, after the student has completed the bachelor's degree. Courses used to satisfy the requirements for the master's degree cannot be used to satisfy the minimum upper-division credits for the bachelor's degree.

ECONOMICS PH.D.

Introduction

The Ph.D. program in economics provides students with training in modern microeconomics, macroeconomics, and econometrics, combined with specialized training in the fields of international finance, international trade, economic development, monetary economics, applied microeconomics, experimental economics, and other areas.

Advancement to Candidacy

Course Requirements

First-year Ph.D. students are required to enroll in the following courses:

- ECON 210B*, and the three sequences:
- ECON 204A-ECON 204B-ECON 204C, Advanced Micro Theory I-II-III;
- ECON 205A-ECON 205B-ECON 205C, Advanced Macro Theory I-II-III; and
- ECON 211A-ECON 211B-ECON 211C, Advanced Econometrics I-II-III.

* Scheduled in pre-fall as a three-week math camp that precedes the start of fall quarter. The three sequences are taken during the traditional academic year.

First-year Ph.D. students should plan to attend an annual “Introduction to field courses" workshop to learn about course options for satisfying second-year course requirements, as described in the next paragraph.

Second-year Ph.D. students are required to complete two fields (e.g. macroeconomics, international finance, labor) based on completion of 30 credits of coursework (two courses per quarter). The fields and associated courses will be proposed by the student with guidance from the faculty and subject to the approval of the Ph.D. program director. Each field will be constructed by selecting two coherent courses from the set of second-year economics Ph.D. courses listed below. Alternative graduate economics courses that satisfy this requirement may be approved by the Ph.D. program director. See the extensive list of second year course options below.

Students are required to submit a second-year field paper which is **due on Aug. 31**, just before the start of the third year. The department's graduate online handbook details the evaluation procedure for the field papers.

Third-year Ph.D. students must attempt and pass the Oral Qualifying Exam by the end of the spring quarter (of the third year). They enroll in ECON 297A with their field paper advisor (in fall only). Each quarter, students must enroll in a workshop focused on advanced topics in their field of interest: ECON 274, ECON 275, or ECON 276. In addition, students enroll in ECON 299B, Doctoral Thesis Research (10 credits), with their advisor, each quarter.

Fourth-year Ph.D. students and beyond are focused on their dissertation research and enroll in ECON 299B, Doctoral Thesis Research (10 credits), and a workshop focused on advanced topics in their field of interest: ECON 274, ECON 275, or ECON 276.

All graduate courses must be taken for letter grade with the exception of ECON 210B, ECON 274, ECON 275, ECON 275 and courses numbered ECON 293 and higher. Only courses with a letter grade of B- or higher can be counted toward the degree requirements.

Ph.D. Courses and Program Requirements

First Year

ECON 204A	Advanced Microeconomic Theory I	5
ECON 204B	Advanced Microeconomic Theory II	5
ECON 204C	Advanced Microeconomic Theory III	5
ECON 205A	Advanced Macroeconomic Theory I	5
ECON 205B	Advanced Macroeconomic Theory II	5
ECON 205C	Advanced Macroeconomic Theory III	5
ECON 211A	Advanced Econometrics I	5
ECON 211B	Advanced Econometrics II	5
ECON 211C	Advanced Econometrics III	5
ECON 210B	Mathematical Methods for Economic Analysis	5

Second Year

Second-year Ph.D. students are required to complete 30 credits of coursework (a total of six courses, two courses per quarter). Four of these courses must be designated for field study, two courses for each of the two fields (e.g. macroeconomics, international finance, labor). The fields and associated courses will be proposed by the student with guidance from the faculty and subject to the approval of the Ph.D. program director. Each field will be constructed by selecting two coherent courses from the set of second-year economics Ph.D. courses listed below. Alternative graduate economics courses that satisfy this requirement may be approved by the Ph.D. program director.

ECON 220A	Development Economics I	5
ECON 220B	Development Economics II	5
ECON 221A	Advanced Methods in Macroeconomics I	5
ECON 221B	Advanced Methods in Macroeconomics II	5
ECON 221C	Advanced Methods in Macroeconomics	5
ECON 224	Economic Applications of Machine Learning	5
ECON 238	Market Design: Theory and Pragmatics	5
ECON 240A	International Trade I	5
ECON 240B	International Trade II	5
ECON 241A	Advanced International Finance I	5
ECON 241C	Advanced International Finance III	5
ECON 241B	Advanced International Finance II	5
ECON 250A	Applied Microeconomics I	5
ECON 250B	Applied Microeconomics II	5
ECON 250C	Applied Microeconomics III	5
ECON 270A	Advanced Topics in Microeconomics I	5
ECON 270B	Advanced Topics in Microeconomics II	5
ECON 272	Evolutionary Game Theory	5

Please note that all courses are not offered every quarter or every year.

Third Year

Students enroll in ECON 299B plus one workshop plus each quarter, and also enroll in ECON 297A in fall quarter with their second-year paper advisor.

ECON 297A	Independent Study	5
ECON 274	Macroeconomics Workshop	3
ECON 275	Applied Microeconomics Workshop	3

ECON 276	Behavioral, Experimental, and Theoretical Economics Workshop	3
ECON 299B	Doctoral Thesis Research	10

Enroll in ECON 297A in fall quarter only.

Fourth Year and Beyond

Students enroll in ECON 299B and one workshop each quarter.

ECON 274	Macroeconomics Workshop	3
ECON 275	Applied Microeconomics Workshop	3
ECON 276	Behavioral, Experimental, and Theoretical Economics Workshop	3
ECON 299B	Doctoral Thesis Research	10

Foreign Language Requirements

Teaching Requirement

Pre-Qualifying Requirements

First-year students take two written preliminary examinations; one each in Micro and Macro, in the second week after final exams in June. Students who do not pass either exam may attempt the exam again in September at a date scheduled by the department. Students who fail either exam twice are not allowed to continue in the program.

Second-year students must complete a field paper that consists of original research demonstrating the student's readiness to undertake the Ph.D. in economics. The paper is due on Aug. 31 in the summer after the second year in the program.

Qualifying Examination

Advancement to candidacy for the Ph.D. degree requires completion with satisfactory grades or better of the required coursework, preliminary examinations, the field paper, and the oral examination. The oral examination is taken after all other requirements have been completed. A student cannot advance to candidacy before clearing any incomplete grades from their record. Students are expected to complete the oral qualifying examination (QE) during the spring quarter of their third year.

Qualifying Examination Committee:

The Graduate Division sets the general structure of the QE committee. The QE committee must be made up of at least three faculty members from the department and one outside member. The chair of the student's qualifying committee may not act as the chair for the dissertation committee. Both the outside member of the QE committee and the QE chair (one of the two additional economics members) must be tenured.

The outside member may be a UC Santa Cruz faculty from another discipline, or an economics faculty member from another campus. (**NOTE:** Travel expenses of QE committee members are not covered by either the Graduate Division or the Economics Department, and students are responsible for travel expenses and lodging of committee members from other campuses). Skype/Zoom may be used during the exam for outside members.

Members of the QE committee are chosen by the student in consultation with his/her faculty advisor and already appointed committee members, approved by the department and officially appointed by the Graduate Division dean.

Post-Qualifying Requirements

[Optional Catchall]

Dissertation

Dissertation

The final requirement for the Ph.D. degree is acceptance of the student's dissertation under the rules of the academic senate. A three-member dissertation advisory committee, headed by the student's research advisor, evaluates the dissertation for the department. The dissertation advisory committee must be approved by both the economics Ph.D. committee and the Graduate Division. The committee may require a formal public defense of the dissertation.

Dissertation Committee

The Graduate Division requires that students who have passed their qualifying exams (QE) form their dissertation reading committee before they are considered advanced to candidacy.

The dissertation committee must include a minimum of three faculty members, one of whom must be designated as the dissertation advisor. Normally these readers are selected from the QE committee, but this is not required.

At least two of these readers must be members of the UC Santa Cruz Economics Department. A majority of committee members must be part of the UC Santa Cruz academic senate.

Academic Progress

The main requirements for the program are as follows:

- Students must pass all first-year courses.
- Students must pass the micro and macro preliminary exams within the maximum two attempts.
- Students must pass the 2nd-year paper, due on Aug. 31 in the summer after the second year.
- Students must pass the oral qualifying exam. This is expected to be completed by the end of the spring quarter of the third year.
- Students must pass a workshop in each quarter in years three and above.

Students who fail to meet any of these requirements within the timeline specified will be placed on academic notice with the Graduate Division. Students who fail to rectify the terms of their notice within the timeline specified in their notice will be dismissed from the program. Note that notice and dismissal

can only be formally issued by the Graduate Division (under recommendation from the Economics Department). More detail on these procedures, as well as student's right to appeal such decisions, can be found in the Graduate Division Handbook. The minimum residency requirement for a Ph.D. degree at UC Santa Cruz is six quarters. To receive a graduate degree from UC Santa Cruz, you must be registered at the Santa Cruz campus for at least three of the six quarters. A minimum of one quarter in residence must elapse between advancement to candidacy and awarding of degree.

Applying for Graduation

By the end of the second week of instruction in the quarter you intend to graduate, you must file an "Application for Degree" form with the Division of Graduate Studies.

GLOBAL ECONOMICS AREA STUDIES COURSE LIST

Area Studies

List of Approved Courses

Master list of area studies courses for global economics major. All area studies plans must be preapproved by an economics adviser. Please see the global economics major for additional program requirements.

Africa

ANTH 130A	Anthropology of Africa.	5
FMST 194G	Images of Africa	5
HISC 264	The Idea of Africa	5
HIS 158C	Slavery in the Atlantic World: Historical and Archaeological Perspectives	5
HIS 190N	Topics in African History	5
MUSC 80Q	A Survey of African Music	5
POLI 146	The Politics of Sub-Saharan Africa	5

Middle East

ANTH 130T	Religion and Politics in the Muslim World	5
ANTH 148	Gender and Global Development	5
HIS 41	The Making of the Modern Middle East	5
HIS 155	History of Modern Israel	5
HIS 156A	Art, Culture, and Mass Media in the Arab Middle East	5
MUSC 80I	Music of Modern Israel	5

Latin America

ANTH 130B	Brazil	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130U	Central America	5
HIS 11A	Latin America: Colonial Period	5
HIS 11B	Latin America: National Period	5
HIS 130	History of Modern Cuba	5
HIS 131	Women in Colonial Latin America	5
HIS 134B	History of Mexico, 1850 to Present	5
LALS 1	Introduction to Latin American and Latino Studies	5
LALS 80D	Political Change in Mexico	5
LALS 80F	Latinos in the U.S.: A Comparative Perspective	5
LALS 80X	Central American Peoples and Cultures	5
LALS 100A	Research in LALS	5
LALS 127	Genero, Nacion Y Modernidad En El Cine	5
LALS 165	Contemporary Peru	5
LALS 168	Inter-American Solidarities	5
LALS 170	Indigenous Struggles in the Americas	5
MUSC 80F	Music in Latin American Culture: Regional Traditions	5
MUSC 80Q	A Survey of African Music	5
POLI 140C	Latin American Politics	5
SPAN 156A	The Language of Latin America Cinema	5
SPAN 156E	Spanish Culture	5
SPAN 156F	El Humor en Espanol	5
SPAN 156M	Mexico and the Southwest	5

Caribbean

ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5

Asia-East Asia-Southeast Asia

ANTH 130C	Politics and Culture in China	5
ANTH 130E	Culture and Politics of Island Southeast Asia	5
ANTH 130I	Cultures of India	5
CHIN 104	Advanced Chinese: Readings in Literature	5
CHIN 105	Advanced Chinese: Readings in History	5
CHIN 107	Introduction to Classical Chinese Prose	5
CHIN 108	Introduction to Classical Chinese Poetry	5
HAVC 80	Colonial Histories and Legacies: Africa, Oceania, and the Indigenous Americas	5
HIS 40A	Early Modern East Asia	5
HIS 40B	The Making of Modern East Asia	5
HIS 44	Modern South Asia, 1500 to Present	5
HIS 80C	Global China	5
HIS 80Y	World War II Memories in the U.S. and Japan	5

HIS 140B	History of Qing China, 1644-1911	5
HIS 140C	Revolutionary China 1895-1960	5
HIS 140D	Recent Chinese History	5
HIS 140E	Women in China's Long 20th Century	5
LIT 141B	Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E	5
LIT 141C	Classical Chinese Culture and Literature, Sixth Century through 16th Century	5
HIS 147B	Political and Social History of Modern South Asia	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 150B	Tokugawa Japan	5
HIS 150C	Inventing Modern Japan: The State and the People	5
HIS 150E	History and Memory in the Okinawan Islands	5
POLI 141	Politics of China	5
POLI 140D	Politics of East Asia	5

Europe-Eastern Europe

FREN 125A	French Civilization: 19th Century	5
FREN 125B	French Civilization: 20th Century	5
FREN 136	La Francophonie	5
HAVC 30	Introduction to European Visual Culture	5
HIS 11A	Latin America: Colonial Period	5
HIS 70A	Modern European History, 1500-1815	5
HIS 70B	Modern European History, 1815-present	5
HIS 147A	History of Premodern India	5
HIS 147B	Political and Social History of Modern South Asia	5
HIS 170A	French History: Old Regime and Revolution	5
HIS 170B	French History: The 19th Century	5
HIS 172A	German History	5
HIS 172B	German Film, 1919-1945	5
HIS 178A	European Intellectual History: The Enlightenment	5
HIS 178B	European Intellectual History: The 19th Century	5
LIT 183D	Die deutsche Romantik	5
POLI 140A	European Politics	5
SPAN 156E	Spanish Culture	5

Russia

ANTH 130H	Ethnography of Russia and Eastern Europe	5
HIS 196O	Russian Revolution, 1917-1932	5

Education

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https://education.ucsc.edu/

PROGRAMS OFFERED

Education, Democracy, and Justice B.A. (p. 717)

Education Minor (General) (p. 722)

Science, Technology, Engineering, and Mathematics (STEM) Education Minor (p. 723)

Mathematics and Education MA/C Contiguous Bachelor's/Master's Pathways (p. 724)

Science Education and Education MA/C Contiguous Bachelor's/Master's Pathway (p. 726)

Critical Race and Ethnic Studies (CRES) MA/C Contiguous Bachelor's/Master's Pathway (p. 723)

Literature and Education MA/C Contiguous Bachelor's/Master's Pathway (p. 727)

Education M.A. and California Teacher Credential Program (p. 729)

Education Ph.D. (p. 733)

Education Designated Emphasis (p. 735)

OTHER PROGRAMS OF INTEREST

Latin American and Latino Studies/Education, Democracy, and Justice B.A. (p. 800)

Latin American and Latino Studies (LALS) and Education Department 4+1 Contiguous Bachelor's/Master's Pathway (p. 815)

Science Education B.S. (p. 490)

Mathematics Education B.A. (p. 406)

The purpose of the Education Department's instructional programs is to prepare all students—both undergraduates and graduates—to engage in the analysis and integration of educational theory, research, and practice for an increasingly diverse society. Our commitment is built around four interrelated domains: 1) schools, families, and communities; 2) teacher education and teacher development; 3) language, literacy, and learning; and 4) mathematics and science education. Foundational to our programs is an acknowledgment of the social, cultural, and political contexts in which all aspects of education occur.

The Education Department offers a doctor of philosophy (Ph.D.) (p. 733) program for students who have exemplary academic preparation as well as experience working in educational settings. We offer a master's level/teaching credential (MA/C) (p. 729)teacher-preparation program; an

education major, Education, Democracy and Justice B.A. (p. 717); and we have two vibrant undergraduate education minor tracks, the education minor (p. 722) and the STEM education minor (p. 723), that serve more than 300 undergraduates each year.

UNDERGRADUATE PROGRAM

The UC Santa Cruz undergraduate courses in education engage students in histories of educational thought and philosophy, the politics and economics of education, multiple approaches to learning theory and teaching pedagogy, and contemporary issues of cultural and linguistic diversity in education.

The state of California does not allow academic majors in education that lead to a teaching credential. Instead, UC Santa Cruz offers an undergraduate major in education and two minors in education for students who are considering a career in teaching or who hold a more general interest in educational studies. Please note that the major and minors in education do not provide a California Teaching Credential. Additionally, please note that the UC Santa Cruz teaching credential program is a graduate program and coursework taken in the major or minor cannot be substituted for credential requirements, except in specifically designated pathways.

In addition to students with a general interest in educational studies, the undergraduate major in education is an option for students considering a career in K-6 teaching and planning to enter a credential program after undergraduate degree completion. Students in other majors who are considering a career in K-6 or 7-12 teaching should start planning in their junior year. Find out more about K-12 school teaching careers here.

GRADUATE PROGRAMS

The master of arts (M.A.) in education and California teaching credential program prepares prospective teachers to work with California's culturally and linguistically diverse student population. Students in this program earn a master's degree and are eligible to apply for a Preliminary California Credential upon completing a 12-month, five-quarter program comprised of two summers and one academic year. Graduates of the program are prepared to teach English language learners enrolled in K–12 public schools. The program also offers the Bilingual Authorization (in Spanish) for primary language instruction or dual language immersion instruction in a K–12 setting.

The goal of the Ph.D. in education is to support graduate students in becoming creative scholars who engage in research focused on the educational needs of students from linguistic and cultural groups that have historically not fared well in our nation's public schools. To achieve this goal, this program provides students with grounding in the varieties of interdisciplinary theorizing, research methods, and applications needed to advance the study of learning and teaching for diverse student populations. The courses and research experiences are closely related to practice in K-12 classrooms and informal settings. Students in this interdisciplinary program apply tools and perspectives from education, anthropology, linguistics, philosophy, psychology, sociology, cognitive science, and cultural historical activity theory. The program integrates theory and practice to examine learning and teaching within the multiple contexts of classroom, school, family, and community. Graduates of this program will be qualified to teach and to conduct the kinds of educational research demanded by tenure-track positions in research and regional universities. Graduates may also work in non-university based institutions that focus on teacher professional development, curriculum development, and related areas of educational research and development.

EDUCATION, DEMOCRACY, AND JUSTICE B.A.

Information and Policies

Introduction

The Education, Democracy and Justice major (EDJ; pronounced as "Edge") will provide opportunities to examine critical questions, theories, practices, and research in the field of education considered broadly and not only in relation to formal schooling. Courses in the major will provide the conceptual knowledge for students to engage in critical thinking about social and policy contexts as well as everyday practices affecting inequitable structures in schooling, society, and culture that have enduring impacts on the quality of our democracy and communities. The major's course of study will explore the history and politics of education and public schooling and their relation to the formation of just and democratic societies; theories of cognition, learning, and pedagogy; and issues of equity and cultural and linguistic diversity in education and in public school policies and practices. The major will not focus on education in international contexts but will address the effects of immigration and globalization on U.S. education.

The department faculty and the program's social justice orientations bridge theory and practice, drawing on a variety of fields and areas of study in the humanities and social sciences—including sociology, psychology, anthropology, history, philosophy—as well as critical interdisciplinary theories and the learning sciences. Core required courses and elective field experiences will incorporate history and insights from action and participatory forms of research and community organizing to highlight the relationship between education and democratic politics. These studies and field experiences will ground students in an understanding of the transformative power of the linguistic, cultural, epistemic, and social resources that individuals, families, social groups, and communities bring to bear on their circumstances, and how these resources provide the foundations for personal and social change to address historic and enduring inequities that have been barriers to education as a democratic project. The aim of the EDJ major is to provide students with the knowledge, skills, and dispositions to become leaders in their communities who can impact a wide array of educational and social institutions, including schools, and put their combination of coursework, research, and fieldwork

experiences to work in improving the lives of the least advantaged to advance the welfare of all.

The Education, Democracy, and Justice (EDJ) major does not provide a professional education degree or teaching credential. However, for students interested in a future career as an elementary school teacher, it will provide a strong background for applying to a master's (M.A. or M.Ed.) or multiple subject teaching credential program. Students interested in 6-8 or 9-12 levels of teaching might wish to double-major in education to provide a strong educational context to support their major in a subject area (e.g. literature, history, science, math) if they intend to apply to a graduate program in teacher education. Students cannot teach in 9-12 grades in California schools with a single major in education. Students who complete the major with at least a 3.0 GPA along with other advised coursework and experiences will be given priority for admission into UCSC's Master of Arts and Credential program in K-5 (multiple subjects) on the recommendation of the faculty.

The Education, Democracy, and Justice (EDJ) major's sociocultural perspective emphasizes equity and social justice related education in and out of school, with a particular focus on how cognition, language, and knowledge production, circulation, and mobilization are related to social, cultural, and other identities and their processes of formation. Students will examine critical, transformative pedagogies that focus on meeting the needs of low-income, ethnically, racially, and linguistically non-dominant students and their families, and how these pedagogies support the development of more healthy and flourishing children and youth and a more just and democratic society.

Program Learning Outcomes

1. Students will demonstrate an understanding of the key theoretical perspectives and existing research on innovative teaching and learning approaches that value and promote historically disadvantaged and under-served communities and their cultural and linguistic resources.
2. Students will apply critical perspectives in reflecting on and/or conducting research and/or fieldwork, and present their findings in multi-modal forms.
3. Students will demonstrate knowledge of broad historical, social, and political contexts that impact equal opportunity to learn and contribute to society, and the role that education and schooling can play in expanding opportunity.
4. Students will demonstrate basic knowledge of transformative teaching and learning principles that can be applied in a wide range of learning environments and youth serving educational organizations.
5. Students will demonstrate oral and written communication skills through individual and group presentations and assignments in their courses.

Academic Advising for the Program

Undergraduate Advisor

The undergraduate advisor offers specific information about navigating through the program and the curriculum and assists students with prerequisites, requirements, policies, procedures, learning support, guidance on internships, scholarships, and opportunities for undergraduate research. Please contact the EDJ undergraduate advisor at educationadvising@ucsc.edu.

Transfer Students should also consult the Transfer Information and Policy section below.

Getting Started in the Major: Frosh

Students interested in pursuing the Education, Democracy, and Justice (EDJ) major should complete EDUC 10, and EDUC 60 and attend a declaration workshop or meet with the department advisor. After completing these requirements, students may petition to declare the education major.

New frosh who are exploring majors may have chosen an "Advising Cluster" on their UC application, and can find information about getting started on the Advising Clusters site.

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply to UC Santa Cruz in the Education, Democracy, and Justice (EDJ) major are not required to complete specific courses for consideration of admission.

Transfer students considering the education major are strongly encouraged to complete most, if not all, general education requirements before transfer. Introductory education courses completed by transfer students at their prior institution will be reviewed to determine equivalency for EDUC 10 and EDUC 60**.** To ensure that students desiring a transfer to UCSC's EDJ major are on track for meeting these goals, they need to connect with their community college or university advisors for guidance and course planning.

EDUC 10	Introduction to Learning	5
EDUC 60	Schooling, Democracy, and Justice	5

Getting Started in the Major: Transfer Students

Transfer students can designate the Education, Democracy, and Justice (EDJ) major as their intended major and begin working on the requirements as soon as they arrive at UCSC.

Transfer students interested in pursuing the education, democracy, and justice (EDJ) major should complete EDUC 10, and EDUC 60 or courses taken at their previous institution that the Education Department has approved as equivalent. Transfer students should also attend a declaration workshop or meet with the department advisor.

After completing these requirements, students may petition to declare the education major.

Students who wish to pursue the education major should arrange to meet with the education undergraduate advisor as early as possible to discuss plans for enrolling in EDUC 10 and EDUC 60, if needed, declaring the major, and other course planning. Students should bring a copy of their UCSC Transfer Credit Summary to the meeting with the undergraduate advisor. This may be printed from the student portal.

EDUC 10	Introduction to Learning	5
EDUC 60	Schooling, Democracy, and Justice	5

Major Qualification Policy and Declaration Process

Major Qualification

To qualify to declare the EDJ major, students must have:

- Attended an Education, Democracy, and Justice (EDJ) Major Workshop or meet with the advisor
- Completed EDUC 10, Introduction to Education, and EDUC 60, Schooling, Democracy, and Justice. (Students may still petition to declare if they have completed one required lower-division course and are currently enrolled in the second required lower-division course.)

The Committee on Educational Policy on Major Declaration Process and Deadlines can be found here.

EDUC 10	Introduction to Learning	5
EDUC 60	Schooling, Democracy, and Justice	5

Appeal Process

Students who are informed that they are not qualified to declare the Education, Democracy, and Justice (EDJ) major may appeal this decision by submitting a letter to the program director within 15 days from the date the notification was made. Within 15 days of receipt of the appeal, the program will notify the student, college, and the Office of the Registrar of the decision.

How to Declare a Major

To officially declare the education, democracy, and justice (EDJ) major, students petition in MyUCSC and create and share an Academic Planning Form with the department's undergraduate advisor. Students pursuing the major should meet with the Education Department's undergraduate advisor or peer advisor as early as possible.

Letter Grade Policy

Any requirement of the major, including major qualification, may be taken for a letter grade or Pass/No Pass. No more than 25 percent of credits earned at UCSC may be graded on a Pass/No Pass basis. Students must be in good academic standing to choose the Pass/No Pass option. See the Pass/No Pass option section of the catalog for more information.

[Optional Catchall]

Course Substitution Policy

Education, Democracy, and Justice (EDJ) B.A. students may substitute up to two of the upper-division elective requirements with upper-division electives from other UCSC departments, individual study courses, education abroad electives, or other four-year institution electives. Students are limited in the number of outside electives accepted toward the major and must petition for approval of the course prior to applying it to the major. Review the department's Petition for a Course Exception page for information about the petition process.

Double Majors and Major/Minor Combinations Policy

The department accepts proposals for double majors. A student pursuing a double major meets the full requirements of the Education, Democracy, and Justice (EDJ) major as well as the full requirements of the other major.

Education Abroad Program (EAP)

Students seeking to study abroad must be declared in their major prior to studying abroad.

It is recommended that the students have the courses intended to be taken abroad reviewed and approved by the Education Department prior to departure. Up to two relevant courses taken through study abroad programs from which credits are transferable to UCSC may be used toward satisfaction of the Education, Democracy, and Justice (EDJ) B.A. elective requirements when the content is deemed appropriate and approved by the Education Department.

Honors

A student with a major GPA of 3.75 or better qualifies for honors in the Education, Democracy, and Justice (EDJ) major. A student with a major GPA of 3.90 or better qualifies for highest honors in the major. In general, no more than approximately 15 percent of the graduating class can be considered for honors or highest honors in the major. Courses and units taken at UCSC to satisfy the major requirements are used to calculate the major GPA. Courses transferred from other institutions (with the exception of study abroad programs through UCSC) are not calculated into major GPA.

[Optional Catchall]

Requirements and Planners

Course Requirements

Education, Democracy, and Justice (EDJ) majors are required to take 10 5-credit courses for a total of 50 credits:

Lower-Division Courses

Both of the following

EDUC 10	Introduction to Learning	5

EDUC 60	Schooling, Democracy, and Justice	5

Upper-Division Courses

The upper-division requirements consist of two foundational courses which satisfy the disciplinary communication and comprehensive requirements, and six electives.

One of the following:

EDUC 110	Popular Education, Democracy, and Social Movements	5
EDUC 180	Introduction to Teaching	5

Plus the following course:

EDUC 190	Senior Seminar Capstone	5

Electives

Beyond the two foundational required courses above, students take six, 5-credit electives from EDUC 102–187. The course lists below separate these education courses by topic area. The Outside Electives list includes courses which may count as electives with department approval, and count toward the program's course substitution policy, outlined in the Information and Policies section.

Outside Electives

The following courses may also be counted toward the six electives:

EDUC 194	Group Projects	5
ENVS 177	Teaching Environmental Education	5
PSYC 108	Educational Psychology	5
SOCY 148	Educational Inequality	5

EDUC 194 can only count once toward the six electives

Social Contexts and Educational Foundations

EDUC 110 is required

EDUC 102	Education, Media, and Society	5
EDUC 128	Immigrants and Education	5
EDUC 135	Gender and Education	5
EDUC 141	Bilingualism and Schooling	5
EDUC 164	Urban Education	5
EDUC 166	Technology and Education	5
EDUC 160	Issues in Educational Reform	5
EDUC 173	Seminar in Critical Pedagogy	5
EDUC 174	Ethnographic Research in Schools and Communities	5
EDUC 178	Special Topics in Education	5
EDUC 181	Race, Class, and Culture in Education	5
CRES 121	The Struggle for K-12 Ethnic Studies	5

Learning and Teaching

EDUC 180 is required

EDUC 104	Ethical Issues and Teaching	5
EDUC 115	K-12 Student Assessment	5
EDUC 120	The Arts in Schools: Aesthetic Education Theory and Practice	5
EDUC 125	Multicultural Children's Literature for Elementary Classrooms	5
EDUC 126	Foundations of Literacy Learning: Contemporary Perspectives	5
EDUC 140	Language, Diversity, and Learning	5
EDUC 177	Teaching Linguistically Diverse Students	5
EDUC 187	Cognition and Instruction	5
EDUC 183	Children's Mathematical Thinking	5
EDUC 182	Social and Political Contexts of Teachers' Work	5
EDUC 166	Technology and Education	5
EDUC 173	Seminar in Critical Pedagogy	5
EDUC 141	Bilingualism and Schooling	5
EDUC 185B	Introduction to Mathematics Education	5
EDUC 185C	Introduction to Teaching Science	5
EDUC 178	Special Topics in Education	5
CRES 121	The Struggle for K-12 Ethnic Studies	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in Education, Democracy, and Justice B.A. is satisfied by completing EDUC 110 or EDUC 180, and EDUC 190.

One of the following courses

EDUC 110	Popular Education, Democracy, and Social Movements	5
EDUC 180	Introduction to Teaching	5

Plus

EDUC 190	Senior Seminar Capstone	5

Comprehensive Requirement

EDUC 190 (5 credits) will satisfy the senior capstone requirement with a focus on advanced topics in education, emphasizing at least one of the following: critical and analytical thinking, field research, advanced research methods (qualitative or quantitative), or advanced theory.

EDUC 190	Senior Seminar Capstone	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

A four-year course plan for frosh majoring in education, democracy, and justice (EDJ) and a two-year course plan for transfer students are provided below.

Following are two recommended academic plans for frosh, and two plans for transfer students. Plan One is a suggested guideline for frosh who may choose social contexts and educational foundations (EDUC 110 is recommended) as an area of emphasis. Plan Two is for frosh who may choose learning and teaching (EDUC 180 is recommended) as an area of emphasis. The third and fourth planners are suggested two-year guidelines for transfer students. Students may choose to take education electives in summer quarters.

Plan One for Incoming Frosh

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	EDUC 60 College 1	WRIT 1/WRIT 1E (if needed)	EDUC 10	
2nd (soph)	WRIT 2*			
3rd (junior)	EDUC 180	EDUC elective EDUC elective	EDUC elective	
4th (senior)	EDUC elective EDUC elective	EDUC elective	EDUC 190	

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the PR-S and DC general education requirements. Other GE requirements may be satisfied by elective courses. All other GE requirements have to be satisfied.

Plan Two for Incoming Frosh

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	EDUC 10	WRIT 1/WRIT 1E (if needed)	EDUC 60	
2nd (soph)	WRIT 2*			
3rd (junior)	EDUC elective EDUC elective	EDUC 110	EDUC elective	
4th (senior)	EDUC elective EDUC elective	EDUC elective	EDUC 190	

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the PR-S and DC general education requirements. Other GE requirements may be satisfied by elective courses. All other GE requirements have to be satisfied.

Sample Plan One Transfer Planner

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	EDUC 60* EDUC elective	EDUC 180	EDUC 10* EDUC elective	
4th (senior)	EDUC elective EDUC elective	EDUC elective EDUC elective	EDUC 190	

The courses listed above will satisfy the PR-S and DC general education requirements. Other GE requirements may be satisfied by elective courses. All other GE requirements have to be satisfied.

*Articulated equivalent courses may be taken prior to transfer.

Plan Two for Transfer Students

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	EDUC 10* EDUC elective	EDUC 110	EDUC 60* EDUC elective	
4th (senior)	EDUC elective EDUC elective	EDUC elective EDUC elective	EDUC 190	

The courses listed above will satisfy the PR-S and DC general education requirements. Other GE requirements may be satisfied by elective courses. All other GE requirements have to be satisfied.

* Approved equivalent courses may be taken prior to transfer.

EDUCATION MINOR GENERAL

Declaring the Minor

To officially declare a general minor in education, students must submit a petition in MyUCSC and share their major Academic Planning Form with the department's undergraduate advisor. Students pursuing a minor in education should meet with the Education Department's peer advisor as early as possible.

To be eligible to declare the general minor in education, students must have:

- completed or be enrolled in EDUC 60, Schooling, Democracy, and Justice ; and
- be declared in a major.

Course Requirements

The general minor in education consists of six courses totaling 30 credits. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Take the following course:

EDUC 60	Schooling, Democracy, and Justice	5

Upper-Division Courses

Take one of the following courses:

EDUC 110	Popular Education, Democracy, and Social Movements	5
EDUC 180	Introduction to Teaching	5

EDUC 180 includes a 30-hour classroom observation practicum, plus additional travel time to school sites.

For EDUC 180, background checks (Live Scan Fingerprinting), evidence of a negative TB test or Risk Assessment Form, and Online Mandated Reporter training are required of all participants prior to the first day of instruction. The department will contact enrolled students with information about how to complete these items.

Upper-Division Electives

Students take four 5-credit electives chosen EDUC 102-187.

Electives may be taken before EDUC 110/180.

SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS STEM EDUCATION MINOR

The Science, Technology, Engineering, and Mathematics (STEM) education minor specifically serves students in STEM majors who are considering careers in secondary mathematics or science teaching.

Students pursuing the STEM education minor should meet with the Cal Teach staff as early as possible. Entry into EDUC 50 is by application only, and interested students must submit an application to the Cal Teach program (see the Cal Teach website or email calteach@ucsc.edu). Entry into EDUC 100 and EDUC 185L is contingent upon successful completion of previous Cal Teach internships and sufficient university-level science or mathematics coursework.

Declaring the STEM Minor

To officially declare a STEM minor in education, students must submit a petition in MyUCSCand share the Academic Planning Form from the major to the department's undergraduate advisor. Students pursuing a minor in education should meet with the Education Department's undergraduate advisor as early as possible.

To be eligible to declare the STEM minor in education, students must have:

- attended an Education Minor Workshop or met with the Education undergraduate advisor;
- completed or be enrolled in EDUC 50 (which requires being accepted into the Cal Teach Program); and
- successfully declared a major.

Course Requirements

The STEM minor in education consists of eight courses, totaling 32 credits and including approximately 75 hours of classroom field placements. Students may take courses for a letter grade or Pass/No Pass.

Lower-Division Courses

Choose one of the following courses

EDUC 50A	CAL Teach 1: Science and Mathematics	2
EDUC 50B	CAL Teach 1: Mathematics	2
EDUC 50C	CAL Teach 1: Science	2

Plus the following course

EDUC 60	Schooling, Democracy, and Justice	5

Upper-Division Courses

Choose one of the following courses:

EDUC 100A	Cal Teach 2: Science and Mathematics	2
EDUC 100B	Cal Teach 2: Mathematics	2
EDUC 100C	Cal Teach 2: Science	2

Plus one of the following courses:

EDUC 185B	Introduction to Mathematics Education	5
EDUC 185C	Introduction to Teaching Science	5

Plus the following course:

EDUC 185L	Introduction to Teaching: Cal Teach 3	3

Plus one cultural and linguistic diversity course:

EDUC 125	Multicultural Children's Literature for Elementary Classrooms	5
EDUC 128	Immigrants and Education	5
EDUC 135	Gender and Education	5
EDUC 140	Language, Diversity, and Learning	5
EDUC 141	Bilingualism and Schooling	5
EDUC 164	Urban Education	5
EDUC 177	Teaching Linguistically Diverse Students	5
EDUC 181	Race, Class, and Culture in Education	5
EDUC 110	Popular Education, Democracy, and Social Movements	5

Plus two electives:

Students take two additional 5-credit courses numbered EDUC 102-EDUC 187. Please refer to the Education Department's website for a list of approved upper-division courses being offered during the current academic year.

CRITICAL RACE AND ETHNIC STUDIES AND EDUCATION MA/C CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

The 4+1 pathway into the M.A./Credential Master's program is an option that allows undergraduates in the critical race and ethnic studies (CRES) major at U.C. Santa Cruz to:

- Finish the master's degree in just one additional year (5 Quarters July to July).
- Apply to the Education master's program through a streamlined application process.

Undergraduate students currently enrolled in the CRES major have the opportunity, any time after the start of their junior

year until Dec. 1 of their senior year, to apply to be admitted to the 4+1 contiguous pathway leading to the Education Master's Degree.

The requirements for admission into the 4+1 pathway are:

- Undergraduate major in CRES
- A GPA in the major of 3.0 or more
- Overall GPA of 3.0 or higher
- Junior or senior standing
- Complete two upper-division courses selected from the following with a grade of B or higher: EDUC 104, EDUC 115, EDUC 125, EDUC 126, EDUC 135, EDUC 141, EDUC 160, EDUC 162, EDUC 164, EDUC 174, EDUC 177.

Interested students should schedule a meeting with the CRES undergraduate advisor to discuss their curriculum plan and complete the application forms. The deadline for application to the pathway is Dec. 1 of the senior year, although students are encouraged to apply earlier.

While students in the pathway are not guaranteed admission to the MA/Credential Program, the Education Department expects to admit students who:

1. have met the requirements for admission to the 4+1, above;
2. have classroom experience with youth; and
3. have a commitment to teaching in communities serving traditionally underserved populations, barring any extenuating circumstances, or if the applicant does not obtain clearance from the State of California. Additionally, students will be eligible for a streamlined admission process if, at the time of application, they have met the state Basic Skills and Subject Matter requirements, typically by providing passing scores on California state tests: the CBEST and the CSET (applicants must pass the required subtests for a secondary Single Subject Social Science credential or the Multiple Subjects credential).

CSET Social Science consists of three subtests:

- Social Science Subtest I (test code 114)
- Social Science Subtest II (test code 115)
- Social Science Subtest III (test code 116)

CSET Multiple Subjects consists of three subtests:

- Multiple Subjects Subtest I (test code 101)
- Multiple Subjects Subtest II (test code 214)
- Multiple Subjects Subtest III (test code 103)

After entering into the Master's/Credential Program, students from the pathway will follow the same requirements as any other students in the MA/C program with expected graduation in July of the year after their graduation from the UC Santa Cruz CRES program.

Students who have completed one of these identified undergraduate education courses will have the course EDUC 205 waived from their MA/Credential requirements.

- EDUC 102, Education, Media and Society,
- EDUC 128, Immigrants and Education,
- EDUC 140, Language, Diversity Learning,
- EDUC 173, Critical Pedagogy,
- EDUC 181, Race, Class and Culture in Education.

Students intending to apply for the MA/Credential Program may also choose to complete these courses in Summer Session II between their junior and senior years, instead of during the MA/Credential Program:

- EDUC 210, Health, Safety and Community, 2 credits,
- EDUC 213, Child and Adolescent Development for Educators, 2 credits,

The following State of California requirements for a California teaching credential, which have to be completed before the end of the final quarter of the MA/Credential Program, can also be completed at the undergraduate stage if a student chooses:

- The US Constitution Examination, when offered by the Education Department. (Completion of any of the courses POLI 20, POLI 111A, POLI 120A or HIS 10A also satisfies this requirement.)
- The UC Santa Cruz Extension online course EDUC.XSC209 can be completed any time it is offered to satisfy the Preliminary Technology Requirement.
- A certified cardiopulmonary resuscitation (CPR) course (infant, child, and adult) must be completed before the end of the final quarter of the MA/Credential Program and be valid at the time of application for the preliminary credential in the final summer session of the MA/Credential Program. (A CPR course that will remain valid through the preliminary credential application may be taken during the undergraduate state; 12-month certifications will not be sufficient. Student must check with course provider.)

MATHEMATICS AND EDUCATION MA/C CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

Mathematics and Education MA/C Contiguous Bachelor's/Master's Pathway

The 4+1 pathway into the Master of Arts/Credential (MA-C) Program is an option that allows undergraduates in the

mathematics education major at the University of California, Santa Cruz to:

▪ Finish the master's degree in just one additional year (five quarters, July to July).

▪ Apply to the Education master's program through a streamlined application process.

Undergraduate students currently enrolled in the mathematics education major have the opportunity, any time after the start of their junior year until Dec. 1 of their senior year, to apply to be admitted to the 4+1 contiguous pathway leading to the Education master's degree.

The requirements for admission into the 4+1 pathway are:

1. a GPA in the major of 3.0 or more;

2. completion of EDUC 185B, Introduction to Mathematics Education, with a grade of B or better. It is recommended students take 185B by the end of their junior year. The course previews the reading and writing workload required in most of the courses in the MA-C Program. EDUC 185B is typically offered in winter; and

3. completion or current enrollment or plan to enroll by fall of the senior year in all of the required Cal Teach courses.

Interested students email the UCSC Credential Analyst to request the application for the Mathematics Education 4+1 Pathway, complete the form, obtain the signature of the Mathematics undergraduate advisor, and email the completed form and supporting documents to the M.A./Credential program coordinator. The deadline for application to the pathway is Dec. 1 of the senior year, although students are encouraged to apply earlier.

While students in the pathway are not guaranteed admission to the MA/Credential Program, the Education Department expects to admit students who have met the MA/Credential admissions requirements and three requirements for admission to the 4+1 pathway described above, barring any extenuating circumstances, or if the applicant does not obtain clearance from the State of California, as described in the program statement for the MA/Credential Master's Program. Additionally, students will be eligible for a streamlined admission process if, at the time of application, they have met the state Basic Skills and Subject Matter requirements, typically by providing passing scores on California State tests: the CBEST and the CSET (applicants must pass the required sub test for a secondary Single Subject Mathematics credential or the Foundational-Level Mathematics credential). CSET Mathematics consists of three subtests: Subtest I, Subtest II, and Subtest III. Students seeking the Foundational-Level Mathematics Credential only required to pass Subtest I and Subtest II.

After entering into the Master's/Credential Program, students from the pathway will follow the same requirements as any other students in the MA/C Program with expected graduation in July of the year after their graduation from the UC Santa Cruz Mathematics Education program.

Students who have completed EDUC 177 will have the course EDUC 205 waived from their MA/Credential requirements. Students intending to apply for the MA/Credential program may also choose to complete these courses in Summer Session II between their junior and senior years, instead of during the MA/Credential Program:

EDUC 210, Health, Safety and Community, 2 credits;

EDUC 213, Child and Adolescent Development for Educators, 2 credits.

The following State of California requirements for a California teaching credential, which have to be completed before the end of the final quarter of the MA/Credential Program, can also be completed at the undergraduate stage if a student chooses:

- The U.S. Constitution Examination, when offered by the Education Department. (Completion of any of the courses POLI 20, POLI 111, POLI 120A or HIST 10A also satisfies this requirement.)
- The UCSC Extension online course EDUC.XSC209 can be completed any time it is offered to satisfy the Preliminary Technology Requirement.
- A certified cardiopulmonary resuscitation (CPR) course (infant, child, and adult) must be completed before the end of the final quarter of the MA/Credential Program and be valid at the time of application for the preliminary credential in the final summer session of the MA/Credential Program. (A CPR course that will remain valid through the preliminary credential application may be taken during the undergraduate state; 12-month certifications will not be sufficient. Student must check with course provider.)

Course planner and sample program

During their undergraduate years, a student follows the planner for the Math Education B.S. program. The program has different sample plans, depending on where students start, frosh and transfer planners for each plan published in the General Catalog. The sample plan below is for students starting at Math 19A or MATH 20A.

Sample Math Education Four-Year Planner

	Fall	**Winter**	**Spring**
1st (frosh)	MATH 19A or MATH 20A	MATH 19B or MATH 20B	MATH 21
	Core/Writing	Core/Writing	MATH 23A
	GE/ME*	GE/ME*	GE/ME*

2nd (soph)	MATH 23B	MATH 100	MATH 128A
	GE/ME*: EDUC 10, EDUC 60, or EDUC 180	STAT 5	EDUC 100B (2 credits)
	EDUC 50B (2 credits)		
3rd (jr)	MATH 110	MATH 181	EDUC 177
	MATH 101	EDUC 185B	MATH 111T

Summer Term II (July-August): EDUC 210 and EDUC 213

4th (sr)	STAT 131	MATH 103A or MATH 105A	MATH 194
	EDUC 177	CSE 20	EDUC 185L

* General Education/Major Exploration

Extra Math course: MATH 101 (offered Fall) or CSE 16 (offered FWS)

MATH 101, Math Problem Solving (F), highly recommended out of all these choices

Education Summer courses:

EDUC 210, Health, Safety and Community, (2 credits) Summer Term II (July-August);

EDUC 213, Child and Adolescent Development for Educators, (2 credits) Summer Term II (July-August);

Education online course (XSC 209), Introduction to Technology in Schools, UCSC Extension.

Math Subject Matter Program

Students following the Math ED 4+1 are likely to also wish to complete the Math Subject Matter Program to waive the CSET exams. The requirements (or equivalents taken at another university) for the CSET waiver are as follows:

Introductory Math Education Concentration Coursework:

- MATH 19A or MATH 20A
- MATH 19B or MATH 20B
- MATH 21
- MATH 23A
- MATH 23B
- STAT 5

Advanced Math Education Concentration Coursework:

- MATH 100
- MATH 103A or MATH 105A
- MATH 110
- MATH 111A or MATH 111T
- MATH 128A
- MATH 181
- MATH 194 or MATH 195
- STAT 131
- Both EDUC 50B and EDUC 100B

Additional Courses Specific to the SMP in addition to the Math Education Curriculum:

- EDUC 185B
- 1 Extra Math course--MATH 24 or MATH 101* or MATH 115 or CSE 16
- 1 Coding Course--CSE 5J or CSE 10/CSE 10L or CSE 20

The Sample course plan for the MA/Credential will be largely unaltered, with the exceptions that EDUC 205** may be waived and EDUC 210 and EDUC 213*** may have been completed by the student as an undergraduate (see Section II.1.A earlier in this proposal).

*Highly recommended for Math Education majors
**May substitute EDUC 177 taken as an undergraduate for EDUC 205
***EDUC 210 and EDUC 213 may be taken in Summer Session II between junior and senior years

Note: Beginning placement begins on the first day of our partner schools' and continues through to the end of their K-12 academic year in June; both winter and spring quarter breaks align to the breaks of the partner schools and not the UC Santa Cruz calendar.

SCIENCE EDUCATION AND EDUCATION MA/C CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

The 4+1 pathway into the Master of Arts (M.A.)/Credential Master's program is an option for UC Santa Cruz Science Education majors at U.C. Santa Cruz to apply to the M.A./Credential program through a streamlined application process.

Undergraduate students currently enrolled in the science education major may, any time after the start of their junior year until Dec. 1 of their senior year, apply to be admitted to the 4+1 contiguous pathway leading to the education master's degree and teaching credential.

The requirements for admission into the 4+1 pathway are:

1. a GPA in the major of 3.0 or higher;
2. Completion of EDUC 185C Introduction to Teaching Science, and with a grade of B or better; and
3. Completion or current enrollment or plan to enroll by fall of the senior year in all of the required Cal Teach courses.

Interested students should schedule a meeting with the science education undergraduate advisor to discuss their curriculum plan and complete the application forms. The deadline for application to the pathway is Dec. 1 of the senior year, although students are encouraged to apply earlier.

While students in the pathway are not guaranteed admission to the M.A./Credential Program, the Education Department expects to admit students who have met the MA/Credential admissions requirements and the three requirements for admission to the 4+1 pathway described above, barring any extenuating circumstances or if the applicant does not obtain clearance from the State of California as described in the program statement for the M.A./Credential Master's program. Additionally, students will be eligible for a streamlined admission process if, at the time of application, they have met the state Basic Skills and Subject Matter requirements, typically by providing passing scores on California State tests: the CBEST and the CSET (applicants must pass the required sub tests[1] for a secondary Single Subject Science credential or the Foundational-Level General Science credential).

After entering into the Master's/Credential program, students from the pathway will follow the same requirements as any other students in the M.A./Credential program with expected graduation in July of the year after their graduation from the UCSC Science Education program.

Students who have completed EDUC 177 for the UCSC Science Education program will have the course EDUC 205 waived from their M.A./Credential requirements. Students intending to apply for the M.A./Credential program may also choose to complete EDUC 210 (Health, Safety and Community) and EDUC 213 (Child and Adolescent Development for Educators) in Summer Session II between their junior and senior years, instead of during the M.A./Credential program.

The following State of California requirements for a California teaching credential, which have to be completed before the end of the final quarter of the M.A./Credential program, can also be completed at the undergraduate stage if a student chooses:

- The U.S. Constitution Examination, when offered by the Education Department. Completion of any of the courses POLI 20, POLI 111A, POLI 120A or HIS 10A also satisfies this requirement.
- The UCSC Extension online course EDUC.XSC209.
- A certified cardiopulmonary resuscitation (CPR) course (infant, child, and adult). A CPR course that will remain valid through the preliminary credential application may be taken during the undergraduate state; 12-month certifications will not be sufficient. Students must check with the course provider.

[1]CSET Science consists of two subtests: Subtest I (test code 215) and Subtest II -- Life Sciences (test code 217), Chemistry (test code 218), Earth and Space Sciences (test code 219), or Physics (test code 220). Students seeking the Foundational-Level General Science Credential take only Subtest I.

LITERATURE AND EDUCATION MA/C CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

The Contiguous Literature and Education 4+1 Pathway allows students to complete a Master's in Education (M.A.) in just one additional year (five quarters, July - July) following completion of the literature major.

The 4+1 pathway program streamlines application and acceptance into the Education M.A. by allowing literature majors to receive priority enrollment in impacted education undergraduate courses, and to complete state-mandated tests and some program requirements prior to the start of the M.A./Credential Program while completing the literature major. Upon completing these requirements and formally applying to the graduate program, graduating literature majors are able to complete the Education M.A./Credential Program in one year (five quarters, July - July; the Education Department expects to admit all graduating literature majors who have met the 4+1 pathway requirements, barring extenuating circumstances; application fees apply).

Undergraduate students currently enrolled in the literature major have the opportunity, any time after the start of their junior year until December 1 of their senior year, to apply to be admitted to the 4+1 contiguous pathway leading to the Education Master's Degree.

The requirements for admission into the 4+1 pathway are:

- Applicant must be an undergraduate major in Literature;
- Applicant must have a 3.0 or higher grade point average in upper-division Literature coursework;
- Applicant must have an overall UCSC grade point average of 3.0 or higher;
- Applicant must have junior or senior standing;

- Applicant must provide a copy of unofficial transcripts;
- Applicant must provide a one-page personal statement describing (a) your motivation and academic preparation for entering the pathway, (b) your goals for the pathway, and (c) your professional goals.

Interested students should schedule a meeting with the literature undergraduate advisor to discuss their curriculum plan and complete the application forms. The deadline for application to the LIT/EDUC 4+1 Contiguous Bachelor's/Master's Pathway is Dec. 1 of the senior year, although students are encouraged to apply earlier.

Students in the LIT/EDUC 4+1 Contiguous Bachelor's/Master's Pathway are not guaranteed admission to the M.A./Credential Program. However, the Education Department expects to admit students who:

1. have met admissions requirements;
2. have 30 or more hours of experience with middle and/or high school-aged youth (classroom experience, tutoring, or coaching sports teams are just a few ways to satisfy this requirement; reach out to litdept@ucsc.edu about opportunities and with questions about whether your existing experience qualifies);
3. have completed two upper-division courses selected from the following with a grade of B or higher: EDUC 120, EDUC 125, EDUC 126, EDUC 135, EDUC 141, EDUC 160, EDUC 164, EDUC 180;
4. have a commitment to teaching in communities serving traditionally underserved populations.

Additionally, students will be eligible for a streamlined admission process if, at the time of application, they have met the state Basic Skills and Subject Matter requirements, typically by providing passing scores on California state tests: the CBEST and the CSET (applicants must pass the required subtests for a secondary Single Subject English Language Arts credential).

CSET English Language Arts consists of four subtests:

- English Subtest I (test code 105),
- English Subtest II (test code 106),
- English Subtest III (test code 107),
- English Subtest IV (test code 108).

After entering into the Master's/Credential Program, students from the LIT/EDUC 4+1 Contiguous Bachelor's/Master's Pathway will follow the same requirements as any other students in the MA/C program with expected graduation in July of the year after their graduation from the UC Santa Cruz literature major.

Students who have completed one of the following undergraduate Education courses will have the course EDUC 205 waived from their M.A./Credential requirements:

- EDUC 102, Education, Media and Society,
- EDUC 128, Immigrants and Education,
- EDUC 140, Language, Diversity Learning,
- EDUC 173, Critical Pedagogy,
- EDUC 181, Race, Class and Culture in Education.

Students intending to apply for the M.A./Credential Program may also choose to complete these courses in Summer Session II between their junior and senior years, instead of during the M.A./Credential Program:

- EDUC 210, Health, Safety and Community, 2 credits,
- EDUC 213, Child and Adolescent Development for Educators, 2 credits.

The following State of California requirements for a California teaching credential, which must be completed before the end of the final quarter of the M.A./Credential Program, can also be completed at the undergraduate stage if a student chooses:

- The U.S. Constitution Examination, when offered by the Education Department. (Completion of any of the courses POLI 20, POLI 111A, POLI 120A or HIS 10A also satisfies this requirement.)
- The UC Santa Cruz Extension online course EDUC.XSC209 can be completed any time it is offered to satisfy the Preliminary Technology Requirement.
- A certified cardiopulmonary resuscitation (CPR) course (infant, child, and adult) must be completed before the end of the final quarter of the M.A./Credential Program and be valid at the time of application for the preliminary credential in the final summer session of the M.A./Credential Program. (A CPR course that will remain valid through the preliminary credential application may be taken by students in the LIT/EDUC 4+1 pathway prior to beginning the M.A./Credential Program; 12-month certifications will not be sufficient. Students must check with the CPR course provider.)

There are a number of sources of financial aid for individuals seeking a teaching credential, as well as state and federal loan forgiveness programs. Of note is the Cal Grant 5th year for individuals seeking a credential.

For additional information, please visit the MA/Credential Program page.

Course planner and sample program

General Literature Concentration Four-Year Planner with Education Fifth-Year Planner

	Fall	Winter	Spring	Summer
1st (frosh)	LIT 60/61 or LIT 80/81		WRIT 2	
	2nd (soph)	LIT 1	LIT 101	EDUC 60
	Upper-division LIT course		Upper-division LIT course	
Language quarter one	Language quarter two	Language quarter three		
3rd (jr)	Upper-division LIT course	LIT 102	Upper-division LIT course	EDUC 210*
	Upper-division EDUC course	EDUC 180 or other Upper-division EDUC course		EDUC 213*
4th (sr)	Upper-division LIT course	LIT 190	Upper-division LIT course	EDUC 207
	Upper-division LIT course	EDUC elective (sub for EDUC 205)	XSC 209	Student Teaching 10 Observation hrs
		U.S. Constitution Exam (or course)		
5th (EDUC + 1 MA/Single Subject Credential)	EDUC 211	EDUC 201A	EDUC 214	EDUC 208 (Portfolio Development)
	EDUC 204	EDUC 227	EDUC 225	
	EDUC 226	EDUC 212B**	EDUC 212C**	EDUC 212A**
	EDUC 200: Beginning Student Teaching: 15 hrs/week	EDUC 201: Intermediate Student Teaching: Nov.--15 hrs/week; Dec.-March--20-25 hrs/week	EDUC 202: Advanced Student Teaching: March-June--20-25 hrs/week	

* Literature students in the 4+1 pathway have the option of taking EDUC 210 and/or EDUC 213 during the summer between their junior and senior years. If one or both are not taken at this time, they can be taken during the 5th year +1 MA/Single Subject Credential part of the program.

** EDUC 212A, EDUC 212B, EDUC 212C are for Bilingual Authorization Spanish Candidates only.

EDUCATION AND CALIFORNIA TEACHER CREDENTIAL PROGRAM M.A.

Introduction

The Master of Arts (M.A.) in Education and California Teaching Credential Program prepares prospective teachers to work with California's culturally and linguistically diverse student population. Students in this program earn a master's degree and are eligible to apply for a Preliminary California Credential upon completing a 12-month, five-quarter program comprised of two summers and one academic year. Graduates of the program are prepared to teach English language learners enrolled in TK–12 public schools. The program also

offers the Bilingual Authorization (in Spanish) for primary language instruction or dual language immersion instruction in a TK–12 setting.

Please note that we do not offer a stand-alone Master of Arts in Education nor a stand-alone credential program. Additionally, holders of a previously issued California or out-of-state credential are not eligible for admission to the program.

Students who complete the program are eligible to apply for a California Preliminary Multiple Subject Teaching Credential or a California Preliminary Single Subject Teaching Credential. The Multiple Subject Teaching Credential authorizes the holder to teach in a TK—12, self-contained public school classroom, where two or more subjects are taught by the same teacher. The Single Subject Teaching Credential authorizes the holder to teach in his/her credential subject area in a 6-12 departmentalized classroom setting within a public school system.

The UC Santa Cruz Single Subject Teacher-Credential Program offers the following subject areas: mathematics, English, social science, and science. Programs of study are subject to change.

Because program requirements are authorized by statutes and regulated by a state entity, the California Commission on Teacher Credentialing program requirements must be responsive to new legislation and regulatory policies. Admission requirements and programs of study referred to are subject to change to comply with regulatory mandates.

Prerequisite Admission Requirements

A bachelor's degree or higher from a regionally accredited institution meets California Basic Skills Requirement (BSR) per Senate Bill (SB) 153, effective 6/29/24. No additional documents are required at time of application to meet the Basic Skills Requirement (BSR). If admitted to the program, we will use your official transcripts to verify completion of the bachelor's degree.

Subject-Matter Requirement

California state law mandates that all teachers provide evidence of their subject-matter knowledge. Exam registration confirmations, exam score reports, or documentation of an approved waiver program must be submitted on the online application. Deadline to complete this requirement is June 10 of each year (prior to official enrollment in the program). However, it is highly recommended that documentation of meeting the subject matter requirement be submitted with the application. **Please note that admission priority may be given to applicants who provide documentation at the time of application.** In addition to the options listed below, the Subject Matter Requirement may be met if your bachelor's degree is in the same area as the credential that you seek. Additionally, there is a college course work option. Please see the MA/C Program website for details on the various options to meet the state Subject Matter Requirement.

Options to meet the Subject Matter Requirement

- Passing scores on the appopriate CSET tests
- Completion of a CTC-Approved Subject Matter Program
- College coursework in each of the identified subject domains
- B.A./B.S. in the same area as the credential sought
- The Subject Matter Requirement may also be met through a combination of college coursework and CSET exams to meet the content for all required CSET subtests.

The deadline to submit evidence of satisfying Subject Matter Competency Requirement is June 10. However, it is **highly recommended** that documentation of satisfying the Subject Matter Competency Requirement be submitted at the time of application.

More information on each of the Subject Matter Requirements can be found here.

Certificate of Clearance

In accordance with Education Code Section 44320(b), each credential candidate for an initial credential, prior to admission to any credential program, must obtain a Certificate of Clearance from the California Commission on Teacher Credentialing (CTC). This certificate is a document issued by the commission to an individual who has completed the commission's fingerprint character and identification process. Please note that the CTC requires either a United States-issued Social Security Number (SSN) or Individual Tax Identification Number (ITIN) to apply for a Certificate of Clearance. The IRS issues ITINs regardless of immigration status, primarily for the purpose of federal tax reporting. Detailed instructions for obtaining a Certificate of Clearance may be found here. Additional information can be found on the Education website here.

Applicants should be aware that a criminal conviction on their record may preclude them from obtaining a Certificate of Clearance.

Bilingual Authorization Candidates

Applicants seeking Bilingual Authorization must obtain it concurrently with a preliminary multiple subjects or single subject credential. While the state allows the Bilingual Authorization to be obtained after the candidate receives their credential, the UC Santa Cruz program is a concurrent model. Bilingual Program applicants will be required to submit a 1-2-page essay in Spanish with their application to the M.A./Credential Program. The essay should address topical questions listed on the Education Department website here.

For Further Information

Please contact the department by email to edma@ucsc.edu, or view the Education M.A./Credential Program admissions requirement webpage for full details about the M.A./Credential program.

Requirements

Course Requirements

Capstone Requirements

Students will complete a capstone portfolio, which includes a teaching performance assessment and reflective papers. Prompts for these assignments may vary from year to year as they reflect the most current California state credentialing requirements.

Multiple Subject Course Requirements

Take all of the following:

EDUC 200	Beginning Student Teaching	5
EDUC 201	Intermediate Student Teaching	5
EDUC 202A	Advanced Student Teaching	5
EDUC 202B	Advanced Student Teaching	5
EDUC 202C	Advanced Student Teaching	5
EDUC 203	Teaching English Language Development: Foundations, Approaches, and Strategies	5
EDUC 205	Teaching, Learning, and Schooling in a Diverse Society	5
EDUC 207	Social Foundations of Education	5
EDUC 208	Portfolio Development	2
EDUC 210	Health, Safety, and Community	2
EDUC 211	Teaching Special Populations in the General Education Classroom	2
EDUC 213	Child and Adolescent Development for Educators	2
EDUC 214	Contemporary Issues in Education	2
EDUC 217	Topics in Elementary Education: Physical Education	2
EDUC 218	Topics in Elementary Education: Visual Arts	2
EDUC 219	Topics in Elementary Education: Performing Arts	2
EDUC 220	Reading and Language Arts for Elementary Classrooms	5
EDUC 221	Science Learning and Teaching in Elementary Classrooms	5
EDUC 222	Mathematics Learning and Teaching in Elementary Classrooms	5

EDUC 212A, EDUC 212B, EDUC 212C: Bilingual Authorization students only

Single Subject Course Requirements

Take all of the following:

EDUC 200	Beginning Student Teaching	5
EDUC 201	Intermediate Student Teaching	5
EDUC 201A	Intermediate Student Teaching: Single Subject	5
EDUC 202A	Advanced Student Teaching	5
EDUC 202B	Advanced Student Teaching	5
EDUC 202C	Advanced Student Teaching	5
EDUC 204	Methods of English Language Development: Single Subject	5
EDUC 205	Teaching, Learning, and Schooling in a Diverse Society	5
EDUC 207	Social Foundations of Education	5
EDUC 208	Portfolio Development	2
EDUC 210	Health, Safety, and Community	2
EDUC 211	Teaching Special Populations in the General Education Classroom	2
EDUC 213	Child and Adolescent Development for Educators	2
EDUC 214	Contemporary Issues in Education	2
EDUC 225	Reading Across the Curriculum in Middle School and Secondary	5

EDUC 212A, EDUC 212B, EDUC 212C: Bilingual Authorization students only

Single Subject Credential students enroll in the two methods courses related to their subject area:

EDUC 226	English Teaching: Theory and Curriculum	5
EDUC 227	English Teaching for Secondary Classrooms	5
EDUC 228	Math Education: Research and Practice	5
EDUC 229	Teaching Mathematics in the Secondary Classroom	5
EDUC 230	Science Education: Research and Practice	5
EDUC 231	Teaching Science in the Secondary Classroom	5
EDUC 232	Social Science: Theory and Curriculum	5
EDUC 233	Social Science Teaching for Secondary Classrooms	5

Bilingual Authorization Course Requirements

Take all of the following:

EDUC 212A	Bilingualism and Biliteracy: History, Politics, Theory, and Practice	2
EDUC 212B	Bilingualism and Biliteracy: Language, Literacy and Content Instruction	2

EDUC 212C	Bilingualism and Biliteracy: Community and School Partnerships	2

Other Requirements

Program and State of California Requirements

Additional California State Requirements for a Preliminary Credential

(Not Required for Initial Admission to the Program)

In addition to the Basic Skills and Submit Matter Requirements, the following state requirements may be met prior to or while enrolled in the program, and must be met to be eligible for a California teaching credential upon completion of the M.A./Credential program.

U.S. Constitution Requirement

A course on the U.S. Constitution (or completion of an examination offered by the Education Department to enrolled students) is required. UCSC-approved courses that meet this requirement are POLI 20, American Politics; POLI 111A/LGST 111A, Constitutional Law; POLI 120A, Congress, President, and the Court in American Politics; and HIS 10A, United States History to 1877. Passage of the AP exam in U.S. History or Government are acceptable for meeting the U.S. Constitution requirement if the applicant received college credit for the exam.

Admitted applicants must submit verification of completing the U.S. Constitution Requirement prior to completing the final quarter of the M.A./Credential program.

Preliminary Technology Requirement

All candidates for their credential must fulfill the requirements for technology skills which includes general and specialized skills in the use of computers in educational settings.

UC Santa Cruz students meet this requirement in one of two ways:

- Option 1: Pass the CSET Preliminary Educational Technology Subsets I II, (CSET test codes 133 134). For more information, see the Technology Subsets I II information on the CSET website.
- Option 2: Pass the UCSC approved course offered through the UCSC Extension Program, XSC209, Technology in Schools, Introduction (online format).

Admitted applicants must submit verification of completing the Technology Requirement **prior** to completing the final quarter of the M.A./Credential program.

Reading Instruction Competence Assessment (RICA)

Multiple Subjects candidates are required—prior to completion of the program and in order to be recommended for a preliminary credential—to pass the RICA examination. The RICA measures the knowledge, skills, and abilities essential to offer effective reading instruction to TK–12 students. For more information on the RICA examination, see the RICA examination information on the CSET website.

Admitted applicants must submit verification of having passed the RICA **prior** to completing the final quarter of the M.A./Credential program.

CPR

A certified cardiopulmonary resuscitation (CPR) course (infant, child, and adult) must be completed and valid upon application for the credential.

Admitted applicants must submit verification of obtaining certification in Infant/Child/Adult CPR prior to completing the final quarter of the M.A./Credential program.

Tuberculosis (TB) Test

All TK-12 schools require anyone working with children to be tested for TB. You can get tested through the UCSC Student Health Center (831-459-2500 to make an appointment) or your private doctor. A copy of your official results must be turned into the Education Department before the end of the first summer quarter.

Student Teaching

The successful development of teaching skills in the classrooms is the culmination of a teacher education program. Therefore, candidates must demonstrate, by the end of their program, teaching competence in the classroom. Credentialed public school teachers are responsible for the nurturing of children and youth. Therefore, teaching credential candidates must consistently display conduct befitting the profession. To this end, the candidate must be able to cope with the demands and responsibilities of teaching as outlined below:

- Meet university and program requirements and deadlines (including school expectations during field experiences).
- Plan ahead to anticipate the transportation needs and potential demands of student teaching.
- Be able to adapt to institutional and/or professional expectations and policies.
- Relate appropriately to children, parents, and school staff.
- Demonstrate sensitivity to the social, cultural, and economic context of the school environment.
- Adhere to school expectations for dress, appearance, and personal hygiene.

Candidates whose professional behavior does not meet these minimal standards may be recommended for dismissal from the program.

Beginning Student Teaching, which begins in August during the Summer Bridge between the university summer and fall quarters, constitutes the first classroom observation experience for students in the program, and continues through most of fall quarter. Student teachers are in their classroom placements from 15–16 hours a week. Students must have a Certificate of Clearance issued and on file with the California Commission on Teacher Credentialing.

Intermediate and advanced student teaching begins late fall and continues through winter and spring, until the end of the academic year in June. Student teachers are placed with cooperating teachers in local schools throughout Santa Cruz County and beyond. Students gradually assume responsibility for preparation, instruction, and evaluation of the class during this period. Supervisors of teacher education give ongoing and frequent support to students in their classroom placements and in seminars at UCSC. Multiple Subject candidates typically obtain classroom experience in both primary and intermediate grades. Single Subject candidates typically obtain classroom experience in middle school/junior high and high school.

Admission to EDUC 201 and EDUC 201A, Intermediate Student Teaching, and EDUC 202A-EDUC 202B-EDUC 202C, Advanced Student Teaching, is based on an assessment of academic performance, experience, leadership, and initiative shown in public school placements and required courses taken earlier in the program. Please note meeting the state Subject Matter Requirement is necessary for enrollment in Advanced Student Teaching.

[Optional Catchall]

Applying for Graduation

EDUCATION PH.D.

Introduction

Education Ph.D. graduate students become creative scholars who engage in research focused on the educational needs of students from linguistic and cultural groups that have historically not fared well in our nation's public schools. The program provides students with grounding in the varieties of interdisciplinary theorizing, research methods, and applications needed to advance the study of learning and teaching for diverse student populations. Courses and research experiences are closely related to practice in K-12 classrooms and informal settings. Students in this interdisciplinary program apply tools and perspectives from education, anthropology, linguistics, philosophy, psychology, sociology, cognitive science, and cultural historical activity theory. The program integrates theory and practice to examine learning and teaching within the multiple contexts of classroom, school, family, and community. Graduates are qualified to teach and to conduct the kinds of educational research demanded by tenure-track positions in research and regional universities. Graduates also work in non-university based institutions that focus on teacher professional development, curriculum development, and related areas of educational research and development.

Together with their faculty adviser, each student develops an integrated program of study that includes advanced coursework, seminars, and electives. Students learn through an apprenticeship model in which they develop expertise through active participation in research. Courses may be taken in other departments, when appropriate.

Ph.D. Admissions Guidelines

The minimum GPA established by the University of California for admission to graduate school is 3.0. In general, the Ph.D. in education program admits based on a holistic assessment of potential for excellence in graduate study, whether this manifests itself in a high GPA, strong letters of recommendation, or a strong Statement of Purpose. Applicants are evaluated on their individual merits and also with regard to how well their proposed doctoral research can be supported by the existing resources of the program.

Admission Requirements

- Bachelor's degree, or its equivalent, from an accepted university prior to the quarter for which admission is sought
- 3.0 GPA or above
- Experience working with culturally and linguistically diverse students and/or communities
- Statement of Purpose
- Personal History Statement
- A writing sample, preferably in education or a related field. The sample can be a term paper, a field report, a research proposal, or an essay written especially for the application
- Official transcripts from all colleges/universities attended after high school
- Three current recommendation letters specifying potential for academic or scholarly work
- Current résumé
- Application fee
- International applicants must take the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) test. A minimum score of 550 on the TOEFL (paper), 220 on the TOEFL (computer), or 83 on the Internet-based test is required for admission. For those choosing to take the IELTS, a minimum overall score of 7 is required. The program follows Graduate Division guidelines when considering TOEFL waivers.

Prior to completing an application, we highly recommend identifying a potential faculty advisor and making contact with them by email. Please contact the education faculty

member(s) whose research interest is similar to your own and explore the possible fit in your interests and their expertise. (For descriptions of faculty research, please visit the Education Department website).

Financial Support

UC Santa Cruz guarantees five years of funding to all admitted Ph.D. students. Financial support for students includes a variety of fellowships, research assistantships, and teaching assistantships. Students may participate in research projects under the auspices of several interdisciplinary research centers and research projects. In the past, these have included the Chicano/Latino Research Center (CLRC), the Vocabulary Innovations in Education (VINE) project, The Teachers With Computers: Ward Annotations for Vocabulary Education (tecWAVE) project, English Language and Literacy Integration in Subject Areas (ELLISA), Effective Science Teaching for English Language Learners (ESTELL) project, The Center for Collaborative Research for an Equitable California (CCREC), and the Center for Educational Research in the Interest of Underserved Students (CERIUS). Recently, students have participated in research projects with the Center for Research on Equity and Collaborative Evaluation (CRECE) and the History Civics Project (HCP).

For Further Information

Contact the doctoral student adviser by sending an email to edgrada@ucsc.edu or view the Education Department's home page where potential applicants can obtain full details about the programs.

Advancement to Candidacy

To achieve Ph.D. candidacy, students are expected to pass an annual review of their written work, maintain satisfactory academic progress, complete all required courses, attend department colloquia, complete a second-year research project, complete a TAship or teaching internship, pass a qualifying examination, and meet the specific requirements of the Division of Graduate Studies.

Course Requirements

During the first two years of study, all students are expected to enroll in a set of required courses, including foundational courses, methodology courses, and elective courses. The student and his/her faculty adviser will determine the overall program of study, depending on the student's preparation, interests, and plans. The program encourages interdisciplinary study.

Course Requirements and Sequencing

The following courses constitute the minimum requirements: four foundational courses, five research methods courses, four elective courses, one additional course in any category, a second-year project independent study, a second-year doctoral proseminar sequence, and a research apprenticeship.

Incoming students consult with their faculty advisers about the current course offerings to determine the order in which they will complete required courses. Students are encouraged to consider these as the foundation and minimum required for doctoral studies. In consultation with their advisers, students will determine the full set of research methods and elective courses they will complete based on their intellectual interests and professional goals. All required courses must be completed prior to advancement to candidacy but students may continue to take classes throughout their program.

The department typically offers approximately eight doctoral courses during each year. The Education Department annually admits 4-6 Ph.D. students, leaving room for doctoral students from other departments to take courses in education.

Courses required before advancing to candidacy:

EDUC 235	Introduction to Educational Inquiry	5
EDUC 236	Quantitative Research Methods	5
EDUC 237	Qualitative Research Methods	5
EDUC 250	Teaching and Teachers	5
EDUC 255	Intermediate Quantitative Methods	5
EDUC 256	Intermediate Qualitative Analysis	5
EDUC 261	Thinking and Learning	5
EDUC 262	Social and Cultural Context of Education	5
EDUC 272	Language in Education and Society	5

And four electives, two of which must be from the list below:

Choose two of the following:

EDUC 263	Educational Reform	5
EDUC 264	Research on Teacher Development and Teacher Education	5
EDUC 268	Schools, Communities, and Families	5
EDUC 280	Language and Literacy Across Disciplines	5
EDUC 286	Research in STEM Education	5
EDUC 295	Critical Perspectives on Education	5

Plus one additional course from any category

Plus the following courses

A total of 16 credits from the following:

Both of the following courses

EDUC 293B	Research Apprenticeship	5
EDUC 294	Second-Year Research Project	5

EDUC 293A is a 2-credit course and can fulfill the requirement for EDUC 293B if it is taken three times.

Plus 6 credits from the following Second-Year Doctoral Proseminar series

EDUC 277A	Second-year Doctoral Proseminar	2
EDUC 277B	Second-year Doctoral Proseminar	2
EDUC 277C	Second-year Doctoral Proseminar	2

EDUC 277A, EDUC 277B, EDUC 277C must each be taken to satisfy the requirement.

The following may also be counted toward meeting elective requirements:

- M.A. course in education with additional readings and assignments. (Do not count toward the four electives and/or the additional course.)
- Independent Study. (One maximum to count toward the four electives and/or the additional course.)
- Undergraduate upper-division course with additional readings and assignments. (One maximum to count toward the four electives and/or additional course.)

Other Requirements

Students are required to attend the Education Department's colloquium series during their first and second years in the program.

Students are required to complete a second-year project paper (the same project to be approved for the en route M.A.). The final version must be approved by two faculty readers by the end of spring quarter of their second year.

Foreign Language Requirements

Teaching Requirement

The education Ph.D. program emphasizes teaching experience, and all students are required to complete one TAship or teaching internship in education prior to advancement to candidacy.

Pre-Qualifying Requirements

Students are required to attend the Education Department's colloquium series during their first and second years in the program.

Students are required to complete a second-year project paper (the same project to be approved for the en route M.A.). The final version must be approved by two faculty readers by the end of spring quarter of their second year.

Qualifying Examination

The qualifying examination is intended to assess a student's depth and breadth of knowledge in their areas of concentration and his/her competence to do extended dissertation-level research. Normally taken near the end of the third year of enrollment, the examination consists of both written and oral components. For the written portion, the student prepares three papers, two of which advance a position based on a review of related research, theoretical framework, or research design/methods; the third is a dissertation prospectus. The student presents and defends their work at the oral examination.

Post-Qualifying Requirements

To achieve Ph.D. candidacy, students are expected to pass an annual review of their written work, maintain satisfactory academic progress, complete all required courses, attend department colloquia, complete a second-year research project, complete a TAship or teaching internship, pass a qualifying examination (QE), and meet the specific requirements of the Division of Graduate Studies.

Advancement to Candidacy

To achieve Ph.D. candidacy, students are expected to pass an annual review of their written work, maintain satisfactory academic progress, complete all required courses, attend department colloquia, complete a second-year research project, complete a TAship or teaching internship, pass a qualifying examination, and meet the specific requirements of the Division of Graduate Studies.

Requirements for the M.A. Degree

Although applications for a master's degree independent of the Ph.D. program are not accepted, students in the Ph.D. program may obtain a M.A. degree after successfully completing a minimum of six quarters residency, a total of 81 course credits (including four foundational courses, five research methods courses, at least four elective courses, a minimum of two from the Education Electives list, one more course from any category, a 5-credit course for the second-year research project, a three-quarter second-year proseminar sequence), and an approved and completed second-year research project. Students seeking an M.A. degree must adhere to the guidelines set forth by the Graduate Division.

Optional Catchall

Dissertation

Dissertation

A dissertation based on substantive original research is required.

Dissertation Defense

After the dissertation has been completed, students must defend the dissertation in an oral examination.

Academic Progress

Applying for Graduation

[Optional Catchall]

EDUCATION DESIGNATED

EMPHASIS

Introduction

The Designated Emphasis in Education enables doctoral students in other departments to pursue interests in education and obtain formal certification of competence in the field of education. Most Education Department Ph.D. courses are offered every other year; the Education Department welcomes D.E. students from other departments to take courses in education. Students should work closely with their education adviser to develop a plan for taking the coursework in a timely fashion.

Education is an institutional field in which scholars from a wide variety of disciplines—including sociology, psychology, politics, economics, mathematics and science—have scholarly interests. A Designated Emphasis in Education enables graduate students from other departments to ground their work in theory and research on important issues in education.

Requirements

The requirements for obtaining a designated emphasis in education are the following:

Committee Composition and Departmental Approvals

Obtain a designated faculty advisor from the faculty in the Education Department. This faculty advisor will be in addition to the faculty advisor from the student's home department. The education faculty advisor must serve on the student's qualifying examination committee and, as appropriate, may also serve on the student's dissertation committee.

Course Requirements

Complete at least five EDUC 5-credit doctoral courses for a total of 25 credits, and 25 credits, from the following list, with no more than two in research methods. Any requests for substitutions must be approved by the Education Department graduate director.

Choose five courses from the following options:

Choose five courses from the following options:

EDUC 235	Introduction to Educational Inquiry	5
EDUC 236	Quantitative Research Methods	5
EDUC 237	Qualitative Research Methods	5
EDUC 250	Teaching and Teachers	5
EDUC 255	Intermediate Quantitative Methods	5
EDUC 256	Intermediate Qualitative Analysis	5
EDUC 261	Thinking and Learning	5
EDUC 262	Social and Cultural Context of Education	5
EDUC 263	Educational Reform	5
EDUC 264	Research on Teacher Development and Teacher Education	5
EDUC 268	Schools, Communities, and Families	5
EDUC 272	Language in Education and Society	5
EDUC 280	Language and Literacy Across Disciplines	5
EDUC 286	Research in STEM Education	5
EDUC 295	Critical Perspectives on Education	5

With no more than two courses from the following group:

EDUC 235	Introduction to Educational Inquiry	5
EDUC 236	Quantitative Research Methods	5
EDUC 237	Qualitative Research Methods	5
EDUC 255	Intermediate Quantitative Methods	5
EDUC 256	Intermediate Qualitative Analysis	5

And the remainder from this group:

EDUC 250	Teaching and Teachers	5
EDUC 261	Thinking and Learning	5
EDUC 262	Social and Cultural Context of Education	5
EDUC 263	Educational Reform	5
EDUC 264	Research on Teacher Development and Teacher Education	5
EDUC 268	Schools, Communities, and Families	5
EDUC 272	Language in Education and Society	5
EDUC 280	Language and Literacy Across Disciplines	5
EDUC 285	Culture and Learning	5
EDUC 295	Critical Perspectives on Education	5

Writing, Research and/or Teaching Requirements

Prepare a significant piece of writing in some area of education. This writing may take the form of a substantial position paper (QE paper) grounded in the literature of educational research, as determined by the graduate advisor in education. In the event the education faculty advisor serves on the dissertation committee then the writing may instead be a dissertation chapter.

Academic Progress

For Further Information

Contact the doctoral student advisor by sending an email to edgrada@ucsc.edu or view the Education Department's home page where potential applicants can obtain full details about the programs.

[Optional Catchall]

Environmental Studies

405 Interdisciplinary Sciences Building
(831) 459-2634--Main Office
(831) 459-5004--Undergraduate Major and Requirement Inquiries
(831) 459-4136--Doctoral Program Inquiries
https://envs.ucsc.edu

PROGRAMS OFFERED

Environmental Studies B.A. (p. 739)

Agroecology B.A. (p. 757)

Environmental Studies/Biology B.A. (p. 763)

Environmental Studies/Earth Sciences B.A. (p. 770)

Environmental Studies/Economics B.A. (p. 776)

Geographic Information Systems (GIS) M.A. (p. 782)

Environmental Studies Ph.D. (p. 784)

Environmental Studies Designated Emphasis (D.E.) (p. 785)

Environmental Studies is a field of study that views the Earth and our place in it, as a set of complex, interacting socio-ecological systems. At UC Santa Cruz, we use an interdisciplinary approach to study the social, cultural, and scientific relationships with the environment. Courses in environmental studies provide training not only in the physical and social sciences, but also in writing, critical thinking, quantitative analysis, project and team management, and more. Environmental studies alumni are making a difference in conservation organizations, habitat restoration, sustainable agriculture, environmental mediation, biodiversity research, and many other areas.

UNDERGRADUATE PROGRAM

The environmental studies major prepares students for meaningful lifetime engagement with the environmental challenges that are facing society. UCSC environmental studies graduates hold leadership positions as legislative and policy analysts, environmental lawyers, environmental managers, city and state planners, educators, restoration ecologists, organic farmers and agroecology specialists, conservation biologists, environmental engineers, museum curators, business consultants, and political advocates. In addition, many graduates go on to obtain professional, master's, or doctoral degrees at the nation's finest institutions.

Students pursue an interdisciplinary curriculum that combines coursework in the natural and social sciences. Introductory courses cover the ecological, political, and economic aspects of historic, current and future environmental issues. The core course, Environmental Studies 100/L, Ecology and Society builds on the skills acquired in the lower-division classes, and encourages students to apply ecological, economic, and political skills toward environmental and ecosystem management. The remaining upper-division elective courses further emphasize the integration of ecological knowledge with an understanding of social institutions and policies. The program emphasizes active, interdisciplinary learning with the overall objective of instilling the necessary skills to conserve biodiversity and integrate the principles of sustainability with respect to management of complex environmental systems. Faculty work on these issues at local, regional, and global levels, providing a unique, proactive, and progressive academic environment for students wishing to pursue a degree program within the Environmental Studies Department.

As a complement to classroom instruction and research, many courses have field components. The Environmental Studies Internship Program helps qualified students find placements with government and educational agencies, community organizations, and private firms. Furthermore, faculty-directed, independent, or field-oriented research courses allow environmental studies students the opportunity to learn more about their specific academic career or personal interests, often while earning academic credit.

In addition to the single environmental studies major, students can also choose to pursue the agroecology major. The major will provide students with a depth of expertise in interdisciplinary knowledge and skills related to agroecology and sustainable food systems. UCSC students pursuing the B.A. in agroecology will gain knowledge and skills in multiple disciplines and an increased understanding of complex agricultural systems.

Students may also choose to pursue one of three combined majors with biology, earth sciences, or economics. The combined major curricula offer the unique integration of the underlying concepts of environmental studies with a focus on the application of these concepts in a closely related field (or vice versa).

The general environmental studies B.A. major offers three concentrations in addition to the major without a concentration. Below are the concentrations offered in the environmental studies B.A. major.

Geographic Information Systems Concentration

Geographic Information Systems (GIS) is an interdisciplinary field that links ecology, geography, and society to evaluate and facilitate environmental planning, policy, management and conservation. Within environmental studies, GIS addresses complex and interconnected social and ecological problems and fosters more sustainable environmental futures by supporting the visualization of geographical distribution of environmental problems and solutions. GIS is also an information technology field that acquires, manages, interprets, integrates, displays, analyzes, or otherwise uses socio-economic and environmental data focusing on geographic, temporal, and spatial contexts. Students in the GIS concentration will develop a strong foundation in environmental problem solving that is linked to geospatial data acquisition and management, computer-based GIS technologies, and advanced geospatial analysis. GIS is a key

emerging industry in the U.S. today and job growth is rapidly expanding. GIS specialists work in many areas, including research and analysis in resource and environmental management, biology, sociology, marine sciences, commercial business and marketing, and urban and regional planning.

The GIS concentration provides students within environmental studies majors with a set of foundational courses in introductory geospatial data management and visualization, information technology and software in GIS, and advanced geospatial analytical approaches for environmental applications. The program learning outcomes and student competencies that are achieved through the concentration include the successful development of basic geospatial technology skills and abilities, advanced geo-spatial data analysis abilities for environmental applications, enhanced understanding of scale, co-production of space, politics and power of representation, and the preparation of students for entry and mid-level careers as GIS specialists.

Global Environmental Justice Concentration

According to the United States Environmental Protection Agency (EPA), environmental justice is defined as 'the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.' Today, environmental justice is a pillar of national environmental policy, with a swathe of laws and legislation that covers a wide range of sectors. It is a growing area in policy, advocacy and scholarship internationally, embracing topics as diverse as indigenous rights, gender equity and climate justice. In recent years, a parallel idea—of human rights and the environment—has emerged in legal and policy contexts. Environmental justice and human rights are thus among the fastest growing subjects in environmental public policy globally.

This concentration provides students within environmental studies majors with special depth of understanding of the issues and approaches central to global environmental justice The global environmental justice concentration is premised on the assertion that the distribution of environmental problems reflects longstanding, uneven terrains of power and privilege, exploitation, and dispossession. Globalization and the fluidity of corporate capital, commodity chains and community campaigns require approaches that conceptualize the frictions between the local and global, legacies of colonialism, and multiplicity of responses— human and non-human—in the face of oppression, adaptation, and resistance. The inextricable interconnections between ecological and social degradation, and the social implications of efforts to remedy ecological degradation, are an intrinsic and important core of environmental studies.

Conservation Science and Policy Concentration

Effective conservation of biological diversity requires integrating principles of conservation biology and environmental policy. Conservation science is built on a foundation of natural history embedded into a framework of modern ecological theory. Conservation policy reflects social values and provides the economic and legislative tools to achieve desired goals surrounding the conservation of species and ecosystems. The purpose of the conservation science and policy concentration is to provide students within environmental studies majors with the depth and necessary skills in natural history, conservation biology, and environmental policy to effectively engage in this intrinsically interdisciplinary field. Students completing this concentration will be prepared for positions with government agencies and conservation organizations concerned with biodiversity conservation and ecosystem management.

The concentration requires upper-division core courses in both natural and social science aspects of conservation, as well as a field-based course in ecology, natural history, or conservation. The field-based course is important because effective work in the conservation field requires a deep understanding of natural ecosystems. This is best learned through immersive, experiential field courses that develop a natural history-based understanding of ecosystems as well as how to ask and answer critical ecological and conservation questions.

GRADUATE PROGRAM

GIS Masters Program

ENVS is launching our new GIS masters program in 2024-2025. More information will be shared on envs.ucsc.edu as it becomes available.

Environmental Studies Ph.D. Program

Established in 1994, the doctoral program* in the Department of Environmental Studies at UC Santa Cruz emphasizes close faculty-student interactions, department-wide intellectual exchange, and cross-discipline innovation. The goal of our Ph.D. program is to develop exceptional individuals with strong foundations in their own fields, and the ability to work with those in other relevant specialties.

The program draws from two main areas: ecology and social science. These are historically independent fields and UCSC's Environmental Studies program is one of the first to link them.

Graduates of the Environmental Studies Doctoral Program at UC Santa Cruz are expected to be informed in conservation biology, global change ecology, agroecology, environmental policy, and political economy of the environment. Our students have deep intellectual strength in their area of specialty, and make substantial contributions toward the understanding of an environmental problem.

Please contact our Graduate Program coordinator with any questions or inquiries you may have.

DESIGNATED EMPHASIS

The Designated Emphasis is the equivalent of a "minor" for doctoral study. It will provide you with a framework for in-depth study in specialized fields in your area, and an opportunity for recognition of particular scholarly expertise.

Discuss your intention to declare the Environmental Studies Designated Emphasis with your primary advisor and the Graduate Program coordinator, in your primary Ph.D. program.

Please see this page for information about the Designated Emphasis in Environmental Studies.

**Our program is doctoral only, we do not offer a terminal master's degree at our program.*

ENVIRONMENTAL STUDIES B.A.

Information and Policies

Introduction

The environmental studies major provides an interdisciplinary approach to learning how to move toward a more sustainable future for human and ecological systems. Courses in environmental studies provide training not only in the physical, biological, and social sciences, but also in writing, critical thinking, quantitative analysis, project and team management, and more. Most students extend their learning outside the classroom through the departmental internship program.

The major is available either without a concentration or in conjunction with one of three more specialized concentrations that provide depth in particular areas of expertise. See the Undergraduate Program page for a description of each of the concentrations offered.

Program Learning Outcomes

Students graduating with a B.A. degree in environmental studies will be able to:

- Identify the societal (social, political, economic and ethical) agents and structures that contribute to environmental change. (social science competency)
- Describe the structure and functioning of major physical and ecological components of the earth's systems. (natural science competency)
- Access and analyze a complex literature addressing specific topics in environmental studies, and evaluate the usefulness and limitations of individual sources of information. (analytic thinking)
- Demonstrate effective oral and written communication skills. (communication skills).

Academic Advising for the Program

Advising is one way to make the most of your university experience. Ask questions, seek advice, and make decisions that work best for you.

To receive advising for this major, contact envsadvi@ucsc.edu. Additional information for prospective transfer students can be found in the Transfer Information and Policy section.

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website. Language placement is not required for the major.

Transfer Information and Policy

Transfer Admission Screening Policy

Students who apply for transfer admission to the major are required to have taken the equivalents of the following courses with a C grade (2.0) or better by the end of the spring term for students planning to enter in the fall.

One of the following:

ENVS 23	The Physical and Chemical Environment	5
CHEM 3A	General Chemistry	5
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus one of the following:

AM 3	Precalculus for the Social Sciences	5
MATH 3	Precalculus	5
AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Recommended Courses

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

One of these courses:

BIOE 20C	Ecology and Evolution	5
ENVS 24	General Ecology	5

Plus one of these:

ENVS 25

or

A course in national or international politics and a course in macroeconomics or microeconomics

Plus both of these courses:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
ENVS 26	Culture and the Environment	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

General Education Courses (GEs)

Prospective students are also encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or to complete all UC Santa Cruz general education requirements before matriculation.

Getting Started in the Major: Transfer Students

Transfer students pursuing environmental studies majors are encouraged to transfer in the fall quarter.

Transfer students should complete as many lower-division requirements as possible before transferring. All remaining lower-division requirements should be completed in enroll in summer, fall, and winter of their first year in order to take ENVS 100 ENVS 100L in winter or spring quarter of their first year. Transfer students can formally declare their major once qualification courses are successfully completed, following the declaration steps on the ENVS department website.

ENVS 25 and ENVS 23 are usually offered during Summer Session at UC Santa Cruz, and transfer students are encouraged to take these classes if they have not yet completed a substitute requirement or if they want a better understanding of the relevant material. If you are transferring, compare catalog descriptions, consult your current institution's advisor, and refer to the ASSIST website to determine equivalency.

Students who are proposed in a different major and have advanced standing when they come to UCSC require permission from the department to change into the major. Contact envsadvi@ucsc.edu to request permission.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify for the environmental studies major, students must complete the specific courses listed below, or their approved equivalents. Some courses may be satisfied via exam credit.

For transfer requirements see Transfer Admission Screening Requirements. Transfer students must have ENVS major listed on their application in order to pursue the major, unless approved by appeal. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

One of the following:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus this course:

ENVS 25	Environmental Politics, Economics and Justice	5

Plus one of these statistics series:

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Determining Qualification

- Students who complete all the qualification courses with a grade of P, or letter grade of C or better are qualified to declare the major.
- Students who have received **one** grade of NP, C-, D+, D, D-, or F in one of the qualification courses taken at UC Santa Cruz will only be qualified to declare the major after successfully completing the same or an equivalent course with a grade of P, or letter grade of C or better.
- Students with **two or more** grades of NP, C-, D+, D, D-, or F in the qualification courses taken at UC Santa Cruz are not qualified to declare the major. See appeal process below.
- Students with AP credit (score of 3 or higher) for any of the qualification course(s) are qualified to declare after successfully completing the remaining qualification courses.

Appeal Process

Students who are not qualified to declare the major may appeal this decision by submitting an appeal to qualify for the major within 15 days of the denial of the declaration. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

How to Declare this Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Students wishing to declare within the Environmental Studies Department should visit the Environmental Studies Department website and follow the declaration steps.

Letter Grade Policy

This program does not have a letter grade policy, except that the comprehensive (senior exit) requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Single environmental studies students can petition up to two upper-division courses to count toward the single environmental studies major requirements. These two substitutions courses may be the following:

- Pre-approved substitution courses: See the department website for a list of classes that can be taken without petition, as a substitution for an ENVS elective.
- By petition: You may petition to substitute courses taken outside of ENVS and/or UC Santa Cruz such as: other institutions, other departments, courses not listed on the pre-approved substitution list, other programs including Educational Abroad Program (EAP), Wildlands Studies, or the Sierra Institute. Please review the petitioning process here.

Double Majors and Major/Minor Combinations Policy

Study Abroad

Students in environmental studies are encouraged to participate in Study Abroad programs and other off-campus programs. Students who are interested in these programs shall note the following policies:

- Students who are planning to take part in Study Abroad programs must be declared in their major prior to studying abroad.
- Students must have their courses they plan to take abroad reviewed and approved by Environmental Studies Advising.
- Single environmental studies majors may petition to substitute up to two courses taken abroad to count toward the environmental studies upper-division electives. Please review the petitioning process here prior to your EAP program.
- For more information on EAP, please visit the UC Education Abroad Program website.

Honors

Departmental Honors. Students must have a 3.5 grade point average (GPA) in all courses used to satisfy the environmental studies upper-division requirements. To be considered for departmental honors, students are limited to no more than one grade of P in those upper-division courses.

Senior Comprehensive Honors. Honors must be nominated by the student's faculty sponsor, and a second faculty member must concur.

Highest Departmental Honors. Students must have a 3.75 grade point average (GPA) in in all courses used to satisfy the environmental studies upper-division requirements and must also receive senior comprehensive honors (see above). To be considered for highest departmental honors, students are limited to no more than one grade of P in those upper-division courses.

[Optional Catchall]

Major Without a Concentration

Course Requirements

Continuing students must complete all lower-division course requirements before taking ENVS 100 and ENVS 100L. Some courses may be satisfied via exam credit.

Lower-Division Courses

One of the following options:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus the following course:

ENVS 25	Environmental Politics, Economics and Justice	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 3 or higher on the AP Calculus exam or a score of 300 or higher on the ALEKS Math Placement Exam.

Plus one of these statistics series:

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Plus one of the following:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
ENVS 26	Culture and the Environment	5

Upper-Division Courses

Students are required to complete the following upper-division courses:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

ENVS 100 and ENVS 100L are offered twice yearly, during the winter and spring quarters.

Electives

Students take seven, 5-credit or more upper-division electives from ENVS 101-179. Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture. Among those seven courses:

- At least one course must be from the list below of courses based in the natural sciences
- At least one course must be from the list below of courses based in the social sciences

A list of all courses offered by the Environmental Studies Department is available in the courses section of the catalog. A list of which upper-division courses offered in the current year by the Environmental Studies Department are based in the natural sciences and which in the social sciences is available on the department website.

Environmental studies electives based in natural sciences:

Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture.

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 106A	Natural History of Birds	5
ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5
ENVS 108L	General Entomology Laboratory	3
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
BIOE 125	Ecosystems of California	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 131	Insect Ecology	5
ENVS 133	Agroecology Practicum	5
ENVS 135	Sustainable Aquaculture	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 162L	Plant Physiological Ecology Laboratory	2
ENVS 163	Plant Disease Ecology	5
ENVS 163L	Plant Disease Ecology Lab	2
ENVS 164	Projects and Practices in Soil Ecology	5
ENVS 166	Agroecosystem Analysis and Watershed Management	5
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 167L	Freshwater and Wetland Ecology Lab	2
ENVS 168	Biogeochemistry and the Global Environment	5
ENVS 169	Climate Change Ecology	5
ENVS 170	Agriculture and Climate Change	5

Environmental studies electives based in the social sciences:

ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 140	National Environmental Policy	5
ENVS 141	Ecological Economics	5
ENVS 143	The Future of Sustainable Development	5
ENVS 144	Global Climate Change Politics	5
ENVS 145	Green Cities	5
ENVS 147	Global Environmental Justice	5
ENVS 149	Environmental Law and Policy	5
ENVS 150	Coastal and Marine Policy	5
ENVS 151	Environmental Assessment	5
ENVS 152	International Environmental Politics	5
ENVS 154	Amazonian Cultures and Conservation	5
ENVS 158	Political Ecology and Social Change	5
ENVS 165	Sustainable Water Systems	5
ENVS 172	Environmental Risks and Public Policy	5
ENVS 173	An Introduction to World Environmental History	5
ENVS 174	Gender and the Environment	5
ENVS 176	Vulnerability, Complex Systems, and Disasters	5
ENVS 178	Race and the Environment	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. A primary goal of the environmental studies major is to train students who are able to critically analyze interdisciplinary environmental problems, justify their position on an issue, and communicate that position to a range of audiences verbally and in writing.

The DC requirement in environmental studies is satisfied by completing

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following:

BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5

ENVS 183B	Senior Internship	5
ENVS 190	Capstone Course: Environmental Problem Solving	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5

ENVS 183B is taken after successfully completing ENVS 183A, and ENVS 195B is taken after successfully completing ENVS 195A.

Comprehensive Requirement

The senior comprehensive may be satisfied by completing one of the options listed below. **All courses used to satisfy the senior comprehensive requirement must be taken for a letter grade.**

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. The senior thesis and senior internship option require careful planning, additional independent research, and at least a two-quarter commitment.

Students with advanced skills in one of the graduate focal areas may also take a graduate seminar by invitation from the instructor.

	Either this course	
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
	or these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or this course	
ENVS 190	Capstone Course: Environmental Problem Solving	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	
ENVS 196	Senior Seminar	5

ENVS 190 is offered in the spring and summer.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the environmental studies B.A. major without a concentration. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3		SOC/ANTH/PHIL course ENVS 25 WRIT 1/WRIT 1E (if needed)	ENVS 23
2nd (soph)	ENVS 24 or BIOE 20C STAT 7 STAT 7L WRIT 2**		ENVS 100 ENVS 100L*	Upper-division ENVS
3rd (junior)	Upper-division ENVS (social science)		Upper-division ENVS (natural science)	Upper-division ENVS
4th (senior)	Upper-division ENVS		Upper-division ENVS	Upper-division ENVS Comprehensive requireme

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*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

Students completing this major will have satisfied the SI, IN, PE-E, IS, and PR-E general education requirements. In addition, they will need to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	STAT 7 STAT 7L	ENVS 100 ENVS 100L* Upper-division ENVS	Upper-division ENVS	
4th (senior)	Upper-division ENVS Upper-division ENVS	Upper-division ENVS Upper-division ENVS	Comprehensive requirement	

		(natural science)		

*This course is also offered in the spring term.

This planner assumes that a student has completed all required lower-division courses—including UCSC or community college general education requirements—with the exception of STAT 7 and STAT 7L, which is only offered at UC Santa Cruz.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

A transfer student who has completed the requirements for the Intersegmental General Education Transfer Curriculum (IGETC) before matriculating at UC Santa Cruz, with at most two course requirements left to complete, is allowed to satisfy IGETC in lieu of the UCSC general education requirements.

Geographic Information Systems Concentration

Course Requirements

Continuing students must complete all lower-division courses before taking ENVS 100 ENVS 100L. Some courses may be satisfied via exam credit.

Lower-Division Courses

One of the following courses:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B

and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus the following course:

ENVS 25	Environmental Politics, Economics and Justice	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 3 or higher on the AP Calculus exam or a score of 300 or higher on the ALEKS Math Placement Exam.

Plus one of the following statistics series:

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
ENVS 26	Culture and the Environment	5

Upper-Division Courses

Students are required to complete the following upper-division courses:

All of the following

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

ENVS 100 and 100L are offered twice yearly during the winter and spring quarters.

Plus all of the following:

ENVS 115A	Geographic Information Systems and Environmental Applications	5
ENVS 115L	Exercises in Geographic Information Systems	2
ENVS 115B	Intermediate Geographic Information Systems (GIS)	5
ENVS 115C	Advanced Geographic Information Systems	5

Electives

Students take four, 5-credit or more upper-division electives from ENVS 101-179. Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture. Among those seven courses:

- At least one course must be from the list below of courses based in the natural sciences
- At least one course must be from the list below of courses based in the social sciences

A list of all courses offered by the Environmental Studies Department is available in the courses section of the catalog. A list of which upper-division courses offered in the current year by the Environmental Studies Department are based in the natural sciences and which in the social sciences is available on the department website.

In addition to coursework, it is strongly recommended that students complete at least one internship related to GIS applications environmental problem-solving (either upper- or lower-division).

Environmental studies electives based on natural sciences:

Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture.

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 106A	Natural History of Birds	5

ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5
ENVS 108L	General Entomology Laboratory	3
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
BIOE 125	Ecosystems of California	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 131	Insect Ecology	5
ENVS 133	Agroecology Practicum	5
ENVS 135	Sustainable Aquaculture	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 162L	Plant Physiological Ecology Laboratory	2
ENVS 163	Plant Disease Ecology	5
ENVS 163L	Plant Disease Ecology Lab	2
ENVS 164	Projects and Practices in Soil Ecology	5
ENVS 166	Agroecosystem Analysis and Watershed Management	5
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 167L	Freshwater and Wetland Ecology Lab	2
ENVS 168	Biogeochemistry and the Global Environment	5
ENVS 169	Climate Change Ecology	5
ENVS 170	Agriculture and Climate Change	5

Environmental studies electives based on the social sciences:

ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 140	National Environmental Policy	5
ENVS 141	Ecological Economics	5
ENVS 143	The Future of Sustainable Development	5
ENVS 144	Global Climate Change Politics	5
ENVS 145	Green Cities	5
ENVS 147	Global Environmental Justice	5
ENVS 149	Environmental Law and Policy	5
ENVS 150	Coastal and Marine Policy	5
ENVS 151	Environmental Assessment	5
ENVS 152	International Environmental Politics	5
ENVS 154	Amazonian Cultures and Conservation	5
ENVS 158	Political Ecology and Social Change	5
ENVS 165	Sustainable Water Systems	5
ENVS 172	Environmental Risks and Public Policy	5
ENVS 173	An Introduction to World Environmental History	5
ENVS 174	Gender and the Environment	5
ENVS 176	Vulnerability, Complex Systems, and Disasters	5
ENVS 178	Race and the Environment	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. A primary goal of the environmental studies major is to train students who are able to critically analyze interdisciplinary environmental problems, justify their position on an issue, and communicate that position to a range of audiences verbally and in writing.

The DC requirement in environmental studies is satisfied by completing

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following:

ENVS 183B	Senior Internship	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5

ENVS 183B is taken after successfully completing ENVS 183A, and ENVS 195B is taken after successfully completing ENVS 195A.

Comprehensive Requirement

The senior comprehensive may be satisfied by completing one of the options listed below. **All courses used to satisfy the senior comprehensive requirement must be taken for a letter grade.** The topic engaged in the senior comprehensive courses must be relevant to the field of Geographic

Information Systems. The relevance of the topic will be reviewed by the instructor of the senior comprehensive course.

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. The senior thesis and senior internship options require careful planning, additional independent research, and at least a two-quarter commitment.

	Either these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	
ENVS 196G	Senior Seminar in Geographic Information Systems (GIS)	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the environmental studies B.A. major with a concentration in geographic information systems. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	ENVS 25 SOC/ANTH/PHIL course WRIT 1/WRIT 1E (if needed)	ENVS 23	
2nd (soph)	ENVS 24 or BIOE 20C STAT 7 STAT 7L WRIT 2**	ENVS 100L*	ENVS upper-division	
3rd (junior)	ENVS 115A ENVS 115L	ENVS 115B	ENVS 115C	
4th (senior)	ENVS upper-division (social science)	ENVS upper-division (natural science)	ENVS upper-division Comprehensive requirement	

*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

This planner assumes that a student has placed into MATH 3 or AM 3.

Students completing this major will have satisfied SI, IN, PE-E, IS, and PR-E general education requirements. In addition, they will need to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS

183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	STAT 7 STAT 7L	ENVS 100 ENVS 100L*	ENVS upper-division	
		ENVS upper-division (social science)	ENVS upper-division (natural science)	
2nd (senior)	ENVS 115A ENVS 115L	ENVS 115B	ENVS 115C	
		ENVS upper-division	Comprehensive requirement	

*This course is also offered in the spring term.

This planner assumes that a student has completed all required lower division courses—including UCSC or community college General Education requirements—with the exception of STAT 7 STAT 7L, which is only offered at UC Santa Cruz.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

A transfer student who has completed the requirements for the Intersegmental General Education Transfer Curriculum (IGETC) before matriculating at UC Santa Cruz, with at most two course requirements left to complete, is allowed to satisfy IGETC in lieu of the UCSC general education requirements.

Global Environmental Justice Concentration

Course Requirements

Continuing students must complete all lower-division courses before taking ENVS 100 ENVS 100L. Some courses may be satisfied via exam credit.

Lower-Division Courses

One of the following:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus the following course:

ENVS 25	Environmental Politics, Economics and Justice	5

Plus one of the following courses:

The math requirement may be satisfied by taking one of the classes below, or by testing out via AP score or ALEKS math placement.

AM 3	Precalculus for the Social Sciences	5
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 3 or higher on the AP Calculus exam or a score of 300 or higher on the ALEKS Math Placement Exam.

Plus one of these statistics series:

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
ENVS 26	Culture and the Environment	5

Upper-Division Courses

Students are required to complete the following upper-division courses:

Both of the following courses:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

ENVS 100 and 100L are offered twice yearly during the winter and spring quarters.

Plus four of the following environmental justice electives:

ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 140	National Environmental Policy	5
ENVS 143	The Future of Sustainable Development	5
ENVS 144	Global Climate Change Politics	5
ENVS 147	Global Environmental Justice	5
ENVS 152	International Environmental Politics	5
ENVS 154	Amazonian Cultures and Conservation	5
ENVS 158	Political Ecology and Social Change	5
ENVS 172	Environmental Risks and Public Policy	5
ENVS 173	An Introduction to World Environmental History	5
ENVS 174	Gender and the Environment	5
ENVS 176	Vulnerability, Complex Systems, and Disasters	5
ENVS 178	Race and the Environment	5
JRLC 135	Apprenticeship in Community Engaged Research	5
SOCY 185	Environmental Inequality	5

Plus three additional upper-division electives:

Students take three, 5-credit or more upper-division electives from ENVS 101-179. Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture. Among those four courses, at least one course must be from the list below of courses based in the natural sciences.

A list of all courses offered by the Environmental Studies Department is available in the courses section of the catalog. A list of which upper-division courses offered in the current year by the Environmental Studies Department are based in the natural sciences and which in the social sciences is available on the department website.

Natural sciences

Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture.

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 106A	Natural History of Birds	5
ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5

ENVS 108L	General Entomology Laboratory	3
BIOE 125	Ecosystems of California	5
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 131	Insect Ecology	5
ENVS 135	Sustainable Aquaculture	5
ENVS 133	Agroecology Practicum	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 162L	Plant Physiological Ecology Laboratory	2
ENVS 163	Plant Disease Ecology	5
ENVS 163L	Plant Disease Ecology Lab	2
ENVS 164	Projects and Practices in Soil Ecology	5
ENVS 166	Agroecosystem Analysis and Watershed Management	5
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 167L	Freshwater and Wetland Ecology Lab	2
ENVS 168	Biogeochemistry and the Global Environment	5
ENVS 169	Climate Change Ecology	5
ENVS 170	Agriculture and Climate Change	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. A primary goal of the environmental studies major is to train students who are able to critically analyze interdisciplinary environmental problems, justify their position on an issue, and communicate that position to a range of audiences verbally and in writing.

The DC requirement in environmental studies is satisfied by completing

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following:

ENVS 183B	Senior Internship	5
ENVS 190	Capstone Course: Environmental Problem Solving	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5

ENVS 183B is taken after successfully completing ENVS 183A, and ENVS 195B is taken after successfully completing ENVS 195A.

Comprehensive Requirement

The senior comprehensive may be satisfied by completing one of the options listed below. **All courses used to satisfy the senior comprehensive requirement must be taken for a letter grade.** The topic engaged in the senior comprehensive courses must be relevant to the field of global environmental justice.

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. The senior thesis and senior internship options require careful planning, additional independent research, and at least a two-quarter commitment.

	Either these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or this course	
ENVS 190	Capstone Course: Environmental Problem Solving	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	
ENVS 196	Senior Seminar	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the environmental studies B.A. major with a concentration in global environmental justice. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

Fall	Winter	Spring	Summer

Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	ENVS 25 SOC/ANTH/PHIL course WRIT 1/WRIT 1E (if needed)	ENVS 23	
2nd (soph)	ENVS 24 or BIOE 20C STAT 7 STAT 7L WRIT 2**	ENVS 100 ENVS 100L*	ENVS 147 or ENVS 172	
3rd (junior)	ENVS 158 or ENVS 173	ENVS upper-division (concentration elective)	ENVS upper-division (concentration elective)	
4th (senior)	ENVS upper-division (natural science)	ENVS upper-division	ENVS upper-division	Comprehensive requirement

*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

Students completing this major will have satisfied SI, IN, PE-E, IS, IN, and PR-E general education requirements. In addition, they will need to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	STAT 7 STAT 7L	ENVS 100 ENVS 100L* ENVS 147 or ENVS 172	ENVS upper-division (concentration elective)	
2nd (senior)	ENVS 158 or ENVS 173 ENV	ENVS upper-division (concentration elective) ENVS	ENVS upper-division Comprehe	

S upper-division (natural science)	upper-division	nsive requirement

*This course is also offered in the spring term.

This planner assumes that a student has completed all required lower division courses—including UCSC or community college general education requirements—with the exception of STAT 7 STAT 7L, which is only offered at UC Santa Cruz.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

A transfer student who has completed the requirements for the Intersegmental General Education Transfer Curriculum (IGETC) before matriculating at UC Santa Cruz, with at most two course requirements left to complete, is allowed to satisfy IGETC in lieu of the UCSC general education requirements.

Conservation Science and Policy Concentration

Course Requirements

Continuing students are required to complete all six lower-division courses before taking ENVS 100 ENVS 100L. See the course descriptions for more specific information. Some courses may be satisfied via exam credit.

Lower-Division Courses

One of the following courses:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus the following course:

ENVS 25	Environmental Politics, Economics and Justice	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 3 or higher on the AP Calculus exam or a score of 300 or higher on the ALEKS Math Placement Exam.

Plus one of these statistics series:

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5

PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
ENVS 26	Culture and the Environment	5

Upper-Division Courses

Students are required to complete the following upper-division courses:

Both of the following:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

ENVS 100 and 100L are offered twice yearly, during the winter and spring quarters.

Plus one of the following:

ENVS 120	Conservation Biology	5
ENVS 160	Restoration Ecology	5
BIOE 165	Marine Conservation Biology	5

Plus one of the following:

ENVS 140	National Environmental Policy	5
ENVS 150	Coastal and Marine Policy	5

Plus two of the following CSP electives:

No duplicate courses from lists above.

Lecture/lab combinations count as a single course.

ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 115A	Geographic Information Systems and Environmental Applications	5
ENVS 115L	Exercises in Geographic Information Systems	2
ENVS 115B	Intermediate Geographic Information Systems (GIS)	5
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
ENVS 140	National Environmental Policy	5
ENVS 141	Ecological Economics	5
ENVS 149	Environmental Law and Policy	5
ENVS 150	Coastal and Marine Policy	5
ENVS 151	Environmental Assessment	5
ENVS 160	Restoration Ecology	5
ENVS 165	Sustainable Water Systems	5
ENVS 167	Freshwater and Wetland Ecology	5
BIOE 125	Ecosystems of California	5
ENVS 106A	Natural History of Birds	5
ENVS 108	General Entomology	5
ENVS 152	International Environmental Politics	5
ENVS 154	Amazonian Cultures and Conservation	5

Field course

One of the following options:

Lecture/Lab combinations count as one course. If a lecture has a lab offered (required or optional), the lab must be taken to count for this requirement.

One of the following field courses:

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 106A	Natural History of Birds	5
ENVS 106M	Natural History of Birds Laboratory	2
ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5
ENVS 108L	General Entomology Laboratory	3
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 167L	Freshwater and Wetland Ecology Lab	2
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
BIOE 112	Ornithology	5
BIOE 112L	Ornithology Field Studies	2
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 124	Mammalogy	5
BIOE 124L	Mammalogy Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7

BIOE 141L	Behavioral Ecology Field Course	7
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150	Ecological Field Methods	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 161	Kelp Forest Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
EART 189A	Geographic Information Systems with Applications in Earth Sciences	5
BIOE 163	Ecology of Reefs, Mangroves, and Seagrasses	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2

Or the CEC field course

Or the California Ecology and Conservation (CEC) field course through the University of California Natural Reserve System (XENV 188).

Electives

Students take two, 5-credit or more upper-division electives from ENVS 101-179. Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture.

A list of all courses offered by the Environmental Studies Department is available in the courses section of the catalog.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. A primary goal of the environmental studies major is to train students who are able to critically analyze interdisciplinary environmental problems, justify their position on an issue, and communicate that position to a range of audiences verbally and in writing.

The DC requirement in environmental studies is satisfied by completing

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following:

BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
ENVS 183B	Senior Internship	5
ENVS 190	Capstone Course: Environmental Problem Solving	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5

ENVS 183B is taken after successfully completing ENVS 183A, and ENVS 195B is taken after successfully completing ENVS 195A.

Comprehensive Requirement

The senior comprehensive may be satisfied by completing one of the options listed below. **All courses used to satisfy the senior comprehensive requirement must be taken for a letter grade.** The topic engaged in senior comprehensive courses must be relevant to the field of conservation science and policy. The relevance of the topic will be reviewed by the instructor of the senior comprehensive course.

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. These courses require careful planning, additional independent research, and at least a two-quarter commitment.

	Either this course	
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
	or these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or this course	
ENVS 190	Capstone Course: Environmental Problem Solving	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	
ENVS 196	Senior Seminar	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the environmental studies B.A. major with a concentration in conservation science and policy. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge (optional)

1st (frosh)	MATH 3 or AM 3	ENVS 25	ENVS 23
	College 1	SOC/ANTH/PHIL course	
		WRIT 1/WRIT 1E (if needed)	
2nd (soph)	ENVS 24 or BIOE 20C	ENVS 100 ENVS 100L*	ENVS 140 or ENVS 150
	STAT 7 STAT 7L		
	WRIT 2**		
3rd (junior)	ENVS 120 or ENVS 160	ENVS upper-division (concentration elective)	ENVS upper-division (concentration elective)
4th (senior)	ENVS upper-division	ENVS upper-division (field course)	ENVS upper-division
			Comprehensive requirement

*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

Students completing this major will have satisfied SI, SR, IN, PE-E, IS, and PR-E general education requirements. In addition, they will need to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1A
				Summer Edge (optional)
1st (junior)	STAT 7 STAT 7L	ENVS 100 ENVS 100L*	ENVS 140 or ENVS 150	
			ENVS upper-division (concentration elective)	
2nd (senior)	ENVS 120 or ENVS 160	ENVS upper-division (concentration elective)	ENVS upper-division	
	ENVS upper-division (field course)	ENVS upper-division	Comprehensive requirement	

*This course is also offered in the spring term.

This planner assumes that a student has completed all required lower division courses—including UCSC or community college General Education requirements—with the exception of STAT 7 STAT 7L, which is only offered at UC Santa Cruz.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

A transfer student who has completed the requirements for the Intersegmental General Education Transfer Curriculum (IGETC) before matriculating at UC Santa Cruz, with at most two course requirements left to complete, is allowed to satisfy IGETC in lieu of the UCSC general education requirements.

AGROECOLOGY B.A.

Information and Policies

Introduction

The agroecology major provides ecological concepts that can be applied to the development of sustainable agricultural systems. Students will develop their understanding of social, political, and economic aspects of agriculture . Students will also engage in hands-on experiences, and obtain skills in research, fieldwork, production, and communication in order to achieve multiple sustainability goals in complex, social-ecological food systems.

The agroecology major does not have any concentrations offered. Students interested in the available concentrations should pursue the environmental studies bachelor of arts (B.A.) degree.

Program Learning Outcomes

Students graduating with a B.A. degree in agroecology will be able to:

- Analyze the problems faced in agriculture and food systems by identifying the societal (historical, social, political, economic, cultural, and ethical) agents and structures that contribute to environmental change. (Social science competency)
- Describe the structure and functioning of major physical and ecological components of earth's systems, including agricultural systems. (Natural science competency)
- Access and assess complex literature and review specific topics in agroecology and sustainable food systems, and evaluate the usefulness and limitations of individual methods. (Analytical thinking)
- Demonstrate effective oral and written communication skills. (Communication skills)
- Demonstrate an introductory level of competence in horticulture or agronomy or aquaculture. (Production skills)

Academic Advising for the Program

Advising is one way to make the most of your university experience. Ask questions, seek advice, and make decisions that work best for you.

To receive advising for this major, contact envsadvi@ucsc.edu. Additional information for prospective transfer students can be found in the Transfer Information and Policy section.

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website. Language placement is not required for the major.

Transfer Information and Policy

Transfer Admission Screening Policy

Students who apply for transfer admission to the major are required to have taken the equivalents of the following courses with a C grade (2.0) or better by the end of the spring term for students planning to enter in the fall:

One of the following:

ENVS 23	The Physical and Chemical Environment	5
CHEM 3A	General Chemistry	5
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus one of the following:

AM 3	Precalculus for the Social Sciences	5
AM 11A	Mathematical Methods for Economists I	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 16A	Mathematics for Life Sciences	5

General Education Courses (GEs)

Prospective students are also encouraged to complete the Intersegmental General Education Transfer Curriculum (IGETC) or to complete all UC Santa Cruz general education requirements before matriculation.

Recommended Courses

In addition, we recommend transfer students complete the following lower-division courses before transferring:

One of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus both of the following:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus:

ENVS 25, or a course in macroeconomics or microeconomics **plus** a course in national or international politics

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
ENVS 26	Culture and the Environment	5

Plus the following course:

ENVS 80F	Introduction to Agroecology and Sustainable Food Systems	5

Getting Started in the Major: Transfer Students

Transfer students pursuing agroecology majors are encouraged to transfer in the fall quarter.

Transfer students should complete as many lower divisions as possible before transferring. All remaining lower-division requirements should be completed in summer, fall, and winter of their first year in order to take ENVS 100 ENVS 100L in winter or spring quarter of their first year. Transfer students can formally declare their major once qualification courses are successfully completed, following the declaration steps on the ENVS department website.

ENVS 25 and ENVS 23 are usually offered during Summer Session at UC Santa Cruz, and transfer students are encouraged to take these classes if they have not yet completed a substitute requirement or if they want a better understanding of the relevant material. If you are transferring, compare catalog descriptions and consult your current institution's advisor to determine equivalency.

Students who are proposed in a different major and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major. Contact envsadvi@ucsc.edu to request permission.

Major Qualification Policy and Declaration Process

Major Qualification

Some courses may be satisfied via exam credit. For transfer requirements, see Transfer Admission Screening Requirements above. Transfer students must have the agroecology major listed on their application in order to pursue the major, unless approved by the department. Contact envsadvi@ucsc.edu with any questions.

One of the following:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus both of the following:

ENVS 25	Environmental Politics, Economics and Justice	5
ENVS 80F	Introduction to Agroecology and Sustainable Food Systems	5

Plus one of the following statistics series:

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Determining Qualification

Students who complete all the qualification courses with a grade of P, or letter grade of C or better are qualified to declare the major.

Students who have received one grade of NP, C-, D+, D, D-, or F in one of the qualification courses taken at UC Santa Cruz will only be qualified to declare after successfully completing the same or an equivalent course with a grade of P, or letter grade of C or better.

Students with two or more grades of NP, C-, D+, D, D-, or F in the qualification courses taken at UC Santa Cruz are not qualified to declare the major.

Students with AP credit (score of 3 or higher) for any of the qualification course(s) are qualified to declare after successfully completing the remaining qualification courses.

Appeal Process

Students who are not qualified to declare the major may appeal this decision by submitting an appeal to qualify for the major here within 15 days of the denial of the declaration. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

How to Declare the Agroecology Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Students wishing to declare within the Environmental Studies Department should visit the Environmental Studies Department website and follow the declaration steps.

Letter Grade Policy

This program does not have a letter grade policy, except that the comprehensive (senior exit) requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Of the four elective courses, agroecology students can petition to substitute one of the agroecology upper-division elective courses from:

- Another ENVS upper-division course (ENVS 104-ENVS 179) not listed as one of the four elective course options.
- A relevant course in SOCY, LALS, ANTH by petition*
- A relevant course taken in a study abroad program by petition*

*By petition: You may petition to substitute a course taken outside of ENVS and/or UC Santa Cruz such as other institutions, other departments, courses not listed on the pre-approved substitution list, other programs including Educational Abroad Program (EAP), Wildlands Studies, or the Sierra Institute. Please review the petitioning process on the department's website.

Double Majors and Major/Minor Combinations Policy

Study Abroad

Students in agroecology are encouraged to participate in Study Abroad programs and other off-campus programs. Students who are interested in these programs shall note the following policies:

- Students planning to study abroad must be declared in their major prior to studying abroad.
- Students must have the courses they plan to take abroad reviewed and approved by Environmental Studies Advising.
- Agroecology majors may petition for one course to fulfill their four electives. Please review the petitioning process here prior to your EAP program. For more information on EAP, please visit the UC Education Abroad Program website.

Honors

Departmental Honors. Students must have a 3.5 grade point average (GPA) in all courses used to satisfy the agroecology upper-division requirements. To be considered for departmental honors, students are limited to no more than one grade of P in those upper-division courses.

Senior Comprehensive Honors. Honors must be nominated by the student's faculty sponsor, and a second faculty member must concur.

Highest Departmental Honors. Students must have a 3.75 GPA in in all courses used to satisfy the agroecology upper-division requirements and must also receive senior comprehensive honors (see above). To be considered for highest departmental honors, students are limited to no more than one grade of P in those upper-division courses.

[Optional Catchall]

Requirements and Planners

Course Requirements

Continuing students must complete all lower-division course requirements before taking ENVS 100 and ENVS 100L. Some courses may be satisfied via exam credit.

Lower-Division Courses

One of the following options:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5

CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus both of the following:

ENVS 25	Environmental Politics, Economics and Justice	5
ENVS 80F	Introduction to Agroecology and Sustainable Food Systems	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
AM 11A	Mathematical Methods for Economists I	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 3 or higher on the AP Calculus exam or a score of 300 or higher on the ALEKS Math Placement Exam.

Plus one of these statistics series:

	Either these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
ENVS 26	Culture and the Environment	5

Upper-Division Courses

All of the following courses:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130B	Justice and Sustainability in Agriculture	5

ENVS 100 and ENVS 100L are offered twice yearly, during the winter and spring quarters. ENVS 130A and ENVS 130L are offered fall quarter only. ENVS 130B is offered winter quarter only.

Plus one of the following courses:

ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 133	Agroecology Practicum	5
ENVS 133B	Agroecology Practicum	6
ENVS 135	Sustainable Aquaculture	5

Plus four Agroecology electives:

Not duplicating any courses used to fulfill the above requirements, students take four courses from the following list. Lecture/lab combinations count as one course. Associated labs are required only when required by the lecture. ENVS 133 and ENVS 133B may not both be counted toward the major.

ENVS 108	General Entomology	5
ENVS 108L	General Entomology Laboratory	3

ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 131	Insect Ecology	5
ENVS 133	Agroecology Practicum	5
ENVS 133B	Agroecology Practicum	6
ENVS 135	Sustainable Aquaculture	5
ENVS 142	Sustainable Energy	5
ENVS 143	The Future of Sustainable Development	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 162L	Plant Physiological Ecology Laboratory	2
ENVS 163	Plant Disease Ecology	5
ENVS 163L	Plant Disease Ecology Lab	2
ENVS 164	Projects and Practices in Soil Ecology	5
ENVS 165	Sustainable Water Systems	5
ENVS 166	Agroecosystem Analysis and Watershed Management	5
ENVS 168	Biogeochemistry and the Global Environment	5
ENVS 169	Climate Change Ecology	5
ENVS 170	Agriculture and Climate Change	5
BIOE 118	Plants and Society: the Biology of Food, Shelter, and Medicine	5
CMMU 149	Political Economy of Food and Agriculture	5
CMMU 186	Food and Agriculture Social Movements	5

If students wish to petition to substitute a course not on the agroecology elective list, contact envsadvi@ucsc.edu.

Required Internship or Independent Study

Complete one of the following in a topic related to agroecology, aquaculture, or sustainable food systems:

ENVS 83	Environmental Studies Internship	5
ENVS 84	Environmental Studies Internship	2
ENVS 99F	Tutorial	2
ENVS 199F	Tutorial	2

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. A primary goal of the agroecology major is to train students who are able to critically analyze interdisciplinary environmental problems, justify their position on an issue, and communicate that position to a range of audiences verbally and in writing.

The DC requirement in agroecology is satisfied by completing:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following:

ENVS 183B	Senior Internship	5
ENVS 190	Capstone Course: Environmental Problem Solving	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5

ENVS 183B and ENVS 195B are usually taken after successfully completing ENVS 183A and ENVS 195A respectively.

Comprehensive Requirement

The senior comprehensive may be satisfied by completing one of the options listed below. **All courses used to satisfy the senior comprehensive requirement must be taken for a letter grade.** The topic engaged in the senior comprehensive courses must be relevant to the field of agroecology.

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. The senior thesis and senior internship option require careful planning, additional independent research, and at least a two-quarter commitment.

Students with advanced skills in one of the graduate focal areas may also take a graduate seminar by invitation from the instructor.

One of the following options:

	Either these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or this course	
ENVS 190	Capstone Course: Environmental Problem Solving	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	
ENVS 196	Senior Seminar	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the Agroecology B.A. major. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

Fall	Winter	Spring	Summer

Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	SOCY/ANTH/PHIL course	ENVS 23	
	ENVS 80F	ENVS 25		
	College 1	WRIT 1/WRIT 1E (if needed)		
2nd (soph)	ENVS 24 or BIOE 20C	ENVS 100 ENVS 100L*	Upper-division elective	
	STAT 7 STAT 7L		ENVS 83 or ENVS 84 or ENVS 199F	
	WRIT 2**			
3rd (junior)	ENVS 130A ENVS 130L	ENVS 130B	ENVS 130C or ENVS 133	
		ENVS 133 or ENVS 135		
4th (senior)	Upper-division elective	Upper-division elective	Upper-division elective	

				Comprehensive requirement

*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

Students completing this major will have satisfied the SI, IN, PE-E, IS, and PR-E general education requirements needed to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	STAT 7 STAT 7L	ENVS 100 ENVS 100L*	ENVS 130C or ENVS 133	
	ENVS 80F	ENVS 130B	Upper-division elective	
	ENVS 83 or ENVS 84 or ENVS 199F			
4th (senior)	ENVS 130A ENVS 130L	ENVS 133 or ENVS 135	ENVS 130C	

Upper-division elective	Upper-division elective	Upper-division elective
		Comprehensive requirement

*This course is also offered in the spring term

This planner assumes a student has completed all lower-division courses except STAT 7 STAT 7L and ENVS 80F before transferring to UCSC.

Students completing this major will have satisfied the SI, IN, PE-E, IS, and PR-E general education requirements needed to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

ENVIRONMENTAL STUDIES/BIOLOGY COMBINED MAJOR B.A.

Information and Policies

Introduction

This course of study provides students with the basic tools of biological science and sufficient understanding of resource conservation, conservation biology, and concerns about environmental sustainability to apply these tools to environmental problems.

Program Learning Outcomes

Students graduating with a B.A. degree in environmental studies/biology combined will be able to:

- Identify the societal (social, political, economic and ethical) agents and structures that contribute to environmental change. (social science competency)
- Describe the structure and functioning of major physical and ecological components of the earth's systems. (natural science competency)
- Access and analyze a complex literature addressing specific topics in environmental studies (ENVS), and evaluate the usefulness and limitations of individual sources of information. (analytic thinking)
- Demonstrate effective oral and written communication skills. (communication skills).

Academic Advising for the Program

Advising is one way to make the most of your university experience. Ask questions, seek advice, and make decisions that work best for you.

To receive advising for this major, contact envsadvi@ucsc.edu. Additional information for prospective transfer students can be found in the Transfer Information and Policy section.

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website. Language placement is not required for the major.

Transfer Information and Policy

Transfer Admission Screening Policy

Students who apply for transfer admission to the major are required to have taken the equivalents of the following courses with a C grade (2.0) or better by the end of the spring term for students planning to enter in the fall:

All of the following courses:

BIOE 20C	Ecology and Evolution	5
BIOL 20A	Cell and Molecular Biology	5
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3C	General Chemistry	3

Plus one of the following:

AM 3	Precalculus for the Social Sciences	5
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Recommended Courses

In addition, taking the following courses prior to transfer is recommended prior to ensure timely graduation.

The following course:

BIOE 20B	Development and Physiology	5

Plus one of the following options:

ENVS 25

or

A course in microeconomics or macroeconomics PLUS a course in national or international politics

Plus the following courses:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
ENVS 26	Culture and the Environment	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

General Education Courses

Prospective students are encouraged to prioritize required and recommended major preparation, and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

Getting Started in the Major: Transfer Students

Transfer students pursuing any of the environmental studies majors are encouraged to transfer in the fall quarter. Transfer students should complete as many lower-division courses as possible before transferring. All remaining lower-division requirements should be completed in summer, fall, and winter of their first year in order to start upper-division courses in winter or spring of the first year. Transfer students can formally declare their major once qualification courses are successfully completed, following the declaration steps on the ENVS department website.

ENVS 25 and general chemistry are usually offered during Summer Session at UC Santa Cruz, and transfer students are encouraged to take these courses if they have not completed a substitute requirement or want a better understanding of the relevant material. If you are transferring, compare catalog descriptions, consult your current institution's advisor, and refer to the ASSIST website to determine equivalency.

Students who are proposed in a different major and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major. Contact envsadvi@ucsc.edu to request permission.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify for the environmental studies/biology combined major, students must complete the specific courses listed below, or their approved equivalents. Some courses may be satisfied via exam credit. For transfer requirements see Transfer Admission Screening Requirements. Transfer students must have ENVS major listed on their application in order to pursue the major, unless approved by appeal. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

Students must take all of these courses for a letter grade.

All of the following courses

BIOL 20A	Cell and Molecular Biology	5
BIOE 20C	Ecology and Evolution	5
ENVS 25	Environmental Politics, Economics and Justice	5
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus one of the following:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Determining qualification

- Students who complete all the qualification courses with a letter grade of C or better are eligible to declare a major.
- Students who have received one grade of C-, D+, D, D-, or F in one of the qualification courses taken at UC Santa Cruz will only be eligible to declare after successfully completing the same or an equivalent course with a letter grade of C or better.
- Students with two or more grades of C-, D+, D, D-, or F in the qualification courses taken at UC Santa Cruz are not eligible to declare.

- Students with non-letter grades in any of the qualification courses for the environmental studies/biology combined B.A. major will not be eligible to declare until a grade of C or better has been assigned.

Appeal Process

Students who are not qualified to declare the major may appeal this decision by submitting an appeal to qualify for the major within 15 days of the denial of the declaration. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

To declare the ENVS/BIO major, students should visit the department website and follow declaration steps.

Letter Grade Policy

All requirements for the environmental studies/biology combined major must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Students pursuing the environmental studies/biology combined major cannot substitute courses to count toward their ENVS upper-division electives. Any substitutions for ecology and evolutionary biology (BIOE) upper-division courses must be approved by the Ecology and Evolutionary Biology Department.

Double Majors and Major/Minor Combinations Policy

Study Abroad

Students in environmental studies are encouraged to participate in Study Abroad programs and other off-campus programs. Students who are interested in these programs shall note the following policies:

- Students planning to study abroad must be declared in their major prior to studying abroad.
- Students must have their courses they plan to take abroad reviewed and approved by environmental studies advising.
- Environmental studies/biology combined majors cannot petition their courses taken abroad for ENVS upper-division course substitution. Any substitutions for BIOE upper division courses must be approved by the Ecology and Evolutionary Biology Department.
- For more information on EAP, please visit the UC Education Abroad Program website.

Honors

Departmental Honors. Students must have a 3.5 grade point average (GPA) in all courses used to satisfy the major's upper-division requirements.

Senior Comprehensive Honors. Honors must be nominated by the student's faculty sponsor, and a second faculty member must concur.

Highest Departmental Honors. Students must have a 3.75 grade point average (GPA) in in all courses used to satisfy the major's upper-division requirements and must also receive senior comprehensive honors (see above).

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

Chemistry and mathematics courses may require placement examinations. See the course descriptions for prerequisite information.

All of the following courses:

BIOL 20A	Cell and Molecular Biology	5
BIOE 20B	Development and Physiology	5
BIOE 20C	Ecology and Evolution	5
ENVS 25	Environmental Politics, Economics and Justice	5

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
ENVS 26	Culture and the Environment	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
AM 6	Precalculus for Statistics	5
AM 11A	Mathematical Methods for Economists I	5

AM 11B	Mathematical Methods for Economists II	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 3 or higher on the AP Calculus exam or a score of 300 or higher on the ALEKS Math Placement Exam.

Plus both of the following:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus one of the following chemistry series:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
CHEM 3CL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Note: This requirement may also be satisfied with prior completion of CHEM 1A, 1B, 1C, and 1N, or equivalent.

Previous to July 1, 2023, the General Chemistry series, offered by the Department of Chemistry and Biochemistry, was listed in the General Catalog as CHEM 1A, CHEM 1B and CHEM 1C, with associated laboratories CHEM 1M and CHEM 1N. As of academic year 2023-24, this series was replaced with two distinct series: CHEM 3A, CHEM 3B and CHEM 3C, with labs CHEM 3BL and CHEM 3CL; or CHEM 4A and CHEM 4B with labs CHEM 4AL and CHEM 4BL. Descriptions of these two series are given here.

Plus one of the following physics options:

	Either this course	
PHYS 1A	Physics for Everyone	5
	or this course	
PHYS 1B	Physics for Everyone	5
	or these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
	or these courses	
PHYS 7A	Elementary Physics I	5
PHYS 7L	Elementary Physics Laboratory	1

Upper-Division Courses

Students are required to complete nine upper-division courses, plus the senior comprehensive requirement.

All of the following courses:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5
BIOL 105	Genetics	5
BIOE 109	Evolution	5

Electives

Students take six 5-credit or more upper-division electives as follows. A single course may not satisfy more than one requirement.

- Three electives from environmental studies (ENVS 101-179). At least one of these courses must be from the ENVS electives based in the social sciences list below.
- One course from the lab-based elective list below
- Two courses from BIOE 107-188 and/or BIOL 100-140

Lecture/lab combinations count as one course. Associated labs are required only when required by the lecture for the three ENVS and two EEB/MCD requirements. Labs must be taken for the one lab-based elective.

ENVS electives based in the social sciences:

ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 140	National Environmental Policy	5
ENVS 141	Ecological Economics	5
ENVS 143	The Future of Sustainable Development	5
ENVS 144	Global Climate Change Politics	5
ENVS 145	Green Cities	5
ENVS 147	Global Environmental Justice	5
ENVS 149	Environmental Law and Policy	5
ENVS 150	Coastal and Marine Policy	5
ENVS 151	Environmental Assessment	5
ENVS 152	International Environmental Politics	5
ENVS 154	Amazonian Cultures and Conservation	5
ENVS 158	Political Ecology and Social Change	5

ENVS 165	Sustainable Water Systems	5
ENVS 172	Environmental Risks and Public Policy	5
ENVS 173	An Introduction to World Environmental History	5
ENVS 174	Gender and the Environment	5
ENVS 176	Vulnerability, Complex Systems, and Disasters	5
ENVS 178	Race and the Environment	5

Lab-based elective options:

If course has a lab offered, the lab must be taken to count for this requirement. Combined lecture/lab classes count as one course.

BIOE 112	Ornithology	5
BIOE 112L	Ornithology Field Studies	2
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124	Mammalogy	5
BIOE 124L	Mammalogy Laboratory	2
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 131	Animal Physiology	5
BIOE 131L	Animal Physiology Laboratory	2
BIOE 133	Exercise Physiology	5
BIOE 133L	Exercise Physiology Laboratory	2
BIOE 134	Comparative Vertebrate Anatomy	5
BIOE 134L	Comparative Vertebrate Anatomy Laboratory	2
BIOE 135	Plant Physiology	5
BIOE 135L	Plant Physiology Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 137L	Molecular Ecology Laboratory	2
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 142L	Animal Behavior in the Wild (A Virtual Field Course)	5
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150	Ecological Field Methods	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 155	Freshwater Ecology	5
BIOE 155L	Freshwater Ecology Laboratory	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159D	Marine Ecology Field Quarter: Methods in Field Ecology Laboratory	5
BIOE 161	Kelp Forest Ecology	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 163	Ecology of Reefs, Mangroves, and Seagrasses	5
BIOE 163L	Ecology of Reefs, Mangroves, and Seagrasses Laboratory	2
BIOL 100	Biochemistry	5
BIOL 100L	Biochemistry Laboratory	5
BIOL 109L	Yeast Molecular Genetics Laboratory	5
BIOL 115	Eukaryotic Molecular Biology	5
BIOL 115L	Eukaryotic Molecular Biology Laboratory	5
BIOL 120	Developmental Biology	5
BIOL 120L	Development Laboratory	5
BIOL 121L	Environmental Phage Biology Laboratory	5
BIOL 186R	Undergraduate Research in MCD Biology	5
ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 106A	Natural History of Birds	5
ENVS 106M	Natural History of Birds Laboratory	2
ENVS 107A	Natural History Field Quarter	5
ENVS 108	General Entomology	5
ENVS 108L	General Entomology Laboratory	3
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 162	Plant Physiological Ecology	5
ENVS 162L	Plant Physiological Ecology Laboratory	2
ENVS 163	Plant Disease Ecology	5
ENVS 163L	Plant Disease Ecology Lab	2
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 167L	Freshwater and Wetland Ecology Lab	2

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement for the environmental studies/biology combined major is satisfied by completing:

The DC requirement in environmental studies/biology combined is satisfied by completing

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following:

Lecture/lab combinations count as one course.

BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
ENVS 183B	Senior Internship	5
ENVS 190	Capstone Course: Environmental Problem Solving	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5
BIOE 108	Marine Ecology	5
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 128L	Large Marine Vertebrates Field Course	7
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 137	Molecular Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 150	Ecological Field Methods	5
BIOE 150L	Ecological Field Methods Laboratory	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 153C	Disciplinary Communication for Biologists	5
BIOE 158L	Field Methods in Marine Ecology	5
BIOE 159A	Marine Ecology Field Quarter: Marine Ecology with Laboratory	5
BIOE 161L	Kelp Forest Ecology Laboratory	5
BIOE 171	Disciplinary Communication for Biologists	5
BIOE 172	Population Genetics	5

Comprehensive Requirement

The senior comprehensive may be satisfied by completing one of the options listed below. All courses used to satisfy the senior comprehensive requirement, as well as all other major requirements for ENVS/BIO, must be taken for a letter grade.

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. The senior thesis and senior internship option require careful planning, additional independent research, and at least a two-quarter commitment.

Students with advanced skills in one of the graduate focal areas may also take a graduate seminar by invitation from the instructor.

	Either this course	
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
	or these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or this course	
ENVS 190	Capstone Course: Environmental Problem Solving	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	
ENVS 196	Senior Seminar	5

ENVS 190 is offered in the spring and summer.

ENVS 183B is taken after successfully completing ENVS 183A, and ENVS 195B is taken after successfully completing ENVS 195A.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the environmental studies/biology combined B.A. major. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	CHEM 3A	CHEM 3B/CHEM 3L	
	College 1	ENVS 25	SOCY/ANTH/PHIL course	
		WRIT 1/WRIT 1E (if needed)		
2nd (soph)	BIOE 20C	ENVS 100 ENVS 100L*	BIOE 20B	
	STAT 7 STAT 7L	BIOL 20A	CHEM 3C	
	WRIT 2**			
3rd (junior)	BIOL 105	BIOE 109	Upper-division BIOE	
	Upper-division ENVS	PHYS 1	Upper-division ENVS	
4th (senior)	Upper-division BIOE	Upper-division BIO	Comprehensive requirement	
			E	
	Upper-division ENVS (social sciences)			

*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

This plan does not explicitly show the required lab course among the ENVS or BIOE electives.

Students completing this major will have satisfied the SI, PE-E, and PR-E general education requirements. In addition, they will need to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	STAT 7 STAT 7L	ENVS 100 ENVS 100L*	Upper-division ENVS	
		BIOL 105	BIOE 109	
4th (senior)	Upper-divisio	Upper-divisi	Upper-division BIOE	

n ENVS (social scienc es)	on ENV S	
Upper - divisio n BIOE	Uppe r- divisi on BIOE	Comprehen sive requirement
	PHY S 1	

*This course is also offered in the spring term.

This plan does not include the required lab based course. Students must complete the lab-based requirement with the courses listed in the course requirements.

This planner assumes that a student has completed all required lower-division courses—including UCSC or community college general education requirements—with the exception of STAT 7 and STAT 7L, which is only offered at UC Santa Cruz.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

A transfer student who has completed the requirements for the Intersegmental General Education Transfer Curriculum (IGETC) before matriculating at UC Santa Cruz, with at most two course requirements left to complete, is allowed to satisfy IGETC in lieu of the UCSC general education requirements.

ENVIRONMENTAL STUDIES/EARTH SCIENCES COMBINED MAJOR B.A.

Information and Policies

Introduction

As of the 2024-2025 academic year, the Environmental Studies/ Earth Sciences combined bachelor of arts (B.A.) program has been discontinued. For continuing students who proposed or declared ENVS/EART prior to 2024-2025, please refer to the degree requirements published at the time of entering UC Santa Cruz or subsequent catalog(s). New students interested in the ENVS/EART major may want to instead consider the Environmental Sciences B.S. program -- contact epsadvising@ucsc.edu with questions about the Environmental Sciences B.S. major.

This course of study provides students with the basic tools of Earth sciences and environmental studies needed to address environmental problems.

Program Learning Outcomes

Students graduating with a B.A. degree in environmental studies/Earth sciences combined will be able to:

- Identify the societal (social, political, economic and ethical) agents and structures that contribute to environmental change. (social science competency)
- Describe the structure and functioning of major physical and ecological components of the Earth's systems. (natural science competency)
- Access and analyze a complex literature addressing specific topics in environmental studies, and evaluate the usefulness and limitations of individual sources of information. (analytic thinking)
- Demonstrate effective oral and written communication skills. (communication skills).

Academic Advising for the Program

Advising is one way to make the most of your university experience. Ask questions, seek advice, and make decisions that work best for you.

To receive advising for this major, contact envsadvi@ucsc.edu. Additional information for prospective transfer students can be found in the Transfer Information and Policy section.

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website. Language placement is not required for the major.

Transfer Information and Policy

Transfer Admission Screening Policy

Students who apply for transfer admission to the major are required to have taken the equivalents of the following courses with a C grade (2.0) or better by the end of the spring term for students planning to enter in the fall:

One of the following:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus one of the following chemistry series:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3

	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4BL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
MATH 3	Precalculus	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

GPA Requirement

To be considered for admission in the environmental studies majors, transfer students must pass the following courses or their equivalents of the following courses with a C (2.0) or better in the required courses.

Recommended courses

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

The following courses:

MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus the following:

ENVS 25

or

A course in macroeconomics or microeconomics, **plus** a course in national or international politics

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5

Prospective students are encouraged to prioritize required and recommended major preparation, and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

Getting Started in the Major: Transfer Students

Transfer students pursuing environmental studies majors are encouraged to transfer in the fall quarter.

Transfer students should complete as many lower divisions as possible before transferring. All remaining lower-division requirements should be completed in summer, fall, and winter of their first year in order to start upper divisions in winter or spring of the first year. Transfer students can formally declare their major once qualification courses are successfully completed, following the declaration steps on the ENVS department website.

ENVS 25 and general chemistry are usually offered during Summer Session at UC Santa Cruz, and transfer students are encouraged to take them if they have not completed a substitute requirement or want a better understanding of the relevant material. If you are transferring, compare catalog descriptions, consult your current institution's adviser, and refer to the ASSIST website to determine equivalency.

Students who are proposed in a different major and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major. Contact envsadvi@ucsc.edu to request permission.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify for the environmental studies/Earth sciences combined major, students must complete the specific courses listed below, or their approved equivalents. For transfer requirements, see Transfer Admission Screening Requirements. Transfer students must have ENVS major listed on their application in order to pursue the major, unless approved by appeal. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

One of the following:

ENVS 24	General Ecology	5
	OR	

BIOE 20C	Ecology and Evolution	5

Plus one of the following:

CHEM 3B	General Chemistry	3
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

Plus all of the following:

ENVS 25	Environmental Politics, Economics and Justice	5
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Determining qualification

- Students who complete all the qualification courses with a grade of P, or letter grade of C or better are qualified to declare a major.
- Students who have received one grade of C-, D+, D, D-, or F in one of the qualification courses taken at UC Santa Cruz will only be qualified to declare after successfully completing the same or an equivalent course with a letter grade of C or better.
- Students with two or more grades of C-, D+, D, D-, or F in the qualification courses taken at UC Santa Cruz are not qualified to declare the major.
- Students with AP credit (score of 3 or higher) for any of the qualification course(s) are qualified to declare after successfully completing the remaining qualification courses.
- If student chooses to take the advanced general chemistry series (CHEM 4A, 4B, etc), they can substitute CHEM 4B as the major qualification requirement instead of CHEM 3B.

Appeal Process

Students who are not qualified to declare the major may appeal this decision by submitting an appeal to qualify for the major within 15 days of the denial of the declaration. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Students wishing to declare the ENVS/EART major should visit the Environmental Studies Department website and follow the declaration steps.

Letter Grade Policy

This program does not have a letter grade policy, except that the comprehensive (senior exit) requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Students pursuing the Environmental Studies/Earth Sciences Combined Major cannot substitute courses to count toward their upper-division electives.

Double Majors and Major/Minor Combinations Policy

Study Abroad

Students in environmental studies-are encouraged to participate in Study Abroad programs and other off-campus programs. Students who are interested in these programs shall note the following policies:

- Students planning to study abroad must be declared in their major prior to studying abroad.
- Environmental studies combined majors cannot petition their courses taken abroad for upper division course substitution.
- For more information on EAP, please visit the UC Education Abroad Program website.

Honors

Departmental Honors. Students must have a 3.5 grade point average (GPA) in all courses used to satisfy the upper-division major requirements. To be considered for departmental honors, students are limited to no more than one grade of P in those upper-division courses.

Senior Comprehensive Honors. Honors must be nominated by the student's faculty sponsor, and a second faculty member must confer.

Highest Departmental Honors. Students must have a 3.75 grade point average (GPA) in in all courses used to satisfy the upper-division major requirements and must also receive senior comprehensive honors (see above). To be considered for highest departmental honors, students are limited to no more than one grade of P in those upper-division courses.

[Optional Catchall]

Requirements and Planners

Course Requirements

Lower-Division Courses

Both of the following:

STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus one of the following math options:

	Either these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5

Plus one of the following chemistry series:

	Either these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
CHEM 3C	General Chemistry	3
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following physics options:

	Either these courses	
PHYS 6A	Introductory Physics I	5
PHYS 6L	Introductory Physics I Laboratory	1
PHYS 6B	Introductory Physics II	5
PHYS 6M	Introductory Physics II Laboratory	1
	or these courses	
PHYS 5A	Introduction to Physics I	5
PHYS 5L	Introduction to Physics I Laboratory	1
PHYS 5B	Introduction to Physics II	5
PHYS 5M	Introduction to Physics II Laboratory	1

Plus one of the following Earth science options:

	Either these courses	
EART 20	Environmental Geology	5
EART 20L	Environmental Geology Laboratory	1
	or these courses	
EART 5	California Geology	5
EART 5L	California Geology Laboratory	1
	or these courses	
EART 10	How the Earth Works	5
EART 10L	Geologic Principles Laboratory	1

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus the following course:

ENVS 25	Environmental Politics, Economics and Justice	5

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Upper-Division Courses

One of the following options:

	Either this course	
EART 110A	Evolution of the Earth	7
	or these courses	
EART 110B	Earth as a Chemical System	5
EART 110M	Earth as a Chemical System Laboratory	2
	or these courses	
EART 110C	The Dynamic Earth	5
EART 110N	The Dynamic Earth Laboratory	2

Plus both of the following:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Electives

The upper-division courses should be selected in pursuit of a coherent plan of study, such as water policy-hydrology, restoration ecology-geochemistry, agroecology-soil physical processes, or environmental policy-climate change, among others, in consultation with faculty from both the Environmental Studies and Earth and Planetary Sciences

departments. Please note that lecture/lab combinations count as a single elective.

Three upper-division environmental studies courses

Of the three required upper-division environmental studies electives (numbered ENVS 101-ENVS 179), at least **one** must be taken from the following list of social science electives:

ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 140	National Environmental Policy	5
ENVS 141	Ecological Economics	5
ENVS 143	The Future of Sustainable Development	5
ENVS 145	Green Cities	5
ENVS 147	Global Environmental Justice	5
ENVS 149	Environmental Law and Policy	5
ENVS 150	Coastal and Marine Policy	5
ENVS 151	Environmental Assessment	5
ENVS 152	International Environmental Politics	5
ENVS 154	Amazonian Cultures and Conservation	5
ENVS 158	Political Ecology and Social Change	5
ENVS 165	Sustainable Water Systems	5
ENVS 172	Environmental Risks and Public Policy	5
ENVS 173	An Introduction to World Environmental History	5
ENVS 174	Gender and the Environment	5
ENVS 176	Vulnerability, Complex Systems, and Disasters	5
ENVS 178	Race and the Environment	5

None of the three environmental studies upper-division courses can be an environmental studies internship, individual study or substitution course.

Three upper-division Earth sciences courses

Three additional upper-division Earth sciences courses (Earth and Planetary Sciences courses numbered EART 100-EART 191C). A list of the upper-division courses offered by the Earth and Planetary Sciences Department is available in the courses section of the catalog.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement for the Environmental Studies/Earth Sciences Combined Major is satisfied by completing:

The following courses:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following options:

	Either one of these courses	
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
ENVS 183B	Senior Internship	5
ENVS 190	Capstone Course: Environmental Problem Solving	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5
EART 195	Senior Thesis	5
	or these courses	
EART 189A	Geographic Information Systems with Applications in Earth Sciences	5
EART 189B	Summer Field Study	5

Comprehensive Requirement

Students satisfy the senior comprehensive requirement in environmental studies or Earth sciences by completing either:

- One of the senior comprehensive options for single environmental studies B.A. majors (see options listed below);
- One of the senior comprehensive options for Earth sciences B.S. (see Comprehensive Requirement under the Earth Sciences B.S.).

The senior comprehensive may be satisfied by completing one of the options listed below. **All courses used to satisfy the senior comprehensive requirement must be taken for a letter grade.**

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. The senior thesis and senior internship option require careful planning, additional independent research, and at least a two-quarter commitment.

Students with advanced skills in one of the graduate focal areas may also take a graduate seminar by invitation from the instructor.

	Either this course	
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
	or these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or this course	
ENVS 190	Capstone Course: Environmental Problem Solving	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	

ENVS 196	Senior Seminar	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the environmental studies B.A. major without a concentration. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	ENVS 25	CHEM 3A	
	College 1	EART 5 EART 5L	SOCY/ANTH/PHIL course	
		WRIT 1/WRIT 1E (if needed)		
2nd (soph)	ENVS 24 or BIOE 20C	ENVS 100 ENVS 100L*	CHEM 3B CHEM 3BL	
	STAT 7 STAT 7L	MATH 11A	PHYS 6A PHYS 6L or PHYS 5A PHYS 5L	
	WRIT 2*			
3rd (junior)	CHEM 3C	Upper-division ENVS	PHYS 6B PHYS 6M or PHYS 5B PHYS 5M	
	MATH 11B	EART 110B EART 110M	Upper-division ENVS	
4th (senior)	Upper-division EART	Upper-division EART	Upper-division EART	
	Upper-division ENVS (social sciences)		Comprehensive requirement	

*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

This planner assumes that a student has placed into MATH 3 or AM 3.

Students completing this major will have satisfied the SI, PE-E, MF, and PR-E general education requirements. In addition, they will need to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge

				(optional)
3rd (junior)	STAT 7 STAT 7L	ENVS 100 ENVS 100L*	Upper-division EART	
	MATH 11B	EART 110B EART 110M	Upper-division ENVS	
4th (senior)	Upper-division ENVS	Upper-division ENVS (social sciences)	Comprehensive requirement	
	Upper-division EART	Upper-division EART		

*This course is also offered in the spring term.

This planner assumes that a student has completed all required lower-division courses—including UCSC or community college general education requirements—with the exception of STAT 7 and STAT 7L, which is only offered at UC Santa Cruz.

A transfer student who has completed the requirements for the Intersegmental General Education Transfer Curriculum (IGETC) before matriculating at UC Santa Cruz, with at most two course requirements left to complete, is allowed to satisfy IGETC in lieu of the UCSC general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

ENVIRONMENTAL STUDIES/ECONOMICS COMBINED MAJOR B.A.

Information and Policies

Introduction

This major provides students with the basic tools of economic analysis and an understanding of the mechanics of resource production, conservation, and use, in both ecological and economic terms.

This combined major in environmental studies (ENVS) and economics (ECON) does not offer any concentrations.

Program Learning Outcomes

Students graduating with a B.A. degree in environmental studies/economics combined will be able to:

- Identify the societal (social, political, economic and ethical) agents and structures that contribute to environmental change. (social science competency)
- Describe the structure and functioning of major physical and ecological components of the earth's systems. (natural science competency)
- Access and analyze a complex literature addressing specific topics in environmental studies, and evaluate the usefulness and limitations of individual sources of information. (analytic thinking)
- Demonstrate effective oral and written communication skills. (communication skills).

Academic Advising for the Program

Advising is one way to make the most of your university experience. Ask questions, seek advice, and make decisions that work best for you.

To receive advising for this major, contact envsadvi@ucsc.edu. Additional information for prospective transfer students can be found in the Transfer Information and Policy section.

Getting Started in the Major: Frosh

This is a course-intensive and/or sequential program, and students who intend to pursue this major must begin taking classes for the major in their first year at UC Santa Cruz. Math placement is required for one or more of the foundational courses for this major. For more information, please review the Math Placement website. Language placement is not required for the major.

Transfer Information and Policy

Transfer Admission Screening Policy

Students who apply for transfer admission to the major are required to have taken the equivalents of the following courses with a C grade (2.0) or better by the end of the spring term for students planning to enter in the fall:

One of the following:

ENVS 23	The Physical and Chemical Environment	5
CHEM 3A	General Chemistry	5

CHEM 3B	General Chemistry	3

Plus the following course:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5

Plus one of the following:

ENVS 25

or

A course in national or international politics

Plus one of the following courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

Recommended Courses

In addition, the following courses are recommended prior to transfer to ensure timely graduation.

The following courses:

ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
AM 11B	Mathematical Methods for Economists II	5
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Plus one of the following courses:

BIOE 20C	Ecology and Evolution	5
ENVS 24	General Ecology	5

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
ENVS 26	Culture and the Environment	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

General Education (GEs)

Prospective students are encouraged to prioritize required and recommended major preparation, and may additionally complete courses that articulate to UC Santa Cruz general education requirements as time allows.

Getting Started in the Major: Transfer Students

Transfer students pursuing any of the environmental studies majors are encouraged to transfer in the fall quarter.

Transfer students should complete as many lower-division courses as possible before transferring. All remaining lower-division requirements should be completed in summer, fall, and winter of the first year in order to start upper divisions in winter or spring of the first year. Transfer students can formally declare their major once qualification courses are successfully completed, following the declaration steps on the ENVS department website.

ENVS 25 and ENVS 23 are usually offered during Summer Session at UC Santa Cruz, and transfer students are encouraged to take them if they have not completed a substitute requirement or want a better understanding of the relevant material. If you are transferring, compare catalog descriptions, consult your current institution's advisor, and refer to the ASSIST website to determine equivalency. Prospective transfer students should review the transfer information.

Students who are proposed in a different major and have advanced standing when they come to UC Santa Cruz require permission from the department to change into the major. Contact envsadvi@ucsc.edu to request permission.

Major Qualification Policy and Declaration Process

Major Qualification

To qualify for the environmental studies/economics combined major, students must complete the specific courses listed below, or their approved equivalents. Some courses may be satisfied via exam credit.

For transfer requirements, see Transfer Admission Screening Requirements. Transfer students must have the ENVS/ECON major listed on their application in order to pursue the major, unless approved by exception. If a student has questions about this, they should contact envsadvi@ucsc.edu.

One of the following courses:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5

CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus all of the following courses:

ENVS 25	Environmental Politics, Economics and Justice	5
ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
AM 11A	Mathematical Methods for Economists I	5
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Determining Qualification

- Students who complete all the qualification courses with a grade of P, or letter grade of C or better are qualified to declare the major.
- Students who have received one grade of C-, D+, D, D-, or F in one of the qualification courses taken at UC Santa Cruz will only be qualified to declare the major after successfully completing the same or an equivalent course with a letter grade of C or better.
- Students with two or more grades of C-, D+, D, D-, or F in the qualification courses taken at UC Santa Cruz are not qualified to declare the major.
- Students with AP credit (score of 3 or higher) for any of the qualification course(s) are qualified to declare after successfully completing the remaining qualification courses.

Appeal Process

Students who are not qualified to declare the major may appeal this decision by submitting an appeal to qualify for the major within 15 days of the denial of the declaration. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. If a student has questions about the appeals process, they should contact envsadvi@ucsc.edu.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first.

Students wishing to declare ENVS/ECON should visit the Environmental Studies Department website and follow declaration steps.

Letter Grade Policy

This program does not have a letter grade policy, except that the comprehensive (senior exit) requirement must be taken for a letter grade.

[Optional Catchall]

Course Substitution Policy

Students pursuing the environmental studies/economics combined major cannot substitute courses to count toward their upper-division electives.

Double Majors and Major/Minor Combinations Policy

Study Abroad

Students in environmental studies are encouraged to participate in Study Abroad programs and other off-campus programs. Students who are interested in these programs shall note the following policies:

- Students planning to study abroad must be declared in their major prior to studying abroad.
- Environmental studies combined majors cannot petition their courses taken abroad for ENVS upper division course substitution.
- For more information on EAP, please visit the UC Education Abroad Program website.

Honors

Departmental Honors. Students must have a 3.5 grade point average (GPA) in all courses used to satisfy the environmental studies upper-division requirements **AND** must be approved by the Department of Economics for department honors. To be considered for departmental honors, students are limited to no more than one grade of P in those upper-division courses.

Senior Comprehensive Honors. Honors must be nominated by the student's faculty sponsor, and a second faculty member must confer.

Highest Departmental Honors. Students must have a 3.75 grade point average (GPA) in in all courses used to satisfy the environmental studies upper-division requirements, and must be approved by the Department of Economics for department honors, and must also receive senior comprehensive honors (see above). To be considered for highest departmental honors, students are limited to no more than one grade of P in those upper-division courses.

Students must fulfill all requirements for honors from both the Environmental Studies and Economics departments to receive honors.

[Optional Catchall]

Requirements and Planners

Course Requirements

Complete the following requirements. Some courses may be satisfied via exam credit.

Lower-Division Courses

All of the following courses:

ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 2	Introductory Macroeconomics: Aggregate Economic Activity	5
ENVS 25	Environmental Politics, Economics and Justice	5
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Plus one of the following courses:

	Either this course	
ENVS 23	The Physical and Chemical Environment	5
	or these courses	
CHEM 3A	General Chemistry	5
CHEM 3B	General Chemistry	3
CHEM 3BL	General Chemistry Lab	2
	or these courses	
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4AL	Advanced General Chemistry Lab	2
CHEM 4B	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 4BL	Advanced General Chemistry Lab	2

Plus one of the following courses:

ENVS 24	General Ecology	5
BIOE 20C	Ecology and Evolution	5

Plus one of the following calculus series:

We encourage all ENVS/ECON students to do the AM 11A AM 11B series. However, the other options will suffice.

	Either these courses	
AM 11A	Mathematical Methods for Economists I	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 11A	Calculus with Applications	5
AM 11B	Mathematical Methods for Economists II	5
	or these courses	
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 19B	Calculus for Science, Engineering, and Mathematics	5
MATH 23A	Vector Calculus	5
	or these courses	
MATH 11A	Calculus with Applications	5
MATH 11B	Calculus with Applications	5
MATH 22	Introduction to Calculus of Several Variables	5

Plus one of the following courses:

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
ENVS 26	Culture and the Environment	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 28	Environmental Ethics	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Upper-Division Courses

One of the following courses:

ECON 100A	Intermediate Microeconomics	5
ECON 100M	Intermediate Microeconomics, Math Intensive	5

Plus all of the following courses:

ECON 113	Introduction to Econometrics	5
ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Electives

Six upper-division elective courses as follows:

- Three courses from the Economics Electives list below
- Three courses from ENVS 101-179. At least one course must be from the list of environmental studies electives in the natural sciences list below.

Lecture/lab combinations count as one course. Associated labs are required only when required by the lecture.

Economics Electives

ECON 100B	Intermediate Macroeconomics	5
ECON 100N	Intermediate Macroeconomics, Math Intensive	5
ECON 101	Managerial Economics	5

ECON 114	Advanced Quantitative Methods	6
ECON 115	Introduction to Management Sciences	5
ECON 120	Development Economics	5
ECON 128	Poverty and Public Policy	5
ECON 130	Money and Banking	5
ECON 131	International Financial Markets	5
ECON 133	Security Markets and Financial Institutions	5
ECON 135	Corporate Finance	5
ECON 136	Business Strategy	5
ECON 138	The Economics and Management of Technology and Innovation	5
ECON 139A	The Economics of Electronic Commerce	5
ECON 139B	E-Commerce Strategy	5
ECON 140	International Trade	5
ECON 141	International Finance	5
ECON 142	Advanced Topics in International Economics	5
ECON 150	Public Finance	5
ECON 156	Health Economics and Policy	5
ECON 159	The Economics of Organizations	5
ECON 160A	Industrial Organization	5
ECON 160B	Government and Industry	5
ECON 161A	Marketing	5
ECON 162	Legal Environment of Business	5
ECON 165	Economics as an Experimental Science	5
ECON 169	Economic Analysis of the Law	5
ECON 170	Environmental Economics	5
ECON 175	Energy Economics	5
ECON 180	Labor Economics	5
ECON 183	Women in the Economy	5

Environmental studies electives in the natural sciences

Lecture/lab combinations count as one course. Associated labs are required only when required by the lecture.

BIOE 125	Ecosystems of California	5
ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 106A	Natural History of Birds	5
ENVS 107A	Natural History Field Quarter	5
ENVS 107B	Natural History Field Quarter	5
ENVS 107C	Natural History Field Quarter	5
ENVS 108	General Entomology	5
ENVS 108L	General Entomology Laboratory	3
BIOE 151A	Ecology and Conservation in Practice Supercourse: Ecological Field Methods	5
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
BIOE 151C	Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems	5
BIOE 151D	Ecology and Conservation in Practice Supercourse: Conservation in Practice	5
ENVS 120	Conservation Biology	5
ENVS 122	Tropical Ecology and Conservation	5
ENVS 123	Animal Ecology and Conservation	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130L	Agroecology and Sustainable Agriculture Laboratory	2
ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 131	Insect Ecology	5
ENVS 133	Agroecology Practicum	5
ENVS 135	Sustainable Aquaculture	5
ENVS 160	Restoration Ecology	5
ENVS 161A	Soils as Living Systems	5
ENVS 162	Plant Physiological Ecology	5
ENVS 162L	Plant Physiological Ecology Laboratory	2
ENVS 163	Plant Disease Ecology	5
ENVS 164	Projects and Practices in Soil Ecology	5
ENVS 163L	Plant Disease Ecology Lab	2
ENVS 166	Agroecosystem Analysis and Watershed Management	5
ENVS 167	Freshwater and Wetland Ecology	5
ENVS 167L	Freshwater and Wetland Ecology Lab	2
ENVS 168	Biogeochemistry and the Global Environment	5
ENVS 169	Climate Change Ecology	5
ENVS 170	Agriculture and Climate Change	5

None of the three environmental studies upper-division courses can be an environmental studies internship, individual study or substitution course.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement for the environmental studies/economics combined major is satisfied by completing:

The following courses:

ENVS 100	Ecology and Society	3
ENVS 100L	Ecology and Society Writing Laboratory	5

Plus one of the following:

BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
ENVS 183B	Senior Internship	5
ENVS 190	Capstone Course: Environmental Problem Solving	5
ENVS 195B	Senior Thesis Group	5
ENVS 196	Senior Seminar	5

ENVS 183B is taken after successfully completing ENVS 183A, and ENVS 195B is taken after successfully completing ENVS 195A.

Comprehensive Requirement

Students in ENVS/ECON satisfy the senior comprehensive requirement by completing both of the following:

- One of the senior exit options for environmental studies B.A. (see options below). **All courses used to satisfy the senior comprehensive requirement must be taken for a letter grade.**
- Pass those portions of the economics comprehensive examination administered in ECON 100A and ECON 113.

Before enrolling in the senior thesis or senior internship option, students must formally apply to work with a particular faculty mentor very early in their thesis or project preparation. The senior thesis and senior internship option require careful planning, additional independent research, and at least a two-quarter commitment.

	Either this course	
BIOE 151B	Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory	5
	or these courses	
ENVS 183A	Senior Internship	5
ENVS 183B	Senior Internship	5
	or this course	
ENVS 190	Capstone Course: Environmental Problem Solving	5
	or these courses	
ENVS 195A	Senior Research	5
ENVS 195B	Senior Thesis Group	5
	or this course	
ENVS 196	Senior Seminar	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

The following are two sample academic plans for students pursuing the environmental studies/economics combined B.A. major. Plan One is for incoming frosh and Plan Two is for incoming transfer students.

Plan One for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	MATH 3 or AM 3	ENVS 25	ENVS 23	
	College 1	ECON 1	ECON 2	
		WRIT 1/WRIT 1E (if needed)		
2nd (soph)	ENVS 24 or BIOE 20C	STAT 7 STAT 7L	SOCY/ANTH/PHIL course	
	AM 11A	AM 11B	ECON 100A or ECON 100M	
	WRIT 2**			
3rd (junior)	ECON 113	ENVS 100 ENVS 100L *	Upper-division ENVS (natural science)	
		Upper-division ECON	Upper-division ECON	

4th (senior)	Upper-division ENVS Upper-division ECON	Upper-division ENVS	Senior exit requirement

*This course is also offered in the spring term.

** WRIT 2 should be taken in or before spring quarter of the second year.

This planner assumes that a student has placed into MATH 3 or AM 3.

Students completing this major will have satisfied the SI, IN, PE, MF, and PR-E general education requirements. In addition, they will need to fulfill all remaining university, college, and general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

Plan Two for Incoming Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	ECON 100A or ECON 100M STAT 7 STAT 7L	ECON 113 ENVS 100 ENVS 100L	Upper-division ENVS (natural sciences) Upper-division ECON	
4th (senior)	Upper-division ENVS Upper-division ECON	Upper-division ENVS Upper-division ECON	Senior exit requirement	

This planner assumes that a student has completed all required lower-division courses—including UCSC or community college general education requirements.

A transfer student who has completed the requirements for the Intersegmental General Education Transfer Curriculum (IGETC) before matriculating at UC Santa Cruz, with at most two course requirements left to complete, is allowed to satisfy IGETC in lieu of the UCSC general education requirements.

Students interested in taking the senior thesis or senior internship as their comprehensive requirement must take ENVS 195A (thesis) or ENVS 183A (internship) in the quarter before completing ENVS 195B (thesis) or ENVS 183B (internship). Both the senior thesis and senior internship are two consecutive quarter commitments.

GEOGRAPHIC INFORMATION SYSTEMS, SPATIAL TECHNOLOGIES, APPLICATIONS AND RESEARCH M.A.

Introduction

Students in the University of California, Santa Cruz's Geographic Information Systems, Spatial Technologies, Applications, and Research (GISTAR) program will develop comprehensive knowledge of geospatial technologies, applications, and research and develop innovative and transdisciplinary expertise in emergent methodological, analytical, and technological applications. We offer students the ability to master geospatial theory and research, conduct advanced geospatial analyses, utilize advanced geospatial technologies, and develop professional geospatial research projects and skills. Students will also engage in extensive interactions with faculty and researchers engaged in advanced geospatial initiatives.

In year one of the two-year master's degree program, students take foundational core courses that focus on training in geospatial theory, geographic information systems (GIS), and advanced geospatial applications and analysis. In the second year, each student completes courses in advanced GIS systems, geospatial technologies and applications, and develops topical expertise in focus areas of specific interest. During the second year, students develop the focus of their

capstone project and conduct innovative applied research with an affiliated program faculty member to complete the project. Graduates of the program will be prepared for advanced job opportunities in geospatial systems, research and analysis as well as new technological innovations, applications, and project development.

The program provides applied geospatial research opportunities with faculty in research areas in which UCSC is an established leader. This includes:

- ecological and biological conservation, coastal science and policy, climate change, ecological modeling, animal ecology, restoration ecology, remote sensing, geomorphology;
- environmental justice, political ecology, marine and coastal law and policy, climate change adaptation and mitigation, agroecology;
- machine learning, embedded systems, agricultural technology, autonomous vehicles, drones, environmental sensors;
- archaeology, data analytics and visualization, digital humanities, urban sociology, historical cartography.

Preparation for Graduate Work in Geographic Information Systems, Spatial Technologies, Applications and Research

Students admitted to the Master of Arts (M.A.) in Geographic Information Systems, Spatial Technologies, Applications and Research program will have completed a bachelor's degree from an accredited institution or equivalent. Relevant fields include a broad range of backgrounds ranging from the social sciences, humanities, physical and biological sciences and engineering and computer science. Students currently employed in related fields or seeking professional additional training and skills are encouraged to apply. Students from underrepresented and diverse racial, ethnic, cultural, socioeconomic, and disciplinary backgrounds are also encouraged to apply

Requirements

Course Requirements

The master's degree in Geographic Information Systems, Spatial Technologies, Applications and Research is a Plan II (capstone project) degree.

The M.A. program will include a core set of six courses and one development course or applications course.

Core Courses

ENVS 215A	Geographic Information Systems and Environmental Applications	5
ENVS 215B	Intermediate Geographic Information Systems	5
ENVS 215C	Advanced Geographic Information Systems	5
ENVS 215L	Exercises in Geographic Information Systems	2
GIST 220	Cartography and Visualization	5
GIST 230	Remote Sensing	5

GIST 215A, GIST 215B, and GIST 215C are crosslisted with (also offered as) ENVS 215A, ENVS 215B, and ENVS 215C.

GIST 215L is crosslisted with (also offered as) ENVS 215L.

Development Course

GIST 240	GIS Development and Programming	5

Applications Course

GIST 250	Geospatial Technology Applications	5

Elective Courses

M.A. students are recommended to take one elective course during their first year and are required to take one elective course during their second year. The elective courses should provide additional training in quantitative or qualitative research design, tools, and analysis or disciplinary knowledge in their focus area of interest. The electives also prepare the students for their capstone project.

Other Requirements

GIST 290A	GISTAR Capstone Project	10
GIST 290B	GISTAR Capstone Project	10

Capstone Project

In the second year, students implement a capstone project by enrolling in and fulfilling the requirements for GIST 290, Geographic Information Systems, Spatial Technologies, Applications and Research (10 credits/quarter). This project is typically developed during Year 1 of the program in collaboration with an affiliated faculty member in the GISTAR program and with oversight from the program. The project should: a) include advanced GIS research and analysis; and b) be applied in nature focusing on the affiliated faculty sponsor's research. Students provide a final written report and oral presentation to GISTAR students at the end of Year 2.

Planners

	Fall	Winter	Spring
1st Year	GIST 215A/ENVS 215A	GIST 215B/ENVS 215B	GIST 215C/ENVS 215C
	GIST 215L/ENVS 215L	GIST 215L/ENVS 215L	GIST 215L/ENVS 215L
	GIST 220	GIST 230	Elective (optional)
	Total	Total	Total

	credits=12	credits=12	credits=12
2nd Year	GIST 240 or GIST 250	GIST 290A	GIST 290B
	Elective course (required)		
	Total credits=10	Total credits=10	Total credits=10

Applying for Graduation

ENVIRONMENTAL STUDIES PH.D.

Advancement to Candidacy

A three-person interdisciplinary guidance committee works to ensure that each student's preparation is individually designed to meet particular needs and interests, to help ensure their success as scholars, and to help students fully engage interdisciplinary dimensions of their training and research. One committee member is the major professor and at least one member needs to be from a complementary meta-discipline from the student's general research area. For instance, a student whose interests are in conservation science may have two committee members who are ecologists and one who is a political scientist.

Course Requirements

The following course:

ENVS 201A	Research Approaches in Environmental Studies	5

Plus one of the following courses from natural sciences

ENVS 220	Conservation Biology	5
ENVS 230	Agroecology and Sustainable Agriculture	5

Plus one of the following courses from social sciences:

ENVS 210	Political Ecological Thought and Environment	5
ENVS 240	Public Policy and Conservation	5

Plus all of the following:

- an approved graduate course in quantitative methods that provides a basis in research design and analysis;
- an approved graduate course in qualitative methods that provides a basis in research design and analysis;
- two approved graduate elective courses that provide focused expertise.

In addition, all students are required to participate in three quarters of:

ENVS 290L	Graduate Research Seminar	2

Before advancement to candidacy:

Every quarter before advancement to candidacy, all students are required to participate in:

ENVS 290	Interdisciplinary Research Seminar AND	2
ENVS 292	Topics in Research in Environmental Studies	2

Foreign Language Requirements

If the venue of a student's research is in a non-English-speaking country, certification of competence in the language of that country may be required before advancement to candidacy.

Teaching Requirements

Students are expected to serve as teaching assistants in undergraduate courses for two quarters.

Pre-Qualifying Requirements

The interdisciplinary guidance committee helps guide the student in preparation for pre-qualifying examinations in three general areas of scholarly interest, and depending on the student's background, interests, and intentions, may require additional coursework, including courses from other departments. The pre-qualifying examination must be taken no later than winter quarter of the third year.

Qualifying Examination

The qualifying examination committee includes an additional member from outside the Environmental Studies Department, and helps guide the student to define and plan their dissertation research. This committee is responsible for certifying that the student is qualified to advance to candidacy for the Ph.D. degree. The qualifying examination must be completed by the end of the third year.

Post-Qualifying Requirements

Dissertation

Dissertation

A dissertation in environmental studies is expected to present an original contribution to the understanding of a significant environmental problem or issue. It should demonstrate a clear understanding of the relevant literature, careful and rigorous research design and data analysis, and effective communication of the results within the context of the student's area of emphasis. The dissertation is guided by a committee that includes both natural and social scientists.

Dissertation Defense

Optional Catchall

Academic Progress

The typical duration of the doctoral program is five to six years.

Applying for Graduation

ENVIRONMENTAL STUDIES DESIGNATED EMPHASIS

Introduction

The designated emphasis is the equivalent of a "minor" for doctoral study. It will provide you with a framework for in-depth study in specialized fields in your area, and an opportunity for recognition of particular scholarly expertise.

Requirements

Complete the Environmental Studies Designated Emphasis Plan and contact the Graduate Program coordinator if you are interested in taking the Environmental Studies Designated Emphasis Plan. You must declare your intent to complete a designated emphasis in environmental studies before you officially advance to candidacy.

Committee Composition and Departmental Approvals

An environmental studies faculty member is required to act as your designated emphasis advisor. They will advise you about coursework as you complete the Environmental Studies Designated Emphasis Plan, serve on your qualifying examination committee, and your dissertation reading committee.

Course Requirements

Doctoral students from other departments at UC Santa Cruz may complete a designated emphasis in environmental studies by completing ENVS 201A, three advanced ENVS graduate courses or seminars (from the list below), and at least two quarters in an environmental studies graduate research group registered under ENVS 292, Topics in Research in Environmental Studies.

ENVS 201A	Research Approaches in Environmental Studies	5

Three advanced graduate courses or seminars

Take three advanced graduate courses or seminars from the departmentally approved list below (current list is also provided on the ENVS DE Plan), and participate for at least two quarters in an environmental studies graduate research group registered under ENVS 292, Topics in Research in Environmental Studies.

ENVS 210	Political Ecological Thought and Environment	5
ENVS 220	Conservation Biology	5
ENVS 230	Agroecology and Sustainable Agriculture	5
ENVS 235	Social Theories of Nature	5
ENVS 240	Public Policy and Conservation	5
ENVS 247	Regional Approaches to Environmental Policy	5
ENVS 263	Plant Disease Ecology	5
ENVS 271	Valuing the Environment	5
ENVS 280	Advanced Topics in Environmental Studies	5
ENVS 291	Advanced Readings in Environmental Studies	3
ENVS 291C	Advanced Readings in Risk and Public Policy	3
ENVS 291D	Advanced Readings in Tropical Ecology, Agriculture, and Development	3
ENVS 291M	Advanced Readings in Biogeochemistry	3
ENVS 291P	Advanced Readings in Environmental History and Anthropology	3

Plus

Participate for at least two quarters in an environmental studies graduate research group registered under ENVS 292, Topics in Research in Environmental Studies.

ENVS 292	Topics in Research in Environmental Studies	2

Writing, Research and/or Teaching Requirements

Include a significant scholarly written component (i.e., a chapter of the student's dissertation or a paper to be submitted for publication) on an appropriate environmental topic.

[Optional Catchall]

ENVIRONMENTAL STUDIES COURSE LISTS

Pre-Approved Upper-Division Substitutions for ENVS Single Majors

Lecture/Lab combinations count as one course. Associated labs are required only when required by the lecture.

Course Lists

Anthropology

ANTH 111	Human Ecology	5
ANTH 146	Anthropology and the Environment	5
ANTH 161	The Anthropology of Food	5
ANTH 173	Origins of Farming	5

Biology (Ecology and Evolutionary)

BIOE 107	Ecology	5
BIOE 108	Marine Ecology	5
BIOE 109	Evolution	5
BIOE 112	Ornithology	5
BIOE 112L	Ornithology Field Studies	2
BIOE 114	Herpetology	5
BIOE 114L	Field Methods in Herpetological Research	2
BIOE 117	Systematic Botany of Flowering Plants	5

BIOE 117L	Systematic Botany of Flowering Plants Laboratory	2
BIOE 118	Plants and Society: the Biology of Food, Shelter, and Medicine	5
BIOE 120	Marine Botany	5
BIOE 120L	Marine Botany Laboratory	2
BIOE 122	Invertebrate Zoology	5
BIOE 122L	Invertebrate Zoology Laboratory	2
BIOE 124	Mammalogy	5
BIOE 124L	Mammalogy Laboratory	2
BIOE 127	Ichthyology	5
BIOE 127L	Ichthyology Laboratory	2
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 140	Behavioral Ecology	5
BIOE 145	Plant Ecology	5
BIOE 145L	Field Methods in Plant Ecology	5
BIOE 147	Community Ecology	5
BIOE 149	Disease Ecology	5
BIOE 150	Ecological Field Methods	5
BIOE 155	Freshwater Ecology	5
BIOE 161	Kelp Forest Ecology	5
BIOE 163	Ecology of Reefs, Mangroves, and Seagrasses	5
BIOE 165	Marine Conservation Biology	5

Community Studies

CMMU 137	Communities and Climate Change	5
CMMU 149	Political Economy of Food and Agriculture	5
CMMU 186	Food and Agriculture Social Movements	5

Earth and Planetary Sciences

EART 100	Vertebrate Paleontology	5
EART 100L	Vertebrate Paleontology Laboratory	2
EART 101	Invertebrate Paleobiology	5
EART 101L	Invertebrate Paleobiology Laboratory	1
EART 102	Marine Geology	5
EART 104	Geologic Hazards	5
EART 105	Coasts and Beaches	5
EART 107	Remote Sensing of the Environment	5
EART 109	Elements of Field Geology	5
EART 109L	Field Geology Laboratory	2
EART 110A	Evolution of the Earth	7
EART 110B	Earth as a Chemical System	5
EART 110C	The Dynamic Earth	5
EART 116	Hydrology	5
EART 121	The Atmosphere	5
EART 140	Geomorphology	5
EART 142	Engineering Geology for Environmental Scientists	5
EART 146	Groundwater	5
EART 148	Glaciology	5

Economics

Note: Credit for ECON 171 is not allowed if ENVS 141 is also taken.

ECON 170	Environmental Economics	5
ECON 171	Natural Resource Economics	5
ECON 175	Energy Economics	5

Education

EDUC 185C	Introduction to Teaching Science	5

Electrical Engineering

ECE 180J	Advanced Renewable Energy Sources, Storage, and Smart Grids	5

History

HIS 177	Smoke, Smallpox, and the Sublime: Thinking about the Environment in the 19th Century	5

John R Lewis College

JRLC 105	The Making and Influencing of Environmental Policy	5
JRLC 135	Apprenticeship in Community Engaged Research	5

Latin American and Latino Studies

LALS 163	The Amazon: Cultures and Perspectives	5

Legal Studies

LGST 131	Wildlife, Wilderness, and the Law	5
LGST 137	International Environmental Law and Policy	5

Microbiology and Environmental Toxicology

METX 101	Sources and Fates of Pollutants	5

Ocean Sciences

OCEA 101	The Marine Environment	5
OCEA 102	Oceans and Climate: Past, Present, and Future	5
OCEA 130	Biological Oceanography	5

Politics

POLI 132	California Water Law and Policy	5
POLI 174	Global Political Ecology	5

Sociology

SOCY 125	Society and Nature	5
SOCY 130	Sociology of Food	5
SOCY 173	Water	5
SOCY 173X	Water and Sanitation Justice	5
SOCY 177E	Eco-Metropolis: Research Seminar in Urban and Environmental Studies	5

SOCY 179	Nature, Poverty, and Progress: Dilemmas of Development and Environment	5
SOCY 185	Environmental Inequality	5

Spanish

SPAN 156L	Society and Sustainability in Latin America	5

Global and Community Health

Social Sciences 1, Suite 117
(831) 459-3850
www.gch.ucsc.edu
gchBAadvising@ucsc.edu

PROGRAMS OFFERED

Global and Community Health B.A. (p. 787)

OTHER PROGRAMS OF INTEREST

Global and Community Health B.S. (p. 441)

GLOBAL AND COMMUNITY HEALTH B.A.

Information and Policies

Introduction

Global and Community Health (GCH) is an interdisciplinary field of study that is connected both to urgent practical work in the world at large and the core concerns of a liberal arts education. Since GCH topics are embedded in and reflective of wide-ranging social forces, their study is situated at the intersection of diverse traditional disciplines ranging from art, literature, and history, to anthropology, sociology, psychology, politics, economics, and the natural and environmental sciences. Other interdisciplinary fields such as feminist studies and Latin American and Latino studies also intersect in influential ways with GCH, creating exciting opportunities for double majors.

University of California, Santa Cruz, students have many opportunities in the GCH curriculum for practical work in the world beyond the university. Students reflect repeatedly through the major on how their own personal learning can be effectively connected with and communicated to external audiences ranging from community organizations to employers to graduate schools.

More than two hundred courses offered by faculty from all five divisions of UC Santa Cruz contribute to the GCH curriculum. These faculty are committed to the value of interdisciplinary learning, as well as to the possibilities of connecting student research and writing with GCH concerns in the world beyond the university.

No specific courses at the high school level are required for admission to the GCH Bachelor of Arts (B.A.) at UC Santa Cruz. Whether taken at the high school or college level, courses in the natural sciences, social sciences, and humanities are appropriate background and preparation.

The GCH B.A. is appropriate for students interested in careers ranging from medicine, nursing, dentistry and pharmacy to public health and environmental health work in governmental agencies, to global health and community health work with non-governmental organizations, law firms and universities. Many of these careers also require additional post baccalaureate degrees for which the GCH B.A. provides an excellent foundation. There are also jobs open to those with a bachelor's degree in GCH in community health, counseling and educational settings as well as in business sectors such as human resources, administration, hospitality, recreation, food services, farming and construction.

Program Learning Outcomes

Students completing requirements for the B.A. in GCH will develop knowledge and competency in the following five domains:

1. the biological and environmental contexts of global and community health;
2. the social and cultural contexts of global and community health;
3. the institutional and policy contexts of global and community health;
4. the methods, skills and humanities-informed analysis of global and community health; and,
5. the interdisciplinary design and implementation of global and community health work.

Academic Advising for the Program

Additional advising information for new and continuing students is available on the GCH B.A. Advising website. Students may also make an appointment with the B.A. advisor via Navigate Slug Success or contact us at any time at gchBAadvising@ucsc.edu. We look forward to hearing from you!

GCH BA Program Advising
Social Sciences 1, Suite #117
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gchBAadvising@ucsc.edu

Getting Started in the Major: Frosh

Students who intend to pursue this major should begin taking classes for the major in their first year at UC Santa Cruz. The GCH B.A. major includes some sequential courses and as a result, it is strongly recommended to meet with the GCH B.A. advisor to discuss your academic planning form.

Students are encouraged to take GCH 1 (Foundations for Global and Community Health) in the first year; this course may be offered during the summer session as well.

Additionally, the GCH B.A. program requires language competency at the first-year level. Some or all of this requirement may be satisfied upon entry with a language placement assessment. Students with language experience other than English are strongly encouraged to take the relevant language placement assessment, so as to support effective academic planning with the GCH B.A. advisor.

It is also critical that students check whether there are prerequisites for offered GCH BA electives that they wish to take. For example, although a student can complete the program without a Math Placement exam, a number of the electives have math prerequisite(s).

Transfer Information and Policy

Transfer Admission Screening Policy

Students planning to apply in this major are not required to complete specific major preparation courses before they come to UC Santa Cruz.

Getting Started in the Major: Transfer Students

All transfer students who have not completed an articulated course equivalent to GCH 1 must take it in either in their first fall quarter or the summer quarter before.

Courses from another institution may be considered only if they appear on the student's Transfer Credit Summary. Students who wish to substitute transferable courses taken elsewhere for the GCH B.A. major's requirements should discuss the procedure with the GCH B.A. program advisor.

Additionally, the GCH B.A. program requires language competency at the first-year level. Some or all of this requirement may be satisfied upon entry with a language placement assessment. Students with language experience other than English are strongly encouraged to take the relevant language placement assessment, so as to support effective academic planning with the GCH B.A. advisor.

It is also critical that students check whether there are prerequisites for offered GCH B.A. electives that they wish to take. For example, although a student can complete the program without a Math Placement exam, a number of the electives have math prerequisite(s).

Major Qualification Policy and Declaration Process

Students may declare the major after completing the required lower-division GCH course (GCH 1) with a grade of C or better.

Major Qualification

Appeal Process

A student who has not been able to satisfy the pre-declaration requirement may petition the GCH program for an exception by using this Appeal to Qualify form within 15 days of the denial of the declaration. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. If a student has questions about the appeals process, they should contact gchBAadvising@ucsc.edu.

How to Declare the GCH B.A. Major

Students should submit a petition to declare by completing the online declaration petition as soon as they complete the major qualification courses or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed major qualification courses.

To initiate the process to declare, please complete the GCH B.A. Academic Planning Form located on the GCH website. For assistance, please contact GCH B.A. advising at gchBAadvising@ucsc.edu.

Letter Grade Policy

All courses that are taken to satisfy any major requirement must be completed with a letter grade of C or better.

Course Substitution Policy

Students may request to substitute GCH B.A. elective requirements with courses taken from other institutions outside of California, individual study courses, study abroad electives, or other four-year institutions. To do so, students must submit a complete Course Substitution request form and receive approval from either the GCH co-director. A complete course substitution request includes appropriate class details (e.g., number of credits received and class title), a copy of the course syllabus, and any relevant materials the student believes should be included in the review process.

The same substitution request procedure is required for any UC Santa Cruz courses that are not included in the Requirements and Planners tab of the GCH B.A. general catalog.

Double Majors and Major/Minor Combinations Policy

Students interested in pursuing multiple majors may **NOT** declare a combination of the Global and Community Health B.S. and B.A. Double majors with other degrees are permitted so long as students qualify for and complete all requirements for each of the majors, including the Disciplinary Communication and comprehensive requirements.

Study Abroad

Students can petition for transferable credits from Global Learning programs to count toward GCH B.A. major requirements via course substitution. It is recommended that students seeking to participate in any Study Abroad opportunity check in with the GCH B.A. advisor to discuss academic planning and progression in the major, and to screen potential course substitutions. Students may not fulfill the Upper-Division Common Core electives and Disciplinary Communications (DC) requirement abroad. All study abroad

courses used to satisfy GCH B.A. major requirements must be reviewed and approved by a GCH director. Please review the Course Substitution Policy section above for more details about the course substitution process.

Students are encouraged to review UC Education Abroad Program (UCEAP) study abroad courses focused on public and global health to fulfill the Area IV upper-division elective requirement for the major after approval of a request submitted to the GCH B.A. advisor.

Honors

Honors in the GCH B.A. are awarded to graduating seniors, based primarily on a review of grades, whose academic performance is judged to be consistently excellent by a committee of GCH faculty. Highest honors in the major are reserved for students with consistently outstanding academic performance.

Independent and Field Studies

Students may petition the program to substitute one upper-division independent study or field study toward the elective requirements of the major.

Medical and Professional School Admission

Medical and professional school admissions requirements vary; students should verify that their coursework will satisfy the admissions requirements of the specific programs to which they plan to apply.

Requirements and Planners

Course Requirements

Lower-Division Courses

One lower-division GCH requirement

All students are required to complete and pass Foundations for Global and Community Health (GCH 1).

GCH 1	Foundations for Global and Community Health	5

Four Lower Division GCH Electives

All students are required to take four lower-division electives from the four lists below: A) one from the natural science and bio-environmental competency list; B) one from the social science and political-cultural competency list; C) one from the quantitative competency list; and, D) one from the language competency list. These courses are normally taken during the student's first year. All lecture/lab combinations count as one course. For courses with a required concurrently enrolled lab, only successful completion of the lecture is required for the major. Successful completion of the lab may count toward total degree credits.

One course required from each of the four lists.

Natural science and bio-environmental competency for Global and Community Health

ANTH 1	Introduction to Biological Anthropology	5
BIOE 19	Biodiversity in the Age of Humans	5
BIOL 20A	Cell and Molecular Biology	5
BIOL 80A	Female Physiology and Gynecology	5
BIOL 80J	Biology of Emerging and Pandemic Diseases	5
BIOL 86	Research Deconstruction: MCD Biology	3
BIOL 88	Studies in Medicine: Its Art, History, Science, and Philosophy	5
BME 5	Introduction to Biotechnology	5
BME 18	Scientific Principles of Life	5
BME 80H	The Human Genome	5
CHEM 3A	General Chemistry	5
CHEM 4A	Advanced General Chemistry: Molecular Structure and Reactivity	5
CHEM 8A	Organic Chemistry	5
CSE 80A	Universal Access: Disability, Technology, and Society	5
ENVS 24	General Ecology	5
ENVS 25	Environmental Politics, Economics and Justice	5
ENVS 80F	Introduction to Agroecology and Sustainable Food Systems	5

Social science and political-cultural competency for Global and Community Health

ANTH 2	Introduction to Cultural Anthropology	5
BME 80G	Bioethics in the 21st Century: Science, Business, and Society	5
CMMU 10	Introduction to Community Activism	5
CMPM 20	Climate Resilience, Health, and Wellbeing	5
ECON 1	Introductory Microeconomics: Resource Allocation and Market Structure	5
ECON 20	Economics for Non-Majors	5
FMST 10	Feminisms of/and the Global South	5
FMST 30	Feminism and Science	5
FMST 31	Disability Studies	5
FMST 41	Trans Gender Bodies	5
GCH 10	COVID, Culture and Community Health	5
HAVC 48	Climate Justice Now! Art, Activism, Environment Today	5
HIS 81	Science in the Colonial World	5
JRLC 60	Understanding Sustainability: Researching Environmental Justice at UCSC	5

LALS 5	Introduction to Human Rights and Social Justice	5
LALS 45	Intersections of Race, Class, and Gender	5
LALS 54	Racism, Science, and Health: Colonial and Carceral Legacies	5
LALS 55	AIDS Across the Americas	5
LALS 56	The Right to Health	5
LALS 57	Drugs, Addiction, and Recovery in the Americas	5
LALS 80J	Race, Nation, and War	5
LALS 80S	Sexualities and Genders in Latin American and Latina/o Studies	5
LIT 80K	Topics in Medical Humanities	5
MERR 41	Pandemics and Planetary Health	5
POLI 17	U.S. and the World Economy	5
POLI 61	Politics of Social Policy	5
PSYC 1	Introduction to Psychology	5
SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Quantitative Competency for Global and Community Health

	Either one of these courses	
BIOE 80S	Lies, Damn Lies, and Statistics	5
CMMU 30	Numbers and Social Justice	5
LALS 15	Truth, Justice, and Statistics	5
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2
	or these courses	
STAT 17	Statistical Methods for Business and Economics	5
STAT 17L	Statistical Methods for Business and Economics Laboratory	2

Language competency for Global and Community Health (complete or test-out of one of the listed courses)

ARBC 3	First-Year Arabic	5
CHIN 3	First-Year Chinese	5
FREN 3	First-Year French	5
HEBR 3	First-Year Hebrew	5
ITAL 3	First-Year Italian	5
JAPN 3	First-Year Japanese	5
PUNJ 3	First-Year Punjabi 3	5
SPAN 3	First-Year Spanish	5
SPAN 5M	Medical Spanish	5
SPHS 6	Spanish for Heritage Speakers	5
YIDD 3	First-Year Yiddish	5

For information on placement exams, go to Languages and Applied Linguistics Department Placement and Articulation Information page and click on the language of interest.

Upper-Division Courses

Upper-division Global and Community Health requirements

All students are required to complete and pass two common core courses: the first, a course in Community Analysis for Global and Community Health; the second, a course in Social Analysis for Global and Community Health. All upper-division major requirement electives must be satisfied by unique, single courses; no one course can be used to satisfy multiple requirements.

Required Common Core Courses

Requirement 1: Community Analysis for Global and Community Health

Choose one course:

ANTH 134	Medical Anthropology: An Introduction	5
CMMU 165	Community Analysis for Global Health	5
METX 108	Introduction to Research Methods in Global and Community Health	5

Requirement 2: Social Analysis for Global and Community Health

Choose one course:

GCH 123	Migration as a Social Determinant of Health	5
GCH 186	Global Health Politics	5
SOCY 146	Introduction to Population Health	5

Six upper-division electives from the four GCH "context" areas

The following four groups of context courses constitute the core upper-division courses of the GCH B.A. One course must be taken from each of the four GCH context areas, plus two additional electives from any of the areas. All lecture/lab combinations count as one course. For courses with a required concurrently enrolled lab, only successful completion of the lecture is required for the major. Successful completion of the lab may count toward total degree credits.

Area I: Biological and environmental contexts

ANTH 104	Human Variation and Adaptation	5
ANTH 110F	Evolution of Human Diet	5
ANTH 111	Human Ecology	5
ANTH 112	Life Cycles	5

ANTH 136	The Biology of Everyday Life	5
BIOE 118	Plants and Society: the Biology of Food, Shelter, and Medicine	5
BIOL 117	Global Health and Neglected Diseases	5
BIOL 188	A Life in Medicine	3
CMMU 162	Community Gardens and Social Change	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 135	Sustainable Aquaculture	5
ENVS 176	Vulnerability, Complex Systems, and Disasters	5
METX 100	Introduction to Microbiology	5
METX 102	Cell and Molecular Toxicology	5
METX 115	Environmental Health Science	5
METX 133	Medical Microbiology	5
PSYC 109	Psychobiology of Stress and Well-being across the Lifespan	5

Area II: Social, cultural and historical contexts

ANTH 110M	Cultures of Mental Health	5
ANTH 110T	Motherhood in American Culture	5
ANTH 110Y	Feeding California	5
ANTH 129	Beyond Borders: Other Globalizations and Histories of Interconnection	5
ANTH 130Y	Health, Illness, & Medicines in Muslim Worlds	5
ANTH 134	Medical Anthropology: An Introduction	5
ANTH 146	Anthropology and the Environment	5
ANTH 161	The Anthropology of Food	5
ANTH 161S	Anthropology of Food, Abroad	6
CMMU 156	Politics of Food and Health	5
CMMU 160	Public Health	5
CMMU 161	Gender Health and Justice	5
CMMU 163	Health Care Inequalities	5
CMMU 164	Health Justice in Conflict	5
ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 120	Development Economics	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 125	Race, Sex, and Technology	5
FMST 133	Science and the Body	5
GCH 123	Migration as a Social Determinant of Health	5
HIS 101D	World History of Science	5
HIS 101F	Global Environmental History	5
HIS 151	Keywords in the History of Science and Medicine	5
HIS 151A	Medicine and the Body in the Colonial World	5
LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 112	Immigration and Assimilation	5
LALS 143	Race and Ethnicity	5
LALS 151	Race & Mobility	5
LALS 152	Consumer Cultures Between the Americas	5
LALS 155	Latin American and Latino Youth Movements	5
LALS 175	Migration, Gender, and Health	5
LALS 177	Migrant Health and Social Justice	5
PSYC 140G	Women's Lives in Context	5
LALS 178	Gender, Transnationalism, and Globalization	5
PSYC 140L	Women's Bodies and Psychological Well-Being	5
PSYC 144	Latinx Psychology	5
PSYC 172	Health Psychology	5
PSYC 178	Nutritional Psychology	5
SOCY 121	Sociology of Health and Medicine	5
SOCY 121G	Genomics and Society	5
SOCY 127P	Sociology of Drugs, Botanicals and Pharmaceuticals	5
SOCY 132	Sociology of Science and Technology	5
SOCY 143	Black Botanical Medicine in the Americas	5
SOCY 146	Introduction to Population Health	5
SOCY 147	Health in a Changing America	5
SOCY 153	Sociology of Emotions	5
SOCY 159	Pregnancy and Birth	5
SOCY 161	Postpartum	5

Area III: Institutional and policy contexts

ECON 156	Health Economics and Policy	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 143	The Future of Sustainable Development	5
ENVS 147	Global Environmental Justice	5
ENVS 158	Political Ecology and Social Change	5
ENVS 172	Environmental Risks and Public Policy	5
GCH 186	Global Health Politics	5
HIS 151B	Drugs in World History	5
LALS 143J	Global Political Economy	5
LALS 172	Visualizing Human Rights	5
LGST 108	Gender, Sexuality, and Law	5
LGST 137	International Environmental Law and Policy	5
LGST 173	Disability, Law, & Politics	5
POLI 160B	International Law	5
POLI 166	Politics of Migration	5

POLI 175	Human Rights	5
POLI 187	Decolonial Global Health: A View from the Middle East and Africa	5
POLI 189	Pandemics, Politics, and Global and Community Health	5
POLI 190S	Policies and Practices of Health Systems Strengthening	5
SOCY 122	The Sociology of Law	5
SOCY 127	Drugs in Society	5
SOCY 128I	Race and Law	5
SOCY 128M	International Law and Global Justice	5
SOCY 135	Healing Justice	5
SOCY 185	Environmental Inequality	5

Area IV: Methods, skills & humanities-informed analysis

AM 115	Stochastic Modeling in Biology	5
ANTH 107A	Methods and Research in Biological Anthropology: Genetics	5
ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 104L	Field Methods Laboratory	5
ENVS 133	Agroecology Practicum	5
HAVC 141N	Data Cultures: Art, Technology, and the Politics of Visual Representation	5
JRLC 136	Methodologies of Critical Praxis	5
LALS 126	Digit@l Americ@s/Digit@l Latin@s	5
LALS 186	Field Research Methods	5
LALS 187F	Human Rights Investigations Lab	2
LIT 121O	Body Theories and Embodied Poetics in Contemporary American Poetry	5
LIT 160C	Cruelty: Enjoying the Pain of Others	5
LIT 167I	The Enviromental Humanities	5
LIT 167G	Reading the Weather: Literature and Global Climate Change	5
SOCY 123	Global and Transnational Perspectives in Science and Technology Studies	5

UCEAP study abroad courses focused on public and global health can be substituted for the upper-division electives listed in Area IV "Methods, skills humanities-informed analysis" of the GCH B.A.

A number of courses offered by UC Online are relevant to the GCH B.A. and have been approved for substitution of major requirements. Please see the GCH B.A. advisor for a current list of these courses.

Electives

Comprehensive Requirement

The comprehensive requirement for the GCH B.A. is satisfied by completing the same courses as those required for the Disciplinary Communication requirements.

Disciplinary Communication (DC) Requirement

Students of every major at UC Santa Cruz must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The 7-credit DC requirement for the GCH B.A. is satisfied by completing one of the following course combination options:

Option 1

Both of the following courses:

GCH 190	Global and Community Health Task Force	5
GCH 195	Global and Community Health Communication	2

Option 2

Both of the following courses:

GCH 195	Global and Community Health Communication	2
GCH 199A	Global and Community Health Senior Thesis	5

Option 3

All three of the following courses:

GCH 195	Global and Community Health Communication	2
GCH 199A	Global and Community Health Senior Thesis	5
GCH 199B	Global and Community Health Senior Thesis B	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Plan One for Incoming Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)

1st(frosh)	GCH 1	Lower-Div Competency 1	Lower-Div Competency 3
	College 1	Lower-Div Competency 2	Lower-Div Competency 4**
		WRIT 1/1E (if needed)	
2nd(soph)	WRIT 2*	Upper-Div GCH Area 1 Elective	Upper-Div GCH Area 2 Elective
		Upper-Div GCH Area 3 Elective	Upper-Div GCH Area 4 Elective
3rd(junior)	Upper-Div GCH Area Elective	Common Core: Requirement 1	Common Core: Requirement 2
	Upper-Div GCH Area Elective		
4th(senior)	GCH 190	GCH 195	

* WRIT 2 should be taken in or before spring quarter of the second year.

**Some or all of this language competency requirement may be satisfied upon entry with a language placement assessment. The maximum possible number of courses required to satisfy the language competency is three courses.

Plan Two for Incoming Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd(junior)	GCH 1	Common Core: Requirement 1	Common Core: Requirement 2	
	Lower-Div Competency 1	Lower-Div Competency 3	Upper-Div GCH Area 1 Elective	
	Lower-Div Competency 2	Lower-Div Competency 4**	Upper-Div GCH Area 2 Elective	
4th(senior)	Upper-Div GCH Area 3 Elective	Upper-Div GCH Area Elective		
	Upper-Div GCH Area 4 Elective	Upper-Div GCH Area Elective		
	GCH 190	GCH 195		

**Some or all of this language competency requirement may be satisfied upon entry with a language placement assessment. The maximum possible number of courses required to satisfy the language competency is three courses.

Latin American and Latino Studies

32 Merrill Academic Building
(831) 459-4284

PROGRAMS OFFERED

Latin American and Latino Studies B.A. (p. 795)

Latin American and Latino Studies/Politics Combined Major (p. 803)

Latin American and Latino Studies/Sociology Combined Major (p. 807)

Latin American and Latino Studies/Education, Democracy, and Justice B.A. (p. 800)

Latin American and Latino Studies Minor (p. 810)

Latin American and Latino Studies Ph.D. (p. 811)

Latin American and Latino Studies Designated Emphasis (p. 813)

The Department of Latin American and Latino Studies (LALS) at UC Santa Cruz centers the interconnected experiences and perspectives of Latin American and Latinx communities as a foundation for intellectual analysis and engaged research. As an interdisciplinary department within a Hispanic-Serving Institution, our mission and vision emerge from the diverse communities that the university serves.

LALS is committed to transformative research, teaching, advising, and mentoring that advance our understanding of how these communities' dreams and realities are shaped by migration and mobilities; inequalities, identities, and intersectionality; race and ethnicity; social and political transitions; and culture, power, and knowledge. LALS is a space for dialogues that link the histories, societies, cultures, ideas, and experiences of Latinxs and Latin American peoples in California, the United States, hemispherically, and globally.

OTHER PROGRAMS OF INTEREST

Latin American and Latino Studies (LALS) and Education Department 4+1 Contiguous Bachelor's/Master's Pathway (p. 815)

UNDERGRADUATE PROGRAM

The Latin American and Latino Studies (LALS) Department integrates the study of Chicanx and Latinx communities in the United States with analysis of the histories, politics, cultures, and societies of Latin America and the Caribbean.

LALS courses address changing political, social, economic, and cultural realities, including migration and transnational communities; gender, racial, sexual, and ethnic relations and identities; social movements; diverse forms of cultural expression; political and economic restructuring in Latin America; and the challenges of political and economic inequities and empowerment for Latinx communities in the United States.

Students in LALS learn to develop thoughtful analysis and clear arguments on complex topics. Through internship and field study experiences, students can acquire useful, pre-professional skills in any of the following key areas: community development/advocacy, public policy, education, journalism, media, performance, and research/writing, among others.

Graduates of the LALS major have forged careers in a wide variety of fields, including environmental activism, community organizing, teaching, health care, legal services, politics and government service, and journalism. Many have gone on to pursue advanced degrees in the U.S. or abroad in fields such as law, anthropology, bilingual education, media, communications, cultural studies, ecology, economics, geography, history, literature, educational counseling, public health, and sociology. LALS majors graduate with knowledge, skills, and understandings that propel them forward into exciting careers grounded in justice, rights, and creating social change.

GRADUATE PROGRAM

The first doctoral program to link Latin American and Latinx studies, the Ph.D. program in Latin American and Latino studies at UC Santa Cruz offers an innovative transnational and interdisciplinary approach to the study of the peoples, cultures, societies, and institutions of the Américas. Drawing from theories, methods, and sources in the humanities and social sciences, the program introduces students to this new field of study and trains them to develop the conceptual and analytical skills necessary for understanding the dynamics of hemispheric change. As part of our rigorous approach to studying the Américas, the department offers four thematic clusters in the emerging field of Latin American and Latino studies: 1) transnational migrations within the Américas; 2) social inequalities; 3) cultural politics and cultural flows; and 4) collective action and social movements. Doctoral students specialize in one of these four substantive themes, as well as a focus area of their own design.

1. **Transnationalisms, Migrations, and Displacement.** While transnational migrations are the subject of research in multiple disciplines, this program analyzes these transformative processes through an interdisciplinary lens. A transnational approach examines links between regions in the Américas, analyzing the social and historical foundations of economic dynamics such as remittances from the United States or the dollarization of Latin American countries. A transnational approach to the study of migratory processes explores the dynamics of bi-national communities, bilingualism and multilingualism, immigrant integration into host societies, and North-South exchanges of ideas and cultures.
2. **Intersectionality, Identities, and Inequalities.** This program's research foregrounds the study of transnational social inequalities formed by power relations based on race, ethnicity, nationality, citizenship, class, territory, gender and/or sexuality in the Américas. These social hierarchies are analyzed as institutions, historical processes, discourses, or signifiers with multiple meanings, and are examined in terms of how they have been mobilized to build, transform, or challenge identities, communities, and

social movements in local, national, and global contexts over time.

3. **Culture, Power, and Knowledge.** Another distinctive area of inquiry in the Américas is the study of cultural politics and cultural flows that shape everyday life, institutions, social identities, discourses, meanings, and cultural forms and practices, in global, regional, and local contexts in the Américas and in an increasingly interconnected and integrated world. The transnational analysis of culture focuses on the ways in which cultural forces and cross-cultural communication and media are contributing to the formation of new transnational imaginaries, as well as how these cultural processes are transforming and redefining national and local cultures.

4. **Collective Action, Social Movements, and Social Change.** This area of research addresses collective action and social movements at local, national and international levels viewed through transnational lenses. As migrants engage in public life, both in their communities of residence and in their communities of origin, they construct diverse practices of political participation, including "civic bi-nationality." These processes are crucial for understanding the largest wave of immigration in a century, including how migrants relate to U.S. society.

While our doctoral program prepares students for research and teaching at the university level, we also support students who opt to seek employment outside academia (e.g., in the corporate or non-profit sectors).

LATIN AMERICAN AND LATINO STUDIES B.A.

Information and Policies

Introduction

A degree in Latin American and Latino studies (LALS) trains students to be critical and analytical thinkers, to be active, engaged global citizens, and to be skilled strategic activists in making the world a more just place for all. An LALS bachelor of arts (B.A.) prepares students to learn from and work with people from a variety of cultures and perspectives, to understand the complexity of our current political, social, and cultural moment, and to use skills from many disciplines and fields.

Program Learning Outcomes

1. **Critical Thinking**. Ability to analyze from a transnational/transborder/translocal perspective—to see the interconnections between Latin American and Latino issues, people, ideas, problems, and solutions. This includes key skills, such as understanding sources, comparing arguments, analysis, and historical perspective.

2. **Research Methods**. Working knowledge of social scientific and/or humanistic approaches to LALS relevant topics. This includes acquiring qualitative and quantitative skills, gathering or obtaining research data, finding/using primary sources, and other research methods.

3. **Communication**. Key communication skills, including written, oral presentation, and digital, including an understanding of media sources and ability to apply media literacy to cross-cultural analysis.

4. **Community Engagement Skills**. Acquisition of hands-on skills in collaborative engagement, cross-cultural fluency, and understanding of Latin America and Latino experiences for practical application and engagement with community and civic organizations.

Academic Advising for the Program

Make an appointment with an advisor or peer advisor through Navigate Slug Success or contact us at any time at lalsadvising@ucsc.edu. We look forward to hearing from you.

LALS Undergraduate Program
32 Merrill Academic Building
(831) 459-2119
lalsadvising@ucsc.edu

Getting Started in the Major: Frosh

Students interested in the LALS major are encouraged to enroll in the required LALS introductory course, chosen from LALS 1 or LALS 5 or LALS 10, and/or the required lower-division elective course as soon as possible, to confirm their interest in the major and to qualify to declare the major.

Transfer Information and Policy

LALS welcomes transfer students. Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to the University of California, Santa Cruz.

Transfer Admission Screening Policy

Students interested in transferring to UC Santa Cruz as LALS majors are encouraged to enroll in courses that satisfy the lower-division requirements prior to transfer, when possible. Visit Assist.org to review transfer articulations and contact the LALS undergraduate advisor with any questions.

Getting Started in the Major: Transfer Students

Transfer students must complete one LALS course taught at UC Santa Cruz to qualify to declare the LALS major. Students should contact the LALS undergraduate advisor if they have questions about transfer credit and to make an academic plan.

Major Qualification Policy and Declaration Process

LALS Major

Students who complete any one LALS course with a grade of C or better or Pass will qualify to declare the major.

LALS Major with Language Intensive Concentration

In addition to completing any one LALS course with a grade of C or better or Pass to declare the major, students pursuing the Language Intensive Concentration must have a viable plan for establishing proficiency in Spanish, Portuguese, or another approved language in sufficient time to take the required two courses taught in the second language by the expected graduation term.

Appeal Process

Students who did not satisfy the major declaration requirement but believe there are extenuating circumstances may file a written appeal. Appeals should be submitted to undergraduate advising by sending an email to lalsadvising@ucsc.edu. Students must file the appeal within 15 days of denial of major declaration. The department will notify the student and college of the decision within 15 days of the receipt of the appeal.

How to Declare a Major

Students may declare the major through the MyUCSC portal. Any questions should be directed to the LALS undergraduate advisor.

Letter Grade Policy

Major and minor requirements will be met with grades of C or better or Pass, within the parameters of the UC Santa Cruz Pass/No Pass grading policy.

Course Substitution Policy

Students may use up to two courses taken outside the LALS Department at UC Santa Cruz toward major requirements. This includes courses taken at UC Santa Cruz and all courses taken at other institutions, including through study abroad programs. Students may review a list of pre-approved substitutions that satisfy the lower- and upper-division elective requirements. Students may contact the undergraduate advisor to inquire about additional courses that may be approved to count as electives or if they plan to study abroad. Transfer students who have completed LALS-related work prior to transfer should contact the undergraduate advisor to ask about transfer credit.

Double Majors and Major/Minor Combinations Policy

LALS students are encouraged to consider double major and major/minor plans. Contact the undergraduate advisor for more information.

Study Abroad

The LALS Department encourages students to participate in Global Learning programs whenever possible. We offer a summer Global Internship program in Buenos Aires, Argentina, that satisfies an elective requirement in LALS. There are also many other learning programs offered throughout the academic year in California, Washington, D.C., Latin America, and elsewhere across the globe. Find out more on the Global Learning website or visit their offices on campus.

Honors

LALS awards honors in the major based on overall student academic performance in courses that count toward the major. To receive the strongest consideration for honors in the major, the following grade point average (GPA) criteria must be met: highest honors, 4.0; honors, 3.7.

Latin American and Latino Studies Major

Course Requirements

The LALS major requires 10 courses with two labs. Some requirements may be satisfied via exam credit.

Lower-Division Requirements

One LALS Introductory Course

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5
LALS 10	Introduction to Chicanx & Latinx Studies	5

One Lower-Division LALS Elective

One 5-credit course from from LALS courses numbered 1-99, including additional LALS introductory courses (LALS 1, 5, or 10). May also be satisfied with a score of 4+ on the AP Spanish Literature and Culture exam. Students may also review the list of pre-approved outside electives found in the Course Substitution Policy. A maximum of two courses taken outside of the LALS Department at UC Santa Cruz may be used toward major requirements.

Upper-Division Requirements

LALS Core Courses

LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Five Upper-Division LALS Electives

Students take five additional 5-credit electives chosen from LALS 101-194. Students may substitute up to two courses outside the LALS Department at UC Santa Cruz toward major requirements. See the Course Substitution Policy in the Information and Policies section for more details. Students

may review the list of pre-approved outside electives, which count toward this two-course limit. Students who wish to use an independent study course to satisfy an elective requirement should contact the undergraduate advisor.

Senior Seminar

All students complete one senior seminar (LALS 194 A-Z, excluding L) and seminar lab (LALS 194L). This requirement satisfies the Comprehensive Requirement.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement for the Latin American and Latino Studies B.A. is met by completing:

LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Comprehensive Requirement

The Comprehensive Requirement is fulfilled by completing one senior seminar (LALS 194 A-Z, excluding L) and seminar lab (LALS 194L).

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Sample Planner for Frosh Students (can be completed in three years)

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	LALS Intro Course* WRIT 1/WRIT 1E (if needed)	LALS lower-division elective		
2nd (soph)	WRIT 2**	LALS 100	LALS 100A + 100L	
3rd (jr)	LALS upper-division elective LALS upper-division elective	LALS upper-division elective LALS upper-division elective	LALS 194 + LALS 194L LALS upper-division elective	
4th (sr)	Possible study abroad, research, or additional major or minor			

*Take LALS 1 or LALS 5 or LALS 10, when offered.

**WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Sample Planner for Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)

1st (jr)	LALS Intro Course *	LALS 100	LALS 100A + 100L
	LALS lower-division elective *	LALS upper-division elective	LALS upper-division elective
2nd (sr)	LALS upper-division elective	LALS 194 + 194L	
	LALS upper-division elective	LALS upper-division elective	

*If not already satisfied by transfer credit.

Latin American and Latino Studies Language Intensive Concentration

The LALS B.A. with Language Intensive Concentration requires 13 courses and two labs: three lower-division courses, two upper-division core courses and one core lab, seven upper-division electives--two or more must be taken in second language(s)--and the senior seminar and lab.

Lower-Division Requirements

One LALS Introductory Course

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5
LALS 10	Introduction to Chicanx & Latinx Studies	5

Two Lower-Division LALS Electives

Two 5-credit courses chosen from LALS courses numbered 1-99 including additional LALS introductory courses (LALS 1, 5, or 10). One elective may be satisfied with a score of 4+ on the AP Spanish Literature and Culture exam. Students may also choose courses from the pre-approved outside electives list. A maximum of two courses taken outside of the LALS Department at UC Santa Cruz may be used toward major requirements.

Upper-Division Requirements

LALS Core Courses

LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Seven Upper-Division LALS Electives

Students take seven additional elective courses, with two or more taught primarily in a second language. Students may choose these electives from LALS 101-194 or the list of courses taught primarily in Spanish below. Students may also choose courses from the pre-approved outside electives list. Note that courses on the pre-approved outside electives list, as well as non-LALS courses on the list of courses taught primarily in Spanish, count toward the limit of two outside courses described in the Course Substitution Policy.

Courses taught primarily in Spanish

At least two elective courses must be taught in a second language(s) of Spanish, Portuguese, or another approved language. Courses taken in a language other than Spanish may require study abroad/study at another university.

Students can self-place into LALS courses taught in Spanish; other departments may have prerequisites for their approved electives. See the undergraduate advisor for more information.

LALS 127	Genero, Nacion Y Modernidad En El Cine	5
LALS 129S	Memoria en Las Americas	5
LALS 135	El Salvador: Expresiones Culturales	5
LALS 147	Violencia Cotidiana en las Americas	5
LIT 188R	Humanidades Ambientales	5
LIT 189A	De la conquista a Sor Juana	5
LIT 189B	El Siglo XIX en América Latina: cultura, política y sociedad	5
LIT 189C	Introducción a Spanish Studies	5
LIT 189F	Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish	5
LIT 189G	Cine y Literatura	5
LIT 189L	Poesía latinoamericana	5
LIT 189O	El Cuento Hispanoamericano: Variedades esteticas de la literatura breve en America Latina	5
LIT 189Q	Ficción y marginalidad	5
LIT 189S	La cultura popular en la narrativa latinoamericana	5
LIT 189V	Andean Indigenismo	5
LIT 189X	Estudios mediaticos	5
LIT 189Z	Literatura de Chile	5
SPAN 156A	The Language of Latin America Cinema	5
SPAN 156F	El Humor en Espanol	5

SPAN 156J	Contemporary Central America	5
SPAN 156M	Mexico and the Southwest	5
SPHS 115	El ensayo lectura, análisis y redacción	5

Senior Seminar

The Comprehensive Requirement is fulfilled by completing one senior seminar (LALS 194 A-Z, excluding L) and seminar lab (LALS 194L).

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement for the Latin American and Latino Studies Language Intensive Concentration is met by completing:

LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Comprehensive Requirement

All students complete one senior seminar (LALS 194 A-Z, excluding L) and seminar lab (LALS 194L).

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Sample Planner for Frosh Students

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	LALS Intro Course* College Core Course Language preparation if needed	LALS lower-division elective WRIT 1/WRIT 1E (if needed) Language preparation if needed	LALS lower-division elective Language preparation if needed	
2nd (soph)	WRIT 2** Language preparation if needed	LALS 100 Language preparation if needed	LALS 100A + 100L Language preparation if needed	
3rd (jr)	LALS upper-division elective in second language LALS upper-division elective	LALS upper-division elective in second language LALS upper-division elective	LALS upper-division elective LALS upper-division elective	
4th (sr)	LALS upper-division elective LALS 194 + LALS 194L			

*Take LALS 1 or LALS 5 or LALS 10, when offered.

**WRIT 2 should be taken in or before spring quarter of the second year.

Two-Year Sample Planner for Transfer Students

Plan assumes language preparation prior to transfer sufficient to place student in SPAN 4 or SPHS 4 (Spanish for Heritage Speakers 4).

	Fall	Winter	Spring	Summer
Entering				KRSG 1T

				Summer Edge (optional)
1st (jr)	LALS Intro Course*	LALS 100	LALS 100A + 100L	
	LALS lower-division elective	LALS lower-division elective	LALS upper-division elective	
	Language preparation if needed	Language preparation if needed	Language preparation if needed	
2nd (sr)	LALS upper-division elective in second language	LALS upper-division elective in second language	LALS 194 + 194L	
	LALS upper-division elective	LALS upper-division elective	LALS upper-division elective	
		LALS upper-division elective		

*If not already satisfied by transfer credit.

LATIN AMERICAN AND LATINO STUDIES/EDUCATION, DEMOCRACY, AND JUSTICE B.A.

Information and Policies

Introduction

A combined major in Latin American and Latino studies (LALS, pronounced el-ay-el-es) and education, democracy, and justice (EDJ, pronounced "edge") builds on both departments' interdisciplinary social justice orientations to bridge theory and practice, with core required courses and elective field experiences that incorporate history and insights from participatory forms of research and community organizing to highlight the relationships between educational justice, Latina/o/x studies, democratic politics, race studies, and social change.

LALS courses train students to be critical and analytical thinkers; to be active, engaged global citizens; and to be skilled strategic activists in making the world a more just place for all. Study in LALS prepares students to learn from and work with people from a variety of cultures and perspectives, to understand the complexity of our current political, social, and cultural moment, and to use skills from many disciplines and fields. LALS investigates the historical, economic, social, and cultural processes that are shaping and transforming the Americas region, including California. By viewing societies as interrelated—specifically U.S. Latino/a communities and Latin American/Caribbean communities—LALS analyzes how local, regional, global, and transnational dimensions affect histories, politics, ethnicities, races, and cultures.

EDJ courses provide opportunities to examine critical questions, theories, practices, and research in the field of education, considered broadly and not only in relation to formal schooling. Courses in the major provide the conceptual knowledge for students to engage in critical thinking about social and policy contexts as well as everyday practices affecting inequitable structures in schooling, society, and culture that have enduring impacts on the quality of our democracy and communities.

Students choosing a combined major in LALS and EDJ will find themselves prepared for a wide variety of careers and/or graduate study, including teaching credential programs and/or masters degrees in education, Ph.D. programs, public policy, educational administration, and inclusive student outreach programming. Students may also choose to complete a second major or minor program alongside the combined major, to focus in a specific area of instruction in preparation for a single subject teaching credential.

Program Learning Outcomes

1. **Critical Thinking.** Ability to analyze from a transnational/transborder/translocal perspective—to see the interconnections between Latin American and Latino issues, people, ideas, problems, and solutions. This includes key skills, such as understanding sources, comparing arguments, analysis, and historical perspective. Students will demonstrate an understanding of the key theoretical perspectives and existing research on innovative teaching and learning approaches that value and promote historically disadvantaged and underserved communities and their cultural and linguistic resources. Students will demonstrate knowledge of broad historical, social, and political contexts that impact equal opportunity to learn and contribute to society, and the role that education and schooling can play in expanding opportunity.
2. **Research Methods.** Working knowledge of social scientific and/or humanistic approaches to LALS relevant topics. This includes acquiring qualitative and quantitative skills, gathering or obtaining research data, finding/using primary sources, and other research methods. Students will apply critical perspectives in reflecting on and/or conducting research and/or

fieldwork, and present their findings in multi-modal forms.

3. **Communication.** Key communication skills, including written, oral presentation, and digital, including an understanding of media sources and ability to apply media literacy to cross-cultural analysis. Students will demonstrate oral and written communication skills through individual and group presentations and assignments in their courses.
4. **Language.** Proficiency in Spanish.
5. **Community Engagement Skills.** Acquisition of hands-on skills in collaborative engagement, cross-cultural fluency, and understanding of Latin America and Latino experiences for practical application and engagement with community and civic organizations. Students will demonstrate basic knowledge of transformative teaching and learning principles that can be applied in a wide range of learning environments and youth serving educational organizations.

Academic Advising for the Program

The combined major in LALS and EDJ is housed in the LALS Department, and the LALS undergraduate advisor should be the first point of contact for majors and prospective majors. Students are also welcome to meet with an EDJ advisor or peer advisor to discuss elective options and course planning as needed.

LALS Undergraduate Advising
32 Merrill Academic Building
(831) 459-2119
lalsadvising@ucsc.edu

EDJ Undergraduate Advising
educationadvising@ucsc.edu

Getting Started in the Major

Students interested in the combined major in LALS and EDJ should complete one LALS lower-division course, chosen from LALS 1 or LALS 5 or LALS 10, and EDUC 60 in their first year, which will qualify them to declare the major. Students will also need proficiency in the Spanish language sufficient to take an elective course taught in Spanish by the senior year. Students are encouraged to meet with the LALS undergraduate advisor to create an academic plan.

Transfer Information and Policy

Students planning to declare in this major are not required to complete specific major preparation courses for consideration of admission.

Transfer Admission Screening Policy

Students interested in transferring to UC Santa Cruz as a combined LALS and EDJ major are encouraged to enroll in courses that satisfy the lower-division requirements prior to transfer. Visit Assist.org to review transfer articulations and contact advisors for LALS and EDJ with any questions.

Getting Started at UCSC as a Transfer Student

Transfer students must complete the lower-division course requirements to declare the combined major in LALS and EDJ, and should focus on completing these classes as soon as they start at UCSC (if they have not completed these courses prior to transfer). Students should contact advisors for LALS and EDJ with questions regarding transferable coursework.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete the required lower-division courses with grades of C or better or Pass before the major can be declared.

One EDJ course:

EDUC 60	Schooling, Democracy, and Justice	5

One course chosen from:

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5
LALS 10	Introduction to Chicanx & Latinx Studies	5

Appeal Process

Students who did not satisfy the major declaration requirement but believe there are extenuating circumstances may file a written appeal. Appeals should be submitted to undergraduate advising by sending an email to lalsadvising@ucsc.edu. Students must file the appeal within 15 days of denial of major declaration. The department will notify the student and college of the decision within 15 days of the receipt of the appeal.

How to Declare a Major

Students may declare the major through the MyUCSC portal. Any questions should be directed to the LALS undergraduate advisor.

Letter Grade Policy

The program does not have a letter grade policy. Major requirements will be met with grades of C or better or Pass, within the parameters of the UC Santa Cruz Pass/No Pass grading policy.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Education Abroad Program (EAP)

The LALS Department encourages students to participate in Global Learning programs whenever possible. We offer a summer Global Internship program in Buenos Aires,

Argentina, that satisfies an elective requirement in LALS. And there are many other learning programs offered throughout the academic year in: California, Washington, D.C., Latin America, and elsewhere across the globe. Find out more on the Global Learning website or visit their offices on campus.

Honors

For combined majors, academic performance must meet the criteria in both departments to be awarded honors. Honors can only be conferred if both departments agree.

LALS awards honors in the major based on overall student academic performance in courses that count toward the major. To receive the strongest consideration for honors in the major, the following grade point average (GPA) criteria must be met: highest honors, 4.0; honors, 3.7.

A student with a major GPA of 3.75 or better qualifies for honors in the EDJ major. A student with a major GPA of 3.90 or better qualifies for highest honors in the major. Courses and credits taken at UC Santa Cruz to satisfy the major requirements are used to calculate the major GPA. Courses transferred from other institutions (with the exception of study abroad programs through UCSC) are not calculated into the major GPA.

[Optional Catchall]

Requirements and Planners

Course Requirements

Combined LALS and EDJ majors are required to take 11 5-credit courses and two writing labs. One of the courses must be taught in Spanish.

Lower-Division Requirements

Take this course:

EDUC 60	Schooling, Democracy, and Justice	5

Plus one course chosen from:

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5
LALS 10	Introduction to Chicanx & Latinx Studies	5

Upper-Division Requirements

Take the following courses:

LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Plus one course chosen from:

EDUC 110	Popular Education, Democracy, and Social Movements	5
EDUC 180	Introduction to Teaching	5

Upper-Division Elective Courses

Up to three elective substitutions are allowed (with department approval) if the student completes an education abroad program. Students must work with the undergraduate advisors on course substitution petitions. One elective course must be taught in Spanish.

Three EDUC Courses

Three 5-credit EDUC courses from 102-187.

Two LALS Courses

Two 5-credit LALS electives numbered 101-190.

Spanish language LALS courses

At least one elective must be taught in Spanish. The following LALS courses are taught primarily in Spanish. Pre-approved outside electives and study abroad courses taught in Spanish may be approved to satisfy the Spanish-language elective requirement. Contact the LALS advisor for more information.

LALS 129S	Memoria en Las Americas	5
LALS 135	El Salvador: Expresiones Culturales	5
LALS 157	Revoluciones Sociales	5
LALS 183	Ecologías Hemisféricas	5

Comprehensive Requirement

The Comprehensive Requirement is fulfilled by completing one senior seminar (LALS 194 A-Z, excluding L) and a Writing Lab (LALS 194L).

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement for the combined LALS and EDJ B.A. is met by completing:

LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample Four-Year Planner for Frosh

	Fall	Winter	Spring	Summer
Entering				College 1A
				Summe

				r Edge (optional)
1st (frosh)	EDUC 60*	LALS Intro Course*		
	Spanish instruction if needed	Spanish instruction if needed	Spanish instruction if needed	
2nd (soph)		LALS 100	LALS 100A + LALS 100L	
	Spanish instruction if needed	Spanish instruction if needed	Spanish instruction if needed	
3rd (junior)	LALS elective (taught in Spanish)	EDUC 110 or EDUC 180	EDUC elective	
	EDUC elective	LALS elective		
4th (senior)	LALS 194_ + LALS 194L			
	EDUC elective			

*Complete lower-division requirements when possible during the first year (LALS 1, 5, or 10 satisfies LALS lower-division requirement).

Sample Two-Year Planner for Transfer Students

To graduate in two years, students must enter at the level of SPAN 2 or above to complete the required elective taught in Spanish by the sixth quarter of enrollment. Plan assumes entry at SPAN 4 or SPHS (Spanish for Heritage Speakers) 4. Spanish instruction is not a requirement of the major if the student is already proficient in Spanish.

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T
				Summer Edge (optional)
1st (junior)	LALS Intro Course*	LALS 100	LALS 100A + LALS 100L	
	EDUC 60*	EDUC 110 or EDUC 180	EDUC elective	
	Spanish instruction if needed**	Spanish instruction if needed	Spanish instruction if needed	
2nd (senior)	possible study abroad	EDUC elective	EDUC elective	
	LALS elective (taught in Spanish)	LALS elective	LALS 194_ + LALS 194L	

*If not already completed with transfer credit.

**If lower-division requirements and Spanish language proficiency are complete prior to transfer, contact the LALS undergraduate advisor to discuss enrollment options and create an academic plan for the first quarter.

LATIN AMERICAN AND LATINO STUDIES/POLITICS COMBINED B.A.

Information and Policies

Introduction

A degree in Latin American and Latino studies (LALS) and politics trains students to be critical and analytical thinkers, to be active, engaged global citizens, and to be skilled scholar-activists making the world a more just place for all. A combined LALS and politics B.A. prepares students to collaborate across cultural differences, to understand and interpret complex political moments and social movements, and to integrate interdisciplinary tools and skills, to understand the complexity of current and past political moments, to discover how social, economic, and cultural aspects inform the political, and to use skills from many disciplines and fields.

Since political issues and practices are embedded in and reflective of the whole experience of a community, the study of politics can constitute the center of a broad-based course of study drawing on many areas including history, sociology, anthropology, philosophy, political science, economics, literature, science, and law. The combined B.A. in LALS and politics allows students to focus their study of political issues and social movements within Latinx and Latin American communities.

Program Learning Outcomes

Latin American and Latino Studies Program Learning Outcomes:

1. Critical Thinking. Ability to analyze from a transnational/transborder/translocal perspective—to see the interconnections between Latin American and Latino issues, people, ideas, problems and solutions. This includes key skills, such as understanding sources, comparing arguments, analysis, and historical perspective.
2. Research Methods. Working knowledge of social scientific and/or humanistic approaches to LALS relevant topics. This includes acquiring qualitative and quantitative skills, gathering or obtaining research data, finding/using primary sources, and other research methods.
3. Communication. Key communication skills, including written, oral presentation, and digital, including an understanding of media sources and ability to apply media literacy to cross-cultural analysis.
4. Community Engagement Skills: Acquisition of hands-on skills in collaborative engagement, cross-cultural fluency, and understanding of Latin America and Latino experiences for practical application and engagement with community and civic organizations.

Politics Program Learning Outcomes:

1. Understand the origins, development, and nature of political institutions, practices, and ideas;
2. Place particular political phenomena in broader context (national, historical, cross-cultural, and theoretical, etc);
3. Demonstrate familiarity with various theoretical approaches to the study of politics, and their application in different geographic and substantive areas;
4. Critically evaluate arguments about political institutions, practices, and ideas based on logic and evidence;
5. Develop and sustain coherent written and oral arguments regarding political phenomena, theories, and values based on appropriate empirical and/or textual evidence and logic.

Academic Advising for the Program

LALS Undergraduate Advising
32 Merrill Academic Building
(831) 459-2119
lalsadvising@ucsc.edu

Politics Undergraduate Advising
25 Merrill Academic Building
(831) 459-2505
polimajor@ucsc.edu

Advising for the combined major in LALS and politics is available from both advising offices, though the major is housed in the LALS Department.

Getting Started in the Major: Frosh

Students interested in the combined major in LALS and politics are encouraged to enroll in the one required LALS lower-division course, chosen from LALS 1 or LALS 5 or LALS 10, and one lower-division politics course, chosen from courses numbered 1-70, at their earliest opportunity.

Transfer Information and Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to UC Santa Cruz.

Transfer Admission Screening Policy

Students interested in transferring in to UC Santa Cruz as a combined LALS and politics major are encouraged to enroll in courses that satisfy the lower-division requirements prior to transfer. Visit Assist.org to review transfer articulations and contact advisors for LALS and politics with any questions.

Getting Started in the Major: Transfer Students

Transfer students must complete the lower-division course requirements to declare the combined major in LALS and politics, and should focus on completing these classes as soon as they start at UCSC (if they have not completed these courses prior to transfer). Students may contact advisors for LALS and politics if they have questions about transferable coursework.

Major Qualification Policy and Declaration Process

Major Qualification

Students qualify for the major by completing two courses. One course is taken from POLI courses numbered 1-70. The second course is chosen from LALS 1, LALS 5, or LALS 10. Both courses may be taken for a letter grade or Pass/No Pass, and must be completed with a grade of C or better or Pass.

Appeal Process

Students who did not satisfy the major declaration requirement but believe there are extenuating circumstances may file a written appeal. Appeals should be submitted to undergraduate advising by sending an email to lalsadvising@ucsc.edu. Students must file the appeal within 15 days of denial of major declaration. The department will notify the student and college of the decision within 15 days of the receipt of the appeal.

How to Declare a Major

Students may declare the major through the MyUCSC portal. Any questions should be directed to the LALS undergraduate advisor.

Letter Grade Policy

This program does not have a letter grade policy. Major and minor requirements will be met with grades of C or better or Pass, within the parameters of the UC Santa Cruz Pass/No Pass grading policy.

[Optional Catchall]

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

Study Abroad

The LALS Department encourages students to participate in Global Learning programs whenever possible. We offer a summer Global Internship program in Buenos Aires, Argentina, that satisfies an elective requirement in LALS. And there are many other learning programs offered throughout the academic year in: California, Washington, D.C., Latin America, and elsewhere across the globe. LALS and politics combined majors are often interested in the learning and internship opportunities offered through the UCDC and UC Sacramento programs. Find out more on the Global Learning website or visit their offices on campus.

Honors

For combined majors, academic performance must meet the criteria in both departments to be awarded honors. Honors can only be conferred if both departments agree.

LALS awards honors based on overall student academic performance in courses that count toward the major. To receive the strongest consideration for honors in the major, the following grade point average (GPA) criteria must be met: highest honors, 4.0; honors, 3.7.

For politics, honors are awarded to graduating seniors whose academic performance is judged to be consistently excellent by a committee of politics faculty, based primarily on a review of grades. Highest honors in the major are reserved for students with consistently outstanding academic performance.

[Optional Catchall]

Requirements and Planners

Course Requirements

A minimum of 12 courses and one lab are required for the Latin American and Latino Studies (LALS) and Politics Combined B.A. Students considering a double major or major/minor plan with the combined major in LALS and politics should contact the LALS undergraduate advisor to discuss their options.

Lower-Division Requirements

Students complete a lower-division politics course, chosen from politics courses numbered 1-70, and one LALS introductory course, chosen from LALS 1 or LALS 5 or LALS 10.

One LALS introductory course

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 10	Introduction to Chicanx & Latinx Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5

One lower-division POLI course

Students take one 5-credit course chosen from POLI 1-70. See the courses section of the UCSC General Catalog for a list of options.

Upper-Division Requirements

Take the following courses:

LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1
POLI 140C	Latin American Politics	5

Three politics core courses chosen from:

POLI 105A	Ancient Political Thought	5
POLI 105B	Early Modern Political Thought	5
POLI 105C	Modern Political Thought	5
POLI 105D	Contemporary Political Theory: Modernity and its Discontents	5
POLI 120A	Congress, President, and the Court in American Politics	5

POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5
POLI 140A	European Politics	5
POLI 140D	Politics of East Asia	5
POLI 140E	Middle East Politics	5
POLI 160A	Theories of International and World Politics	5
POLI 160B	International Law	5
POLI 160C	Security, Conflict, Violence, War	5
POLI 160D	The Politics of Global Capitalism	5

Three upper-division electives

Students choose two additional 5-credit upper-division electives from LALS courses numbered 101-190, and one additional 5-credit upper-division elective from politics courses numbered 100-189.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy a disciplinary communication (DC) requirement. The DC requirement for the LALS and politics combined B.A. is met by completing:

LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Comprehensive Requirement

Students satisfy the Comprehensive Requirement by completing either an LALS senior seminar (LALS 194 A-Z, excluding L) and seminar lab (LALS 194L), or a politics senior seminar (POLI 190 A-Z).

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Four-Year Sample Course Planner for Frosh Students

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	LALS Intro Course * College 1	POLI lower-division requirement WRIT 1/WRIT 1E (if needed)		
2nd (soph)	WRIT 2**	LALS 100	LALS 100A + LALS 100L	
3rd (junior)	POLI core LALS elective	POLI 140C*** LALS elective	POLI core POLI elective	
4th (senior)	(possible study abroad)	POLI core	LALS 194 + LALS 194L or POLI 190	

*Take LALS 1 or LALS 5 or LALS 10 when offered.

** WRIT 2 should be taken in or before spring quarter of the second year.

***Take POLI 140C when offered in junior or senior year.

Two-Year Sample Course Planner for Transfer Students

	Fall	Winter	Spring	Summer
Entering				KRSG 1T

				Summer Edge (optional)
1st (junior)	LALS Intro Course*	LALS 100	LALS 100A + LALS 100L	
	POLI lower-division requirement*	POLI 140C **	POLI core	
	POLI core			
2nd (senior)	POLI elective	POLI core	LALS 194 + LALS 194L or POLI 190	
	LALS elective	LALS elective		

*If not already satisfied by transfer credit.

**Take POLI 140C when offered in junior or senior year.

LATIN AMERICAN AND LATINO STUDIES/SOCIOLOGY COMBINED B.A.

Information and Policies

Introduction

A degree in Latin American and Latino studies (LALS) and sociology trains students to be critical and analytical thinkers, to be active, engaged global citizens, and to be skilled strategic activists in making the world a more just place for all. A combined LALS and sociology B.A. prepares students to learn from and work with people from a variety of cultures and perspectives, to understand the complexity of current and past societies and social moments, to discover how political, economic, and cultural aspects inform the social, and to use skills from many disciplines and fields.

Sociology is the study of social interactions among individuals and social groups. More specifically, sociologists examine cultural, ideological, economic, and political structures and the processes whereby social institutions are created, maintained, and transformed. The combined B.A. in LALS and sociology allows students to focus their study of sociological contexts and processes within Latinx and Latin American communities.

Program Learning Outcomes

LALS Program Learning Outcomes:

1. Critical Thinking. Ability to analyze from a transnational/transborder/translocal perspective—to see the interconnections between Latin American and Latino issues, people, ideas, problems and solutions. This includes key skills, such as understanding sources, comparing arguments, analysis, and historical perspective.
2. Research Methods. Working knowledge of social scientific and/or humanistic approaches to LALS relevant topics. This includes acquiring qualitative and quantitative skills, gathering or obtaining research data, finding/using primary sources, and other research methods.
3. Communication. Key communication skills, including written, oral presentation, and digital, including an understanding of media sources and ability to apply media literacy to cross-cultural analysis.
4. Community Engagement Skills: Acquisition of hands-on skills in collaborative engagement, cross-cultural fluency, and understanding of Latin America and Latino experiences for practical application and engagement with community and civic organizations.

Sociology Program Learning Outcomes:

1. Critical Thinking: Demonstrate critical thinking skills by analyzing and evaluating social, political, and/or cultural arguments, across a variety of areas such as inequality; social problems; and race, class, and gender.
2. Sociological Understanding: Demonstrate sociological understandings of phenomena, for example, how individual biographies are shaped by social structures, social institutions, cultural practices, and multiple axes of difference and/or inequality.
3. Written and Oral Communication: Formulate effective and convincing written and/or oral arguments.
4. Social Theory: Demonstrate the ability to use several of the major classical or contemporary perspectives in social theory.
5. Research Methodology: Demonstrate the ability to use several of the major social science research methodologies.

Academic Advising for the Program

LALS Undergraduate Advising
32 Merrill Academic Building
(831) 459-2119
lalsadvising@ucsc.edu

Sociology Undergraduate Advising
Rachel Carson College Rm 226
831-459-2888
socyadvising@ucsc.edu

Advising for the combined major in LALS and sociology is available from both advising offices, though the major is housed in the LALS Department.

Getting Started in the Major

Students interested in the combined major in LALS and sociology are encouraged to enroll in the one required LALS lower-division course, chosen from LALS 1 or LALS 5 or LALS 10, and the two required lower-division sociology courses, chosen from SOCY 1, SOCY 10, or SOCY 15, at their earliest opportunity.

Transfer Information and Policy

Students planning to apply in this major are not required to complete specific major preparation courses for consideration of admission to the University of California, Santa Cruz.

Transfer Admission Screening Policy

Students interested in transferring in to UC Santa Cruz as a combined LALS and sociology major are encouraged to enroll in courses that satisfy the lower-division requirements prior to transfer. Visit Assist.org to review transfer articulations and contact advisors for LALS and sociology with any questions.

Getting Started in the Major: Transfer Students

Transfer students must complete the lower-division course requirements to declare the combined major in LALS and sociology, and should focus on completing these classes as soon as they start at UCSC (if they have not completed these courses prior to transfer). Students should contact advisors for LALS and sociology regarding transferable coursework.

Major Qualification Policy and Declaration Process

Major Qualification

Students must complete the lower-division sociology courses (two chosen from SOCY 1, SOCY 10, or SOCY 15) and one LALS course (LALS 1 or LALS 5 or LALS 10) with grades of C or better or Pass before the major can be declared.

One course chosen from:

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5
LALS 10	Introduction to Chicanx & Latinx Studies	5

Two courses chosen from:

SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Appeal Process

Students who did not satisfy the major declaration requirement but believe there are extenuating circumstances may file a written appeal. Appeals should be submitted to undergraduate advising by sending an email to lalsadvising@ucsc.edu. Students must file the appeal within 15 days of denial of major declaration. The department will notify the student and college of the decision within 15 days of the receipt of the appeal.

How to Declare a Major

Students may declare the major through the MyUCSC portal. Any questions should be directed to the LALS undergraduate advisor.

Letter Grade Policy

This program does not have a letter grade policy. Major requirements will be met with grades of C or better or Pass, within the parameters of the UC Santa Cruz Pass/No Pass grading policy.

[Optional Catchall]

Course Substitution Policy

Double Major and Major/Minor Combinations Policy

Study Abroad

The LALS Department encourages students to participate in Global Learning programs whenever possible. LALS offers a summer Global Internship program in Buenos Aires, Argentina, that satisfies an elective requirement in LALS, and sociology offers a Global Internship program in Santiago Chile. There are many other learning programs offered throughout the academic year in: California, Washington, D.C., Latin America, and elsewhere across the globe. Find out more on the Global Learning website or visit their offices on campus.

Honors

For combined majors, academic performance must meet the criteria in both departments to be awarded honors. Honors can only be conferred if both departments agree.

LALS awards honors in the major based on overall student academic performance in courses that count toward the major. To receive the strongest consideration for honors in the major, the following grade point average (GPA) criteria must be met: highest honors, 4.0; honors, 3.7.

For sociology, honors are awarded based on the student's cumulative GPA for all courses taken at UC Santa Cruz to satisfy the program's major requirements. Students with a GPA of 3.75 or above will be considered for honors in the

major. Students with a GPA of 3.9 or above will be considered for highest honors in the major.

[Optional Catchall]

Requirements and Planners

Course Requirements

A minimum of 12 courses and one lab are required for the Latin American and Latino studies (LALS) and sociology combined B.A. Students considering a double major or major/minor plan with the combined major in LALS and sociology should contact the LALS undergraduate advisor to discuss their options.

Lower-Division Requirements

One LALS Introductory course

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5
LALS 10	Introduction to Chicanx & Latinx Studies	5

Two courses chosen from:

SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Upper-Division Requirements

LALS and sociology combined majors take four upper-division core courses and one writing lab, four 5-credit upper-division electives (two in LALS and two in sociology), and one senior seminar exit requirement in LALS or sociology.

Upper-Division Core Courses

LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1
SOCY 105A	Classical Social Theory	5
SOCY 105B	Contemporary Social Theory	5

Four Upper-Division Elective Courses

Choose two 5-credit upper-division LALS electives (numbered 101-190) and two 5-credit upper-division sociology electives (numbered 110-189).

Disciplinary Communication (DC) Requirement

Students of every major must satisfy a disciplinary communication (DC) requirement. The DC requirement for the LALS and sociology combined B.A. is met by completing:

LALS 100A	Research in LALS	5
LALS 100L	Research in LALS Lab	1

Comprehensive Requirement

Students satisfy the Comprehensive Requirement by completing either an LALS Senior Seminar (LALS 194 A-Z, excluding L) and LALS 194L, or complete SOCY 196S. Topics in SOCY 196S vary. Students interested in the SOCY 196S option will need to apply in advance.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information. Contact the LALS undergraduate advisor to make an academic plan based on your completed coursework and educational goals.

Sample Four-Year Planner for Frosh (can be completed in three years - ask undergraduate advisor)

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	LALS Intro Course College 1	SOCY 1, SOCY 10, or SOCY 15 WRIT 1/WRIT 1E (if needed)	SOCY 1, SOCY 10, or SOCY 15	
2nd (soph)	WRIT 2**	LALS 100	LALS 100A + LALS 100L	
3rd (junior)	SOCY 105A	SOCY 105B	SOCY electiv	

			e
	LALS elective	LALS elective	SOCY elective
4th (senior)	LALS 194 + LALS 194L or SOCY 196S in senior year		

*LALS 1 or LALS 5 or LALS 10 when offered.

**WRIT 2 should be taken in or before spring quarter of the second year.

Sample Two-Year Planner for Transfer Students

Recommended academic plan for students starting as juniors, who have completed their lower-division SOCY courses prior to transfer (ask undergraduate advisor if you need a plan that incorporates lower-division sociology requirements).

	Fall	**Winter**	**Spring**	**Summer**
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	LALS Intro Course *	LALS 100	LALS 100A + LALS 100L	
	SOCY 105A	SOCY 105B	SOCY elective	
2nd (senior)	SOCY elective	LALS elective	LALS 194 + LALS 194L or SOCY 196S	
	LALS elective			

*If not already satisfied by transfer credit.

LATIN AMERICAN AND LATINO STUDIES MINOR

The minor in Latin American and Latino studies requires seven LALS courses: two lower-division courses and five upper-division courses. Students are eligible to declare the minor as soon as they've completed any one course in LALS.

Course Requirements

Lower-Division Courses

Complete the following requirements. Courses may be taken for a letter grade or Pass/No Pass.

One LALS introductory course

LALS 1	Introduction to Latin American and Latino Studies	5
LALS 10	Introduction to Chicanx & Latinx Studies	5
LALS 5	Introduction to Human Rights and Social Justice	5

Plus one lower-division elective

One 5-credit course chosen from LALS 1-99 including additional LALS introductory courses (LALS 1, LALS 5, or LALS 10). May also be satisfied with a score of 4+ on the AP Spanish Literature and Culture exam. Students may also review the list of pre-approved outside electives found in the Course Substitution Policy. A maximum of two courses taken outside of the LALS Department at UC Santa Cruz may be used toward minor requirements.

Upper-Division Courses

Students choose one of the core courses, LALS 100 or LALS 100A (which is taken concurrently with LALS 100L, the writing lab) and four upper-division electives.

Upper-Division Core Course

	Either this course	
LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
	or these courses	
LALS 100A	Research in LALS	5

LALS 100L	Research in LALS Lab	1

Four Upper-Division Electives

Four additional 5-credit upper-division electives chosen from LALS 100-194. This can include an additional core course (LALS 100 or 100A/LALS 100L, whichever was not used above), or one or more senior seminars (LALS 194A-Z), space permitting. Students may also review the list of pre-approved outside electives found in the Course Substitution Policy. A maximum of two courses taken outside of the LALS Department at UC Santa Cruz may be used toward minor requirements.

Global Learning

The LALS Department encourages students to participate in Global Learning programs whenever possible. We offer a summer Global Internship program in Buenos Aires, Argentina, that satisfies an elective requirement in LALS. And there are many other learning programs offered throughout the academic year in: California, Washington, D.C., Latin America, and elsewhere across the globe. Find out more on the Global Learning website or visit their offices on campus.

Course Substitution Policy

Students may use up to two courses taken outside the LALS department at UC Santa Cruz toward minor requirements. This includes courses taken at UC Santa Cruz in non-LALS departments and all courses taken at other institutions, including through study abroad programs. Students may review a list of pre-approved substitutions that satisfy the lower- and upper-division elective requirements. Students may contact the undergraduate advisor to inquire about additional courses that may be approved to count as electives or if they plan to study abroad. Transfer students who have completed LALS-related work prior to transfer should contact the undergraduate advisor to ask about transfer credit.

LATIN AMERICAN AND LATINO STUDIES PH.D.

Introduction

The Ph.D. program in Latin American and Latino Studies at UCSC offers an innovative transnational and interdisciplinary approach to the study of the peoples, cultures, societies and institutions of the Americas. The program is designed to educate students in this field of study and train them to develop the conceptual and analytical skills necessary for understanding the dynamics of hemispheric change. This is the first doctoral program in Latin American and Latino Studies.

In preparing students for research and teaching at the university level, the department offers four thematic clusters in the field of Latin American and Latino Studies: 1) transnational migrations within the Americas; 2) social inequalities; 3) cultural politics and cultural flows; and 4) collective action and social movements. Doctoral students specialize in one of these four substantive themes, as well as a focus area of their own design.

- **Transnationalisms , Migrations, and Displacement.** While transnational migrations are the subject of research in multiple disciplines, this program analyzes these transformative processes through an interdisciplinary lens. A transnational approach examines links between regions in the Americas, analyzing the social and historical foundations of economic dynamics such as remittances from the United States or the dollarization of Latin American countries. A transnational approach to the study of migratory processes explores the dynamics of bi-national communities, bilingualism and multilingualism, immigrant integration into host societies, and North-South exchanges of ideas and cultures.
- **Intersectionality , Identities, and Inequalities.** This program's research foregrounds the study of transnational social inequalities formed by power relations based on race, ethnicity, nationality, citizenship, class, territory, gender and/or sexuality in the Américas. These social hierarchies are analyzed as institutions, historical processes, discourses, or signifiers with multiple meanings, and are examined in terms of how they have been mobilized to build, transform, or challenge identities, communities, and social movements in local, national, and global contexts over time.
- **Culture, Power, and Knowledge.** Another distinctive area of inquiry is the study of cultural politics and cultural flows that shape everyday life, institutions, social identities, discourses, meanings, and cultural forms and practices, in global, regional, and local contexts in the Américas and in an increasingly interconnected world. The transnational analysis of culture focuses on the ways cultural forces and cross-cultural communication and media are contributing to the formation of new transnational imaginaries, as well as how these cultural processes are transforming and redefining national and local cultures.
- **Collective Action, Social Movements, and Social Change.** This area of research addresses collective action and social movements at local, national and international levels viewed through transnational lenses. As migrants engage in public life, both in their communities of residence and in their communities of origin, they construct diverse practices of political participation, including "civic bi-nationality." These processes are crucial for understanding the largest wave of immigration in a century, including how migrants relate to US society.

The doctoral program provides rigorous training in both disciplinary and interdisciplinary approaches to the study of transnational processes that link the Americas. The program educates doctoral students in the theories and research methods based in disciplines of the social sciences and the humanities.

The deadline for applications to the doctoral program is mid-December in the preceding year. The program only accepts students for admission in fall quarter.

Advancement to Candidacy

Course Requirements

Twelve Courses

The program requires a total of 12 courses with LALS Graduate Program affiliated faculty. Of the required courses, up to two may be independent studies with LALS faculty and up to four may be taken in other departments. The graduate advisor will determine whether these courses count for the LALS program requirements.

Before advancement to candidacy, a full-time course load is two or three courses at the graduate level.

The following are the course requirements:

These four core courses are required for all students.

LALS 200	Bridging Latin American and Latina/o Studies	5
LALS 200A	Power and Structure in the Américas	5
LALS 200B	Cultures and Subjectivities in the Américas	5
LALS 201	Research in Practice	5

Foreign Language Requirement

The language of instruction in most seminars is English, and students are expected to develop their reading, writing, and speaking/presentation abilities as they complete the program requirements. In addition, they are expected to develop their research abilities and proficiency in Spanish, Portuguese, an Indigenous language of the Americas, or another language that is central to their research, according to their research goals and in order to engage with the scholarship being produced across the Americas.

As per Graduate Division requirements, the secondary language requirement must be satisfied by the end of the third year, prior to Advancing to Candidacy. The secondary language requirement may be fulfilled by:

1. UC Santa Cruz graduate courses in Spanish, Portuguese, or another language central to the research project:
   Passing a 5-credit graduate seminar in LALS or other UCSC department offered in the language during the academic year, or passing a UCSC Literature Summer Research Language course
2. Accredited summer immersion program, e.g. Berkeley, Cornell, or abroad – the program must have a scholarly and rigorous focus, the student must receive advance approval from their faculty advisor, and the student must submit to the graduate advisor a letter from the program attesting to their completion of the program and their satisfactory performance in the language.
3. Graduated from a university with primary instruction in Spanish, Portuguese, or another language central to the research project.
4. Pass LALS Department language exam in Spanish or Portuguese.

Students will be required to include information regarding their plans for satisfying the secondary language requirement in their end-of-year statements in the first and second years.

Students are required to demonstrate, by one of the methods listed above, their proficiency in a language other than English before the completion of the qualifying examination.

Qualifying Examination

Doctoral students will be required to submit two qualifying essays (field statements), two original course syllabi, a dissertation prospectus, and an oral Qualifying Examination (QE), as described below.

A Qualifying Exam Committee, composed of four faculty members, will approve both the scope of the field statements and the final written products, including the dissertation prospectus, and will conduct the oral examination. The committee also provides students with guidance and feedback throughout the QE process. Of the four members, this committee must include at least two LALS faculty members—at least one of whom is an LALS core faculty member, while the other may be LALS core or affiliate. One of these two must chair the committee. The committee also must include one tenured faculty from outside the LALS department (this person might or might not be an affiliate faculty member). Emeriti faculty are not permitted to chair the committee, and only one emeritus faculty member is permitted on each committee. Both the outside member of the QE committee and the QE chair must be tenured. The qualifying examination committee must be approved in advance by the Graduate Division.

Students should take their oral examinations by spring quarter of the third year. The Qualifying Exam process is discussed in detail in a mandatory colloquium session with the graduate program coordinator and graduate director each academic year.

1. **Qualifying Essays.**

Students are required to complete two qualifying essays. The qualifying essay topics should address broad non-overlapping fields and review the literatures related to the proposed dissertation questions. Students should consult with their qualifying examination committee early in the process, regarding the appropriate scope and content of their essays. One of the qualifying essays must focus on one of the department's four themes: transnational migrations and social displacement; intersectionality, identities and inequalities; collective action, social movements and social change; and culture, power, and knowledge. The qualifying essay should demonstrate command of the methodology relevant to the student's specialized research interests (e.g., ethnographic field methods, textual analysis, archival research methods, statistics, media analysis, and/or comparative methods) and include

relevant texts in the second language. The committee chair must approve these essays at least one month prior to the oral examination.
In addition, the essays must be accompanied by two proposed course syllabi for potential undergraduate courses.

2. **Prospectus.** The prospectus is a carefully conceived, coherent research proposal for the doctoral dissertation. It should clearly present and justify the student's research interests and the questions that will guide the dissertation. It should demonstrate command of the methodology relevant to the student's specialized interests (e.g., ethnographic field methods, textual analysis, archival research methods, statistics, media/content analysis and/or comparative methods, etc.). The prospectus will often need to be revised even after the student passes the Qualifying Exam and advances to candidacy.

3. **Qualifying Examination**. An oral examination will follow the approval of the qualifying essays.

After successfully completing the Qualifying Examination, students are expected to assemble a Dissertation Committee that includes a minimum of three faculty members, one of whom must be designated as the dissertation chair/advisor. The Dissertation Committee chair may be the same faculty member who served as the QE committee chair. The Dissertation Committee must be chaired by a LALS core ladder-rank faculty member and include two additional members, one of whom must be a faculty member from LALS—including core ladder-rank, emeriti, and affiliate faculty. Only one faculty emeritus/a is permitted on each Dissertation Committee. Students may have one member from another campus. Normally the Dissertation Committee is selected from the QE Committee, but this is not required.

Coursework and the qualifying process should be completed by the end of the third year. Students may petition for a non-terminal master's degree after advancing to candidacy.

Dissertation

Dissertation

Students will be expected to complete the dissertation prospectus and secure approval from the dissertation committee by the last day of the quarter after the qualifying examination. In the prospectus, students should clearly articulate the logic of an interdisciplinary, transnational approach, as well as the methodologies to be used for addressing the research questions.

The dissertation must demonstrate in-depth research, make a significant and original scholarly contribution, and include material worthy of publication.

LATIN AMERICAN AND LATINO STUDIES DESIGNATED EMPHASIS

Introduction

The Designated Emphasis (DE) in Latin American Latino Studies (LALS) provides graduate students from other graduate programs at the University of California, Santa Cruz, with opportunities for interdisciplinary study with faculty from across the campus. Completion of the program will be listed on the graduate degree as a designated emphasis.

Students wishing to pursue the Designated Emphasis in LALS should consult with their respective graduate program coordinators and with their faculty advisors before submitting the Petition to Enroll. Students should declare their intent to undertake the DE prior to the execution of their Qualifying Examinations (QE). Graduate students are strongly encouraged to submit the application no later than the end of the third year.

The application and an annually updated list of regularly offered, approved graduate courses are available on the LALS website.

Requirements

The following are required for the designated emphasis:

Committee Composition and Departmental Approvals

The student must have a designated LALS advisor (DE advisor) from among the Latin American and Latino studies core or affiliated faculty. This advisor will be in addition to the faculty advisor from the student's home department. The Latin American and Latino Studies advisor must serve on the student's QE and/or dissertation committee.

Course Requirements

Students must submit a course plan to the LALS Graduate Committee for approval to enroll in the DE. The student must take five graduate courses in Latin American and Latino Studies: the required LALS 200, one LALS course taught by a core LALS faculty member, and three courses with LALS content in any UC Santa Cruz department taught by core, participating, or affiliated LALS faculty.

PREAPPROVED LALS B.A. ELECTIVES COURSE LIST

Pre-Approved LALS B.A. Electives

Lower-Division Courses

The following courses may be used as pre-approved substitutions for the lower-division elective of the Latin and Latin American studies B.A. and minor.

History

HIS 11A	Latin America: Colonial Period	5
HIS 11B	Latin America: National Period	5
HIS 12	Introduction to Latino American History	5

HIS 82	California Gold Rush in Global History	5

Literature

LIT 61Z	Introduccion a generos literarios de Espana y America Latina	5
LIT 80N	Latino Expressions in the U.S	5
LIT 80Q	Jane the Virgin: Latinx Readers and (Latin) American Literature	5
LIT 90X	Introduccion a la Escritura Creativa/Introduction to Creative Writing	5

Music

MUSC 12	Mariachi Ensemble	2
MUSC 12B	Mexican Folklorico Music and Dance	2
MUSC 80F	Music in Latin American Culture: Regional Traditions	5

MUSC 12 and MUSC 12B must be taken three times in order to count as one elective.

Politics

POLI 61	Politics of Social Policy	5

Sociology

SOCY 15	World Society	5
SOCY 30A	Introduction to Digital Justice Studies	5

Spanish

SPAN 5M	Medical Spanish	5

Theater Arts

THEA 80M	Chicano/a Teatro	5

Upper-Division Courses

The following courses may be used as pre-approved substitutions for the upper-division elective of the Latin and Latin American studies B.A. and minor.

Anthropology

ANTH 110H	Brazilian Amazon Cultures and Environments	5
ANTH 110I	Cultures of Sustainability and Social Justice	5
ANTH 130B	Brazil	5
ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
ANTH 130J	Politics and Statemaking in Latin America	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130M	Inside Mexico	5
ANTH 130P	Ethnography of Southern Cone Chile and Argentina	5
ANTH 130U	Central America	5
ANTH 133	Narratives of the Popular	5
ANTH 176B	Meso-American Archaeology	5
ANTH 145X	Special Topics in Socio-Cultural Anthropology	5
ANTH 164	The Anthropology of Dance	5

Critical Race and Ethnic Studies

CRES 160	Latina/o/x Geographies	5

Education

EDUC 128	Immigrants and Education	5
EDUC 141	Bilingualism and Schooling	5
EDUC 181	Race, Class, and Culture in Education	5

Environmental Studies

ENVS 122	Tropical Ecology and Conservation	5
ENVS 143	The Future of Sustainable Development	5
ENVS 145	Green Cities	5
ENVS 154	Amazonian Cultures and Conservation	5

Feminist Studies

FMST 115	Gender, Sexuality, and Transnational Migration Across the Americas	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 175	Gender and Sexualities in Latina/o America	5
FMST 194F	Chicana/Latina Cultural Production	5

Film and Digital Media

FILM 165E	Chicana/o Cinema, Video	5

History

HIS 124A	Panama Canal and U.S. Empire	5
HIS 128	Chicana/Chicano History	5
HIS 130	History of Modern Cuba	5
HIS 131	Women in Colonial Latin America	5
HIS 134A	Colonial Mexico	5
HIS 134B	History of Mexico, 1850 to Present	5
HIS 185I	Latin American Jewish History in the Modern Period	5
HIS 190A	Slavery and Race in Latin America	5
HIS 190B	Race and the Nation in Latin America	5
HIS 190D	Asian and Latino Immigration Since 1875	5
HIS 190T	Latin America in the Cold War	5

History of Art and Visual Culture

HAVC 140D	Chicano/Chicana Art: 1970-Present	5
HAVC 144A	Latin American Art and Visual Culture	5

HAVC 160A	Indigenous American Visual Culture Before 1550: Mexico	5
HAVC 160B	Indigenous American Visual Culture Before 1550: The Andes	5
HAVC 162A	Special Studies in Early Indigenous American Visual Culture: The Ancient Maya	5
HAVC 162B	Special Studies in Early Indigenous American Visual Culture: The Inka	5

History of Consciousness

HISC 136	Latin American Thought	5

Literature

LIT 124B	The Contemporary Latin American Short Story	5
LIT 165A	Chicanx/Mexican American Literature	5
LIT 165B	Latino Fictions of the Americas	5
LIT 188R	Humanidades Ambientales	5
LIT 189A	De la conquista a Sor Juana	5
LIT 189B	El Siglo XIX en América Latina: cultura, política y sociedad	5
LIT 189C	Introducción a Spanish Studies	5
LIT 189F	Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish	5
LIT 189G	Cine y Literatura	5
LIT 189L	Poesía latinoamericana	5
LIT 189O	El Cuento Hispanoamericano: Variedades esteticas de la literatura breve en America Latina	5
LIT 189Q	Ficción y marginalidad	5
LIT 189S	La cultura popular en la narrativa latinoamericana	5
LIT 189V	Andean Indigenismo	5
LIT 189X	Estudios mediaticos	5
LIT 189Z	Literatura de Chile	5

Oakes College

OAKS 151A	Corre la Voz: Community Literacies and Power Seminar	2
OAKS 151B	Community Literacies Field Study	3
OAKS 152	Transformative Literacies	5
OAKS 153	Community Mapping	5
OAKS 185	Tracing Health	5

OAKS 151A/EDUC 151A and OAKS 151B/EDUC 151B must both be taken to count as one elective.

Politics

POLI 140C	Latin American Politics	5
POLI 144	Andean Politics	5
POLI 190V	States in the Global South	5
POLI 190W	Topics in Latin American Politics	5

Psychology

PSYC 119A	Development as a Sociocultural Process	5
PSYC 140F	Mind, Society, and Culture	5
PSYC 144	Latinx Psychology	5
PSYC 155	Social-Community Psychology in Practice	5

Sociology

SOCY 107A	Designing Digital Justice Projects	5
SOCY 117M	Immigration Enforcement and Deportations	5
SOCY 139T	Community-Engaged Research Practicum	5
SOCY 156	U.S. Latinx Identities: Centers and Margins	5

Spanish

SPAN 156A	The Language of Latin America Cinema	5
SPAN 156F	El Humor en Espanol	5
SPAN 156J	Contemporary Central America	5
SPAN 156M	Mexico and the Southwest	5

Spanish for Heritage Speakers

SPHS 115	El ensayo lectura, análisis y redacción	5

LATIN AMERICAN AND LATINO STUDIES (LALS) AND EDUCATION DEPARTMENT 4+1 CONTIGUOUS BACHELOR'S/MASTER'S PATHWAY

The 4+1 pathway into the MA/Credential Master's program is an option that allows undergraduates in the Latin American and Latino Studies (LALS) major at UC Santa Cruz to:

- Finish the master's degree in just one additional year (five quarters, July to July)
- Apply to the Education Master's program through a streamlined application process

Undergraduate students currently enrolled in the LALS major have the opportunity, any time after the start of their junior year until Dec. 1 of their senior year, to apply to be admitted to the 4+1 contiguous pathway leading to the Education Master's degree.

The requirements for admission into the 4+1 pathway are:

- Undergraduate major in LALS
- A GPA in the major of 3.0 or greater
- Overall GPA of 3.0 or higher

- Junior or senior standing
- Completion of two upper-division courses selected from the following with a grade of B or higher:
    - EDUC 104, EDUC 115, EDUC 125, EDUC 126, EDUC 135, EDUC 141, EDUC 160, EDUC 162, EDUC 164, EDUC 174, EDUC 177

Interested students should schedule a meeting with the LALS undergraduate advisor to discuss their curriculum plan and complete the application forms. The deadline for application to the pathway is Dec. 1 of the senior year, although students are encouraged to apply earlier.

While students in the pathway are not guaranteed admission to the MA/Credential Program, the Education Department expects to admit students who: (a) have met the requirements listed above for admission to the 4+1; (b) have 30 or more hours of experience with youth (classroom experience, tutoring, or coaching sports teams are just a few ways to satisfy this requirement; reach out to edma@ucsc.edu about whether your existing experience qualifies); and (c) have a commitment to teaching in communities serving traditionally underserved populations, barring any extenuating circumstances, or if the applicant does not obtain clearance from the State of California. Additionally, students will be eligible for a streamlined admission process if, at the time of application, they have met the state Basic Skills and Subject Matter requirements, typically by providing passing scores on California State tests: the CBEST and the CSET (applicants must pass the required subtests for a secondary Single Subject Social Science credential or the Multiple Subjects credential).

After entering into the Master's/Credential Program, students from the pathway will follow the same requirements as any other students in the MA/C program with expected graduation in July of the year after their graduation from the UCSC LALS program.

Students who have completed one of these identified undergraduate education courses will have the course EDUC 205 waived from their MA/Credential requirements: EDUC 102, Education, Media and Society; EDUC 128, Immigrants and Education; EDUC 140, Language, Diversity and Learning; EDUC 173, Critical Pedagogy; or EDUC 181, Race, Class, and Culture in Education. Students intending to apply for the MA/Credential Program may also choose to complete these courses in Summer Session II between their junior and senior years, instead of during the MA/Credential Program: EDUC 210, Health, Safety and Community, 2 credits; EDUC 213, Child and Adolescent Development for Educators, 2 credits.

The following State of California requirements for a California teaching credential, which have to be completed before the end of the final quarter of the MA/Credential Program, can also be completed at the undergraduate stage if a student chooses:

- The U.S. Constitution Examination, when offered by the Education Department. (Completion of any of the courses POLI 20, POLI 111A, POLI 120A or HIST 10A also satisfies this requirement.)
- The UCSC Extension online course EDUC.XSC209 can be completed any time it is offered to satisfy the Preliminary Technology Requirement.
- A certified cardiopulmonary resuscitation (CPR) course (infant, child, and adult) must be completed before the end of the final quarter of the MA/Credential Program and be valid at the time of application for the preliminary credential in the final summer session of the MA/Credential Program.

(A CPR course that will remain valid through the preliminary credential application may be taken during the undergraduate program; 12-month certifications will not be sufficient. Students must check with course provider.)

Politics

Politics

25 Merrill College
(831) 459-3437
politics@ucsc.edu
https://politics.ucsc.edu/

Legal Studies

27 Merrill College
(831) 459-2505
legalstudies@ucsc.edu
https://legalstudies.ucsc.edu/

PROGRAMS OFFERED

Politics B.A. (p. 817)

Politics Minor (p. 820)

Politics Ph.D. (p. 821)

Politics Designated Emphasis (p. 823)

Legal Studies B.A. (p. 823)

Legal Studies Minor (p. 829)

OTHER PROGRAMS OF INTEREST

Latin American and Latino Studies/Politics Combined Major (p. 803)

The study of politics is the exploration of the ways human communities shape and share a common life through their institutional practices, ideas, interests, and expectations. It looks at the way collective decisions are made, and at the obstacles citizens meet as they try to forge a shared and just life. Courses address issues central to public life, such as democracy, power, freedom, political economy, social movements, international law and conflict, institutional reforms, and how public life, as distinct from private life, is

constituted. In describing the department and major at UC Santa Cruz, we use the term 'politics' (rather than 'political science' or 'government') because the study of political life requires a more inclusive approach than that associated solely with the discipline of political science, and because politics happens in places other than governments.

The programs offered by the UCSC Politics Department are designed to acquaint students with a broad range of issues studied by those in the field. The department offers an undergraduate major, a minor, a combined Latin American and Latino studies/politics major, and a doctoral degree.

The Politics Department also encourages students to pursue additional academic opportunities while at UCSC. Possible programs include: the UCDC Program, a one-quarter program at the UC campus in Washington, D.C. that includes coursework and an internship; UCSAC, a one-quarter program at the center in Sacramento; and the Education Abroad Program (UCEAP).

The Politics Department also administers the Legal Studies Program.

POLITICS B.A.

Information and Policies

Introduction

The study of politics is a critical part of a liberal arts education. Since political issues and practices are embedded in and reflective of the whole experience of a community, the study of politics can constitute the center of a broad-based course of study drawing on history, sociology, anthropology, philosophy, political science, economics, literature, science, and law.

Politics students at the University of California, Santa Cruz have many opportunities for field work and for internship placements. Students are encouraged to develop their own extensive independent research projects. The Politics Department also encourages students to pursue additional academic opportunities while at UC Santa Cruz. Possible programs include: the UCDC program, a one-quarter program at the UC campus in Washington, D.C. that includes coursework and an internship, UC Sacramento, a one-quarter program at the UC Center in Sacramento, and the UC Education Abroad Program.

Politics faculty members give students individual attention to help them in their studies. Faculty members are firmly committed to the value of a liberal arts education, but they are also actively engaged in programs of research and writing. The research interests of the faculty range from questions of justice to the problem of war, from campaign strategy to relations between the rich and the poor countries of the world.

No specific courses at the high school level are required for admission to the major in politics at UCSC. Courses in history, literature, philosophy, and the social sciences, whether taken at the high school or college level, are appropriate background and preparation for the politics major.

A major in politics is appropriate for students interested in careers in law, journalism, or teaching; in political and governmental work from local to international settings; in non-governmental organizations; and in corporations dealing with regulatory or global issues. Many UCSC politics graduates have also gone on to do advanced work in distinguished graduate and professional schools. Others have found active and challenging careers in business and community organizing. Still others have turned to scholarship and writing. But regardless of career direction, the most significant purpose of the politics major is to help educate a reflective and activist citizenry capable of sharing power and responsibility in a contemporary democracy.

Program Learning Outcomes

Upon completion of the major, students will have met the following objectives:

1. understand the origins, development, and nature of political institutions, practices, and ideas;
2. place particular political phenomena in broader context (national, historical, cross-cultural, and theoretical, etc);
3. demonstrate familiarity with various theoretical approaches to the study of politics, and their application in different geographic and substantive areas;
4. critically evaluate arguments about political institutions, practices, and ideas based on logic and evidence;
5. develop and sustain coherent written and oral arguments regarding political phenomena, theories, and values based on appropriate empirical and/or textual evidence and logic.

Academic Advising for the Program

Undergraduate Advisor

The undergraduate advisor offers specific information about navigating through the program and the curriculum and assists students with prerequisites, requirements, policies, procedures, learning support, guidance on internships, scholarships, and opportunities for undergraduate research. Politics advising is located in Merrill 27 and can be reached at polimajor@ucsc.edu.

Transfer students should also consult the Transfer Information and Policy section.

Peer Advisors

Peer advising assists with academic planning, guidance on major and minor requirements, and preparation of declaration paperwork. Peer advising can be reached at lgstpoli@ucsc.edu.

Advising Hours

Politics Advising

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required. To ensure timely completion of the major, prospective politics majors are encouraged to meet with a major advisor to develop an academic plan during their first year.

Transfer Information and Policy

Transfer Admission Screening Policy

No major preparation courses are required prior to transfer; however, one or two of the following courses or their equivalents are recommended to ensure timely graduation.

POLI 1	Politics: Power, Principle, Process, and Policy	5
POLI 3	Keywords: Concepts in Politics	5
POLI 4	Citizenship and Action	5
POLI 17	U.S. and the World Economy	5
POLI 20	American Politics	5
POLI 21	Governing the Golden State	5
POLI 60	Comparative Politics	5
POLI 61	Politics of Social Policy	5
POLI 70	Global Politics	5

Getting Started in the Major: Transfer Students

To ensure a smooth transition into UC Santa Cruz and timely completion of the major, transfer students should meet with the politics undergraduate advisor as early as possible to discuss a two-year major planner and course enrollment. Completion of a lower-division politics course in the first quarter will allow timely declaration of the major (required in the second quarter of enrollment).

Major Qualification Policy and Declaration Process

Major Qualification

Students may declare the major after completing two lower-division politics courses numbered POLI 1–POLI 70 with grades of C/P or better. These courses are normally taken during the first year for frosh.

Appeal Process

Students who are approaching the campus declaration deadline and who have not completed two lower-division courses POLI 1-POLI 70, or their transfer equivalents, with grades of C or better, may petition to declare the major: the petition will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) to be resolved within at most one more enrolled quarter.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first. Before submitting the petition, students are required to meet with Politics Advising to create an academic plan. A template planner can be found here. For students needing guidance on the declaration of major process, signing up for a declaration of major workshop is highly recommended.

Letter Grade Policy

This program does not have a letter grade policy.

Optional Catchall

Course Substitution Policy

Double Majors and Major/Minor Combinations Policy

The department accepts proposals for double majors. A student pursuing a double major meets the full requirements of the politics major as well as the full requirements of the other major.

The Politics Department offers a combined major with the Latin American and Latino Studies Department. Requirements may be found in the Latin American and Latino studies section of the catalog.

Honors

Students receiving "Honors" and "Highest Honors" in the politics major upon graduation will typically have taken at least 10 major courses for a letter grade and will have achieved in those courses GPAs of 3.7 and 3.85 respectively. Final determinations about honors are made by a faculty committee that judges the rigor, breadth, depth, improvement, and overall achievement evident in the student's academic record in the major.

Independent and Field Studies

Students may petition the department to substitute only one upper-division independent study or field study toward the elective requirement in the politics major. UCDC and UCSAC internships are exempt from this limit.

Requirements and Planners

Course Requirements

Lower-Division Courses

Two lower-division politics courses

Students complete two courses numbered POLI 1 through POLI 70, as a foundation for continued success in the politics major and as a requirement to declare the major. These courses are normally taken during the student's first year.

Upper-Division Courses

Four upper-division politics core courses.

The following four groups of courses constitute the core of the politics major. Four courses are required: two courses from one group, one course from a second group, and one course from a third group. In general, upper-division courses

are not recommended for frosh. This requirement also satisfies the disciplinary communication requirement.

Theory

POLI 105A	Ancient Political Thought	5
POLI 105B	Early Modern Political Thought	5
POLI 105C	Modern Political Thought	5
POLI 105D	Contemporary Political Theory: Modernity and its Discontents	5

U.S. Politics

POLI 120A	Congress, President, and the Court in American Politics	5
POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5

Comparative

POLI 140A	European Politics	5
POLI 140C	Latin American Politics	5
POLI 140D	Politics of East Asia	5
POLI 140E	Middle East Politics	5

Global Politics/International Relations

POLI 160A	Theories of International and World Politics	5
POLI 160B	International Law	5
POLI 160C	Security, Conflict, Violence, War	5
POLI 160D	The Politics of Global Capitalism	5

Four upper-division politics electives

Four additional courses selected from POLI 100-POLI 189.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement for politics majors is satisfied by completing any three of the four required core courses. The politics core course list is detailed above in the major requirements.

Comprehensive Requirement

The comprehensive requirement in the Politics Department can be satisfied in any of the following methods:

- **Senior Seminar:** Successful completion of a politics senior seminar (POLI 190 series) that includes the writing of an extensive paper (no less than 15 pages) with substantial research content. To enroll in a specific POLI 190 seminar, students must have successfully completed the prerequisite courses listed in the seminar's catalog course description.
- **Additional (Fifth and Sixth) Electives:** Successful completion of two additional politics upper-division electives numbered POLI 100-189, one of which includes a substantial writing component comparable to a paper for a senior seminar, either as part of the existing course requirements or added with the approval of the instructor. The student must receive prior approval from the instructor of the course with the substantial writing component, and must enroll in a two-credit independent study, POLI 199F, as part of this option. Generally, instructors with the title of lecturer are not available to supervise POLI 199F.
- **Graduate Seminar:** Successful completion of a politics graduate seminar (enrollment is contingent on the written recommendation of two politics faculty) that includes the writing of an extensive paper (no less than 15 pages) with substantial research content.
- **Thesis (2-3 quarters):** Successful completion of a senior thesis (POLI 195A, POLI 195B, POLI 195C) of a minimum of 50 pages. This option is for students interested in working on original research and writing under the supervision of a politics faculty member.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

A four-year course plan for frosh majoring in politics and a two-year course plan for transfer students are provided below.

Four-Year Sample Course Planner for Frosh Students

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	POLI (Lower-division) College 1	POLI (Lower-division) WRIT 1/WRIT 1E (if needed)		
2nd (soph)	POLI (Upper-division	POLI (Upper-	POLI (Upper-	

	elective)	division elective)	division core)
	WRIT 2*		
3rd (junior)	POLI (Upper-division core)	POLI (Upper-division elective)	POLI (Upper-division core)
	POLI (Upper-division elective)	POLI (Upper-division core)	
4th (senior)	POLI 190 (Senior Seminar)		

* WRIT 2 should be taken in or before spring quarter of the second year.

In addition to the specific courses shown in this four-year planner, a student must complete courses satisfying the general education requirements. While many politics courses that fulfill major requirements also fulfill a GE requirement, which GE requirements are fulfilled by completion of the major depends on which specific courses a student takes to fulfill the major requirements.

Two-Year Sample Course Planner for Transfer Students

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	POLI (Lower-division)*	POLI (Upper-division elective)	POLI (Upper-division elective)
	POLI (Lower-division)	POLI (Upper-division core)	POLI (Upper-division core)
	POLI (Upper-division elective)		
2nd (senior)	POLI (Upper-division core)	POLI 190 (Senior Seminar)	
	POLI (Upper-division elective)	POLI (Upper-division core)	

* WRIT 2 should be taken in or before spring quarter of the second year.

This planner assumes that a student has completed all general education requirements–beyond major preparation requirements before coming to UC Santa Cruz.

*Articulated equivalent courses may be taken prior to transfer.

POLITICS MINOR

Students in our minor gain a solid grounding in ideas, concepts, and real-world problems and possibilities of politics through a selection of at least six courses.

Course Requirements

The minor requires one lower-division politics course and five upper-division politics courses. Of these, four are to be selected from core classes in our subfields: political theory (105 series), American politics (120 series), comparative politics (140 series) and global/international politics (160 series).

Students select two subfields' core series and are required to complete two core classes in each.

The sixth course can be any politics upper-division elective numbered 100-189.

This program does not have a letter grade policy.

Lower-Division Courses

One 5-credit lower-division politics course from POLI 1-POLI 70.

Upper-Division Courses

Five upper-division politics courses are required. Of these, four are to be selected from the core courses listed below: two from one concentration and two from another concentration (concentrations are: Theory, U.S., Comparative, and Global/IR). A fifth course is to be selected from POLI 100-POLI 189.

Theory

POLI 105A	Ancient Political Thought	5
POLI 105B	Early Modern Political Thought	5
POLI 105C	Modern Political Thought	5
POLI 105D	Contemporary Political Theory: Modernity and its Discontents	5

U.S. Politics

POLI 120A	Congress, President, and the Court in American Politics	5
POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5

Comparative

POLI 140A	European Politics	5
POLI 140C	Latin American Politics	5
POLI 140D	Politics of East Asia	5
POLI 140E	Middle East Politics	5

Global Politics/International Relations

POLI 160A	Theories of International and World Politics	5
POLI 160B	International Law	5
POLI 160C	Security, Conflict, Violence, War	5
POLI 160D	The Politics of Global Capitalism	5

POLITICS PH.D.

Introduction

The Faculty

The work of the UCSC Politics Department's faculty has led the field toward interdisciplinary and engaged research, and represents the diverse cutting edge of U.S. and international political research. A group of affiliated graduate faculty extends the program's intellectual breadth and the range of the course offerings.

The department enjoys several areas of special strength, including American political development, the social foundations of democratic politics and democratization; political economy; politics of the developing world; the politics of language; sub-national politics; post-colonial theory and nationalist discourse; early modern political thought; and informal and translocal political organization.

The Curriculum

The Politics Department is impressed by the fact that many of the best studies of politics today disregard the conventional boundaries of the political science's disciplinary subfields. Therefore, the core graduate curriculum and qualifying examination process are structured around four interrelated themes central to political inquiry. Each of these areas of emphasis focuses, in a different way, on the relations among material life, institutional authority, collective mobilization, and political vision at all levels of politics.

Political and Social Thought. Brings together the history of political thought; contemporary social and critical theory; and the contributions of legal and institutional analysis of various kinds. This area of inquiry emphasizes the critical study of political practices that are experienced or understood as in some way limiting, oppressive, or wrong. The work of political and social theory as we see it is to transform our understanding of these practices; to see their contingent conditions; and to articulate the possibilities of governing ourselves differently.

Political and Social Forces. Concerns the interaction of social forces and political forces, drawing upon the work of scholars focused on social mobilizations and histories. Accordingly, this area of inquiry focuses on the articulation and organization of political interest and identities. This area studies the mutual interaction of these interests and identities with structure (states, discourses, public policy, and the law) uniting substantive and theoretical concerns across regional, national, and global politics.

States and Political Institutions. Emphasizes the international study of political institutions as instruments of collective decision-making and action. This area of inquiry focuses on the state and on transnational, subnational, and regional political institutions. In this area, we emphasize historical patterns of institutional development in relation to domestic political conflict and the changing contours of international political economy and patterns of conflict and cooperation among states.

Political Economy. Focuses on the relationship between states, markets, and societies. This area of inquiry explores the various understandings of political economy that have emerged within a number of different theoretical perspectives, including Marxism, realism, and liberalism. At subnational, national, and supranational levels, this area seeks to understand political economy outcomes as the result of the mutual interactions between political institutions, societal interests, and ideas and norms.

The politics graduate curriculum works critically upon and within conventional social science research and also ranges beyond its methods, drawing upon cultural studies, historical sociology, and history as they inform the study of politics.

Students in the politics graduate program also work with faculty in other distinguished departments at UCSC, including literature, history of consciousness, history, Latin American and Latino studies, environmental studies, sociology, philosophy, international economics, and feminist studies.

Scholars and students in the program emphasize the articulation of important questions prior to the development of methods for grappling with them, while recognizing the importance of appropriate methodological tools for doing meaningful political research.

To support the growth of students as scholars, the department also offers a series of professional development sessions to introduce and help develop the skills of successful academic work. All graduate students are also expected to attend department events with notable visitors brought to campus for public lectures, presentation, and/or graduate colloquia.

Advancement to Candidacy

Course Requirements

All curricular requirements are aimed at preparing students for timely and successful completion of a doctoral dissertation. The graduate curriculum in politics includes seven stages: 1) three core seminars plus POLI 201, Logics of Inquiry seminar; 2) five other graduate-level Politics Department courses; 3) three additional graduate-level courses that may be from Politics or other departments, along with further training as appropriate in language and methodology; 4) teaching assistant seminar training; 5) a qualifying examination consisting of written and oral parts; 6) the research and writing of the dissertation; and 7) its oral defense.

Core Seminars and Methods Training

Required Core Seminars:

During the first two years in residence, students are required to take three of the four core seminars that correspond to the areas of emphasis:

POLI 200A	Political and Social Thought Core Seminar	5
POLI 200B	Social Forces and Political Change Core Seminar	5
POLI 200C	States and Political Institutions Core Seminar	5
POLI 200D	Political Economy Core Seminar	5

Logics of Inquiry:

The department also recognizes the importance of informed and critically engaged methodology. Logics of Inquiry, POLI 201, is a required course that investigates approaches to the study of politics and to the enterprise of social science in general. We also regularly offer POLI 202, Political Research, a seminar providing a foundation in qualitative methods, and occasionally offer other methods courses as well. Students sometimes pursue further coursework in other UC Santa Cruz departments, and the department has sent many students to summer training programs such as the Institute for Qualitative and Multi-Method Research (IQMR).

POLI 201	Logics of Inquiry	5
POLI 202	Fundamentals of Political Research	5

Additional Courses

Prior to the qualifying examination, a minimum of five additional politics graduate courses taught by Politics Department faculty or affiliated graduate faculty must be completed. Three additional graduate-level courses are also required, which may be taken from any UCSC department (including Politics).

Each candidate shall develop with his or her advisor language and method requirements appropriate to the student's project, graduate education, and career goals.

Foreign Language Requirements

Teaching Requirement

Throughout its history, the department has been strongly committed to undergraduate teaching. The graduate program offers graduate students the opportunity to work closely with faculty and undergraduates as teaching assistants. The Politics Department’s faculty is committed to “the teaching of teaching”: its training of college educators emphasizes the importance of civic education in undergraduate instruction. All students who are teaching assistants will be required to attend a TA training program in which pedagogic and substantive issues will be considered.

See our website for details about the policies for admission to graduate standing as well as the application, and information about financial-support opportunities. For more information, refer to the Graduate Division website.

Pre-Qualifying Requirements

Qualifying Examination

The Qualifying Examination (QE) process intends to demonstrate a student’s mastery of and engagement with a range of literatures, including a) core literatures in two of the program’s four areas of emphasis, and b) specialized literatures relevant to the research trajectory. It provides a forum to specify and develop research questions and plans for the dissertation.

Preparation begins with the first core seminar and continues throughout the required coursework. The QE is completed during the third year and has three components: 1) two written examinations; 2) the dissertation prospectus; and 3) an oral examination. All components are evaluated by a committee of four faculty members, one of whom is not a member of the Politics Department.

Students must complete the QE process by the end of their third year. A student who fails any component of the QE process twice will not be permitted to continue in the program.

Post-Qualifying Requirements

Dissertation

Dissertation

Upon advancing to candidacy students begin formal work on the dissertation, with the assistance and oversight of the dissertation committee.

Dissertation Committee

The dissertation committee must be composed of at least three professors, two of whom (including the chair) are members of the Politics faculty. The dissertation committee is selected by the student and approved by the Graduate Division. The dissertation committee need not be the same as the QE committee. The chair of the two committees can be the same professor.

Dissertation Defense

Upon completion, the student will be asked to defend her/his dissertation before the dissertation committee.

Academic Progress

Normative time to completion of the Ph.D. is six years. Upon advancement to candidacy, students are expected to complete the dissertation within three years.

At the end of each academic year, whether the student is in residence at UC Santa Cruz or not, s/he will file a statement of progress with the dissertation committee.

If the Ph.D degree is not awarded within seven years from the date of advancement to candidacy, the student's candidacy shall lapse and the the student will be required to pass a new qualifying exam prior to submitting the dissertation or undergo such other formal review as the department directs.

Applying for Graduation

At the end of the dissertation writing process, the student must file a petition for the degree, format the dissertation according to Graduate Division guidelines, complete an oral defense, and obtain signatures of the committee members on the official title page. One these items are complete, the student may file the dissertation to complete the Ph.D.

Students must either be registered or on Filing Fee the quarter in which the degree is to be conferred. In order to be eligible for Filing Fee, a student must have been registered or on an approved leave of absence the previous quarter.

[Optional Catchall]

POLITICS DESIGNATED EMPHASIS

Introduction

Graduate students in politics may obtain a designated emphasis on the politics Ph.D. diploma indicating they have completed an additional specialized course of study in another department that offers a designated emphasis. Please consult the department of interest for more information.

Requirements

To receive a designated emphasis in politics, graduate students from other departments must complete the following requirements **in addition to degree requirements for the doctorate in their home (or coordinating) department.**

Committee Composition and Departmental Approvals

The student must have a designated faculty advisor from among the politics core faculty. This advisor will be in addition to the faculty advisor from the student's home department. The politics advisor must serve on the student's qualifying examination committee and on the student's dissertation committee.

Course Requirements

The student must take four (4) graduate courses offered by the Politics Department. Two of these courses must be core courses (Political and Social Thought, Political Institutions, Political Economy, or Social Forces) and two courses may be electives appropriate to the student's thesis research. No more than one of these two elective courses may be an independent study.

POLI 200A	Political and Social Thought Core Seminar	5
POLI 200B	Social Forces and Political Change Core Seminar	5
POLI 200C	States and Political Institutions Core Seminar	5
POLI 200D	Political Economy Core Seminar	5

Writing, Research and/or Teaching Requirements

The student must prepare a significant piece of writing in the area of politics. This writing may take the form of a doctoral dissertation chapter or a paper to be submitted for publication.

Academic Progress

[Optional Catchall]

LEGAL STUDIES B.A.

Information and Policies

Introduction

Legal Studies (LGST) is an interdisciplinary, liberal arts major focused on legal ideas, institutions, and issues in and beyond the U.S. Our courses introduce students to the integral roles of law in social life, including its complex relation to values and shifting views of justice, rights, liberty, equality, citizenship, and authority; to culture and social practices; and to historical, political, and economic forces and institutions.

Our program is housed under the auspices of the Politics Department, but operates independently and is designed to provide different disciplinary lenses on intersections between law and other realms. These include the relation of law to human rights, civil rights, voting rights, and property rights; to immigration, citizenship, borders, and sovereignty; to racial, gender, and economic inequalities; to environmental and health justice; to the scope and limits of governmental power; to the law of democracy and relation between citizens and the state; to relations between nation-states; and to concerns regarding access to justice, justice gaps, and historical and systemic injustices.

Students who join this major have the opportunity to take courses with faculty from a range of backgrounds in the social sciences, humanities, arts, and law. Our curriculum includes course offerings spanning from anthropology, art, economics, environmental studies, feminist studies, history, Latin American and Latino studies, literature, music, philosophy, politics, psychology, and sociology. This allows our students to engage their interests through different approaches and analytical frameworks, and to consider many dimensions of law and its operation. For example, legal studies students might learn how to use approaches from psychology or philosophy to think about crime and punishment; they might use approaches from political theory or economics to think about property rights or social welfare policies; they might consider civil rights or privacy issues through approaches from critical race theory or feminist studies; they might use approaches from history or sociology to consider law in different eras or in relation to different groups; they might use approaches from politics to consider human rights and legal systems outside the U.S.

The legal studies major provides a broad academic platform from which students can pursue many different career paths and/or advanced studies. Alumni from our program work in many areas: law and the legal profession, government, non-profits, education, health, and community services, technology and software engineering, business, consulting and accounting, the entertainment industry, media, journalism, and communications. Our alums are also successful in pursuing graduate degrees in many fields. Although legal studies is often of interest to students considering law school or law-related careers, the major is not designed as “pre-law” or preparation for law school. (Students who are considering law school should visit the Career Center's website and pre-law coach.

Our program strongly encourages students to enrich their studies with additional learning and opportunities. Legal Studies sponsors a speakers series and co-sponsors other talks and events, including career and alumni panels. We also encourage students to pursue internships or field experiences, such as through our legal studies internship seminar (LGST 185); Legal Aid & Advocacy (LGST 188A and OAKS 188B/LGST 188B) through the UCDC program, a one-quarter study and internship program in Washington, D.C.; or through the UC Center Sacramento, which offers a one-quarter study and internship program at the state capitol. Students may also want to study abroad through Global Learning at UC Santa Cruz, and some may want to consider developing independent research projects on topics of special interest to them.

Program Learning Outcomes

Upon completion of the major, undergraduates with a B.A. in Legal Studies will have met the following objectives:

1. describe, explain, and compare the sources and functions of law in the U.S. and other national or international contexts, including drawing on theoretical perspectives, institutional perspectives, and social/cultural perspectives;
2. analyze the role of laws, courts, and other legal institutions in broader society, including the historical, social, political, and economic contexts in which it operates;
3. evaluate the operation and function of legal norms, practices, and systems/institutions from a variety of disciplinary and social perspectives;
4. apply and critically evaluate arguments about legal principles and norms, practices, and institutions based on logic and evidence, and from a variety of disciplinary perspectives; and
5. develop and communicate well-organized, persuasive, and well-supported written and oral arguments and analyses regarding law and legal issues based on appropriate empirical and/or theoretical evidence and logic.

Academic Advising for the Program

Undergraduate Advisor

The undergraduate advisor offers specific information about navigating through the program and the curriculum and and assists students with prerequisites, requirements, policies, procedures, learning support, guidance on internships, scholarships, and opportunities for undergraduate research. Please contact the LGST undergraduate advisor at legalstudies@ucsc.edu.

Peer Advisors

Peer advising can assist in academic planning in regards to major and minor requirements and help prepare declaration of major and minor paperwork. Please contact the LGST peer advising team at lgstpoli@ucsc.edu.

Advising Hours

Legal Studies Advising

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required.

Transfer Information and Policy

Transfer Admission Screening Policy

No major preparation courses are required prior to transfer; however, one of the following courses or their equivalents are recommended to ensure timely graduation.

PHIL 7	Elementary Logic	5
PHIL 9	Introductory Symbolic Logic	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 27	Business Ethics	5

Getting Started in the Major: Transfer Students

To ensure a smooth transition into UC Santa Cruz and timely completion of the major, transfer students should meet with the undergraduate advisor as early as possible to discuss a two-year major planner and course enrollment. Completion of LGST 10 in the first quarter will allow timely declaration of the major (required in the second quarter of enrollment).

Major Qualification Policy and Declaration Process

Major Qualification

Students may declare the legal studies major after completing LGST 10, Introduction to the Legal Process, with a grade of C/P or better.

Students will ideally have completed the remaining lower-division requirements before declaring the major.

Transfer students should also consult the Transfer Information and Policy section.

LGST 10	Introduction to Legal Process	5

Appeal Process

Students who are not eligible to declare the major due to more than one non-passing grade in the major qualification course may submit an appeal. In the appeal form, students will be asked to provide:

- A detailed rationale for the appeal, explaining the circumstances around the non-passing grades and what has changed since then. Students are encouraged to be specific in how they plan to succeed moving forward.
- Unofficial transcript(s) of all college courses, including grades.

Within 15 business days of receipt of the appeal, the department advisor will email the student and their college advisors, to notify them of the department's decision.

To discuss the major qualification process, feel free to email ymonterh@ucsc.edu or schedule an appointment via Slug Success.

How to Declare a Major

Petition to declare your major as soon as you have met qualification requirements and/or reach your declaration deadline quarter, whichever comes first. Before submitting the petition, students are required to meet with Legal Studies Advising to create an academic plan.

Letter Grade Policy

Students are permitted to take up to three LGST courses on a P/NP basis that will count toward the major. If a student wishes to qualify for honors, the number of P/NP courses should be no more than two.

Course Substitution Policy

Students may petition the department to substitute only one upper-division independent study or field study toward the elective requirement in the legal studies major. UCDC and UCSAC internships are exempt from this limit.

Double Major and Major/Minor Combinations Policy

Honors

To be considered for honors or highest honors at graduation, a student must have taken a minimum of nine (9) graded courses in the major. P/NP grades are not included when calculating GPA in the major. “Honors” and “Highest Honors” classifications will be awarded to graduating students who achieve GPAs of 3.67 and 3.8 respectively, based on classes taken within the legal studies major. Per General Catalog policy, generally no more than 15 percent of the graduating class earns honors or highest honors in the major.

Optional Catchall

Requirements and Planners

Course Requirements

In addition to completing LGST 10, legal studies majors are required to take a course in philosophical logic or ethics, a course on constitutional law, and a course on international or comparative law. They must also take courses in each of three broadly defined thematic areas: theory, public law and institutions, and law and society. Within the theory theme, students may take courses such as legal theory, jurisprudence, ethics, logic, and social and political thought; within the law and society theme, courses topics range from gender to race to psychology to economics; within the public law and institutions theme, courses range from environmental law to human rights law to criminal justice to public policy. To fulfill the senior exit requirement, students can take a senior capstone seminar, or they may opt to write a senior thesis.

Lower-Division Courses

All students are required to complete and pass LGST 10 prior to declaring the major. This course is normally taken the first year.

LGST 10	Introduction to Legal Process	5

Choose one of the following courses:

All legal studies majors are required to take one of these philosophy courses (transfer students are strongly encouraged to take a similar course prior to enrolling at UC Santa Cruz).

PHIL 7	Elementary Logic	5
PHIL 9	Introductory Symbolic Logic	5
PHIL 22	Introduction to Ethical Theory	5
PHIL 24	Introduction to Ethics: Contemporary Moral Issues	5
PHIL 27	Business Ethics	5

Upper-Division Courses

Complete one of the following "Constitutional Law" courses:

POLI 111A	Constitutional Law	5
LGST 111B	Civil Liberties	5
LGST 111C	The First Amendment	5

Plus one of the following "Global Law" courses:

LGST 116	Comparative Law	5
POLI 160B	International Law	5
POLI 175	Human Rights	5

Thematic Core Course Requirement — 6 courses

Legal studies majors are required to take six thematic core courses, with a minimum of one in each of the three thematic areas:

A. Theory

B. Public Law and Institutions

C. Law and Society

A. Theory Theme Courses

Take any of the following courses:

POLI 103	Feminist Interventions	5
POLI 105A	Ancient Political Thought	5
POLI 105C	Modern Political Thought	5
POLI 105B	Early Modern Political Thought	5
POLI 105D	Contemporary Political Theory: Modernity and its Discontents	5
LGST 107	Toleration, Speech, and Hate	5
LGST 109	Legal Theory	5
LGST 146	Philosophy of Law	5
LGST 155	Topics in American Legal History: Making of American Constitutionalism	5
LGST 157	Political Jurisprudence	5
POLI 184	Shariah and Political Thinking: Law and Politics in Modern Islamic Thought	5
ANTH 148	Gender and Global Development	5
ANTH 187	Cultural Heritage in Colonial Contexts	5
ART 172	Public Art: Memory, Landscape, and Artist as Activist	5
ART 181	Art, Power & Politics	5
ENVS 147	Global Environmental Justice	5
FMST 194O	The Politics of Gender and Human Rights	5
LIT 168A	The Culture of Islamic Law	5
PHIL 126	Philosophy of Social Sciences	5
PHIL 140	History of Ethics	5
PHIL 143	Applied Ethics: Ethics Bowl	5
PHIL 144	Topics in Social and Political Philosophy	5
PHIL 153	Philosophy of Race	5
SOCY 128C	Social History of Democracy, Anarchism, and Indigenism	5
SOCY 128J	The World Jury on Trial	5
PSYC 114	Human Development as a Cultural Process	5
PSYC 140M	Legitimizing (In)Equality: Attitudes, Beliefs, and Social Policy	5

B. Public Law and Institutions Theme Courses

Take any of the following courses:

POLI 111A	Constitutional Law	5
LGST 111C	The First Amendment	5
LGST 115	Law and the Holocaust	5
LGST 116	Comparative Law	5
POLI 120A	Congress, President, and the Court in American Politics	5
POLI 120C	State and Capitalism in American Political Development	5
LGST 124	Government Secrecy	5
LGST 125	History of the U.S. Penal Culture	5
LGST 131	Wildlife, Wilderness, and the Law	5
LGST 133	Law of Democracy	5
LGST 137	International Environmental Law and Policy	5
LGST 139	War Crimes	5
LGST 148	Cites, Urban Planning, and the Law	5
LGST 152	Courts and Litigation	5
LGST 153	Immigration, Citizenship, and Law	5
LGST 155	Topics in American Legal History: Making of American Constitutionalism	5
LGST 156	Administrative Law and Challenges of Regulation	5
LGST 159	Property and the Law	5
LGST 173	Disability, Law, & Politics	5
LGST 188A	Introduction to the Legal Profession and Legal Aid Work	2
OAKS 188B	Legal Field Practice: Professional Skills and Ethics	3

POLI 132	California Water Law and Policy	5
POLI 134	Congress: Representation and Legislation	5
POLI 165	Global Organization	5
POLI 167	Politics of International Trade	5
POLI 175	Human Rights	5
ECON 128	Poverty and Public Policy	5
ENVS 140	National Environmental Policy	5
ENVS 144	Global Climate Change Politics	5
ENVS 149	Environmental Law and Policy	5
ENVS 151	Environmental Assessment	5
ENVS 150	Coastal and Marine Policy	5
ENVS 152	International Environmental Politics	5
ENVS 165	Sustainable Water Systems	5
GCH 186	Global Health Politics	5
SOCY 117E	Migrant Europe	5
SOCY 128J	The World Jury on Trial	5
SOCY 128M	International Law and Global Justice	5

LGST 188A/OAKS 188A and OAKS 188B/LGST 188B must both be taken to count as one course.

C. Law and Society Theme Courses

Take any of the following courses:

LGST 108	Gender, Sexuality, and Law	5
LGST 111B	Civil Liberties	5
LGST 113	Gay Rights and the Law	5
LGST 114	Jews, Anti-Semitism, and the American Legal System	5
LGST 117	Sports, Law, and Politics	5
LGST 118	Law and Literature	5
LGST 130	Inequality and Law	5
LGST 150	Children and the Law	5
LGST 153	Immigration, Citizenship, and Law	5
LGST 154	The Legal Profession	5
LGST 158	Law and Politics of Memory	5
LGST 161	Intellectual Property	5
LGST 173	Disability, Law, & Politics	5
LGST 185	Internship/Field Seminar: Experiences in Law, Politics, and Policy	5
POLI 110	Law and Social Issues	5
POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5
POLI 121	Racism & Justice in America	5
POLI 151	Politics of Law	5
POLI 182	The Power to Punish	5
ANTH 110C	California Pasts	5
ANTH 126	Contraband: Shadow Economies and the Law	5
ANTH 130C	Politics and Culture in China	5
ANTH 138	Political Anthropology	5
ANTH 142	Anthropology of Law	5
ANTH 187	Cultural Heritage in Colonial Contexts	5
ENVS 144	Global Climate Change Politics	5
ANTH 187B	Cultural Resource Management	5
ART 175	Taking Art to the Streets	5
ART 186	Art and Globalization	6
ECON 160A	Industrial Organization	5
ECON 162	Legal Environment of Business	5
ECON 169	Economic Analysis of the Law	5
ECON 183	Women in the Economy	5
ENVS 130B	Justice and Sustainability in Agriculture	5
FMST 112	Women and the Law	5
FMST 194O	The Politics of Gender and Human Rights	5
HIS 110B	Revolutionary America, 1740-1815	5
HIS 110D	The Civil War Era	5
LIT 168A	The Culture of Islamic Law	5
LIT 168B	Islamic Law and Society	5
LIT 189A	De la conquista a Sor Juana	5
PSYC 147A	Psychology and Law	5
PSYC 147B	Psychology and Law	5
SOCY 117E	Migrant Europe	5
SOCY 122	The Sociology of Law	5
SOCY 127	Drugs in Society	5
SOCY 128	Law and Politics in Contemporary Japan and East Asian Societies	5
SOCY 128I	Race and Law	5

Electives

Disciplinary Communication (DC) Requirement

Students in every major must satisfy that major's upper-division disciplinary communication (DC) requirement. The DC requirement in legal studies is satisfied by completing one of the following two options:

Senior Seminar

LGST 196	Senior Capstone	5

Senior Thesis (two or three quarters)

LGST 195A	Senior Thesis	5
LGST 195B	Senior Thesis	5
LGST 195C	Senior Thesis	5

Comprehensive Requirement

Students can satisfy the senior comprehensive requirement in the legal studies major by successfully completing one of the following two options:

Senior Capstone

The capstone is designed to provide an interdisciplinary integration of themes related to the study of law and includes a substantial writing requirement.

LGST 196	Senior Capstone	5

Senior Thesis (2-3 quarters).

Completion of a senior thesis of a minimum of 50 pages with substantial research content, supervised by a legal studies faculty member or affiliate. A cumulative UC GPA of 3.6 is strongly recommended, though not required. In rare circumstances, exceptions can be made pending approval of the proposed professor.

LGST 195A	Senior Thesis	5
LGST 195B	Senior Thesis	5
LGST 195C	Senior Thesis	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sample four-year and two-year course plans for students majoring in legal studies are provided below.

Four-Year Sample Course Planner for Frosh Students

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)		LGST 10 WRIT 1/WRIT 1E (if needed)	Phil 9 or 22	
2nd (soph)	LGST Core - Law Society (LS) WRIT 2*	LGST Core - Theory (T)	LGST Core - Public Law Institution (PLI) POLI 160B/LGST 160B (Required)	
3rd (junior)	LGST Core (LS, PLI or T) LGST Core (LS, PLI or T)	POLI 111A/LGST 111A (Required) LGST Core (LS, PLI or T)		
4th (senior)	LGST 196 (Capstone)			

* WRIT 2 should be taken in or before spring quarter of the second year.

In addition to the specific courses shown in this four-year planner, a student must complete courses satisfying the general education requirements. See the UC Santa Cruz Legal Studies website to view courses and designations for which courses fulfill the majors' three-core thematic requirements: Theory, Public Law and Institutions, and Law Society.

Two-Year Sample Course Planner for Transfer Students

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	LGST 10 LGST Core - Public Law Institut	PHIL 9* LGST Core - Theory (T)	POLI 160B/LGST-160B (required) LGST Core - Law Society (LS)	

	ion (PLI)		
2nd (senior)	LGST Core (LS, PLI or T)	LGST 196 (Senior Capstone)	LGST Core (LS, PLI or T)
	LGST Core (LS, PLI or T)	POLI 111A/L GST 111A (Required)	

*Articulated equivalent courses may be taken prior to transfer.

This planner assumes that a student has completed all general education requirements, beyond major preparation requirements before coming to UC Santa Cruz. See the UCSC Legal Studies website to view courses and designations for which courses fulfill the majors' three-core thematic requirements: Theory, Public Law and Institutions, and Law Society.

LEGAL STUDIES MINOR

Course Requirements

The legal studies minor comprises six courses: LGST 10 plus any five upper-division LGST courses.

Students in the legal studies minor are not required to follow major requirements such as taking courses in each thematic area, the philosophy (ethics) requirement, or a senior seminar course. This program does not have a letter grade policy.

Lower-Division Courses

Take this course

LGST 10	Introduction to Legal Process	5

Upper-Division Courses

Take any five 5-credit courses from LGST 100-187 or from the list below. 5-credit courses crosslisted as LGST courses will also count toward this requirement. Students should contact the department if they wish to count independent study toward this requirement.

ANTH 110C	California Pasts	5
ANTH 130C	Politics and Culture in China	5
ANTH 138	Political Anthropology	5
ANTH 142	Anthropology of Law	5
ANTH 148	Gender and Global Development	5
ANTH 187	Cultural Heritage in Colonial Contexts	5
ANTH 187B	Cultural Resource Management	5
ART 172	Public Art: Memory, Landscape, and Artist as Activist	5
ART 181	Art, Power & Politics	5
ECON 128	Poverty and Public Policy	5
ECON 160A	Industrial Organization	5
ECON 162	Legal Environment of Business	5
ECON 169	Economic Analysis of the Law	5
ECON 183	Women in the Economy	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 140	National Environmental Policy	5
ENVS 144	Global Climate Change Politics	5
ENVS 147	Global Environmental Justice	5
ENVS 149	Environmental Law and Policy	5
ENVS 150	Coastal and Marine Policy	5
ENVS 151	Environmental Assessment	5
ENVS 152	International Environmental Politics	5
ENVS 165	Sustainable Water Systems	5
ENVS 179	Environmental Interpretation	5
FMST 194O	The Politics of Gender and Human Rights	5
GCH 186	Global Health Politics	5
HIS 110B	Revolutionary America, 1740-1815	5
HIS 110D	The Civil War Era	5
HIS 121B	African American History, 1877 to the Present	5
LALS 194X	Extractivism and Socio-Environmental Conflicts in the Americas	5
LIT 168A	The Culture of Islamic Law	5
LIT 168B	Islamic Law and Society	5
LGST 107	Toleration, Speech, and Hate	5
LGST 108	Gender, Sexuality, and Law	5
LGST 111B	Civil Liberties	5
LGST 111C	The First Amendment	5
LGST 114	Jews, Anti-Semitism, and the American Legal System	5
LGST 115	Law and the Holocaust	5
LGST 116	Comparative Law	5
LGST 117	Sports, Law, and Politics	5
LGST 124	Government Secrecy	5
LGST 125	History of the U.S. Penal Culture	5
LGST 131	Wildlife, Wilderness, and the Law	5
LGST 133	Law of Democracy	5
LGST 137	International Environmental Law and Policy	5
LGST 139	War Crimes	5
LGST 146	Philosophy of Law	5
LGST 148	Cites, Urban Planning, and the Law	5
LGST 152	Courts and Litigation	5

LGST 153	Immigration, Citizenship, and Law	5
LGST 154	The Legal Profession	5
LGST 155	Topics in American Legal History: Making of American Constitutionalism	5
LGST 156	Administrative Law and Challenges of Regulation	5
LGST 157	Political Jurisprudence	5
LGST 158	Law and Politics of Memory	5
LGST 159	Property and the Law	5
LGST 161	Intellectual Property	5
LGST 173	Disability, Law, & Politics	5
LGST 185	Internship/Field Seminar: Experiences in Law, Politics, and Policy	5
LGST 188A	Introduction to the Legal Profession and Legal Aid Work	2
OAKS 188B	Legal Field Practice: Professional Skills and Ethics	3
PHIL 126	Philosophy of Social Sciences	5
PHIL 140	History of Ethics	5
PHIL 143	Applied Ethics: Ethics Bowl	5
PHIL 144	Topics in Social and Political Philosophy	5
PHIL 153	Philosophy of Race	5
POLI 102	Doing Political Research	5
POLI 103	Feminist Interventions	5
POLI 105A	Ancient Political Thought	5
POLI 105B	Early Modern Political Thought	5
POLI 105C	Modern Political Thought	5
POLI 105D	Contemporary Political Theory: Modernity and its Discontents	5
POLI 110	Law and Social Issues	5
POLI 111A	Constitutional Law	5
POLI 120A	Congress, President, and the Court in American Politics	5
POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5
POLI 121	Racism & Justice in America	5
POLI 132	California Water Law and Policy	5
POLI 134	Congress: Representation and Legislation	5
POLI 151	Politics of Law	5
POLI 160B	International Law	5
POLI 165	Global Organization	5
POLI 167	Politics of International Trade	5
POLI 175	Human Rights	5
PSYC 114	Human Development as a Cultural Process	5
PSYC 140M	Legitimizing (In)Equality: Attitudes, Beliefs, and Social Policy	5
PSYC 147A	Psychology and Law	5
PSYC 147B	Psychology and Law	5
PSYC 153	The Psychology of Poverty and Social Class	5
SOCY 117E	Migrant Europe	5
SOCY 122	The Sociology of Law	5
SOCY 127	Drugs in Society	5
SOCY 128C	Social History of Democracy, Anarchism, and Indigenism	5
SOCY 128J	The World Jury on Trial	5
SOCY 128M	International Law and Global Justice	5
SOCY 185	Environmental Inequality	5

LGST 188A/OAKS188A and OAKS 188B/LGST 188B must both be taken to count as one course.

Psychology

150 Social Sciences 2 Building
https://psychology.ucsc.edu/

PROGRAMS OFFERED

Psychology B.A. (p. 832)

Cognitive Sciences B.S. (p. 843)

Psychology Ph.D. (p. 850)

UNDERGRADUATE PROGRAMS

The Psychology Department offers undergraduate programs in psychology (B.A.) and cognitive science (B.S.)

Psychology B.A.

Psychology majors at UC Santa Cruz are introduced to theory and scientific research in the field. Students begin with lower-division courses (course numbers 1-99) that include introductory psychology, precalculus, statistics, introduction to developmental psychology, and cognition: fundamental theories/introduction to cognitive psychology. In addition, majors take upper-division courses (course numbers 100-199) in research methods and several areas of psychology.

The department offers coursework in developmental, cognitive, social, and clinical-personality psychology.

The developmental psychology program studies processes that integrate individual, interpersonal, and cultural aspects of human development. Our faculty uses qualitative and quantitative mixed methodologies to study children and youth's lived experiences from a strengths-based perspective in diverse communities and contexts including families, friends, peers, neighborhoods, schools, children's museums, and other institutions.

The cognitive psychology program investigates human perception, memory, and language using a combination of behavioral, neuroscience, and computational modeling approaches. Our faculty consider basic scientific questions in these areas as well as real-world implications (e.g. techniques

for learning better in the classroom), cross-disciplinary connections (e.g. with biologists, computer scientists), and clinical applications (e.g. misophonia and other perceptual and cognitive disorders).

The social psychology program involves the study of persons embedded within social contexts and communities. Social psychology courses at UC Santa Cruz are organized around themes of social justice and focus on a wide range of social issues. Our faculty, therefore, focus on issues of race, class, sexuality, ethnicity, citizenship, gender, and ability, and are steeped in critical theoretical and applied perspectives.

Clinical-personality psychology focuses on issues of individual traits, psychological distress, well-being, and adjustment.

The Psychology Department offers a general psychology major and an intensive major. The intensive psychology major requires additional coursework in research methods as well as additional thesis, research, or field study credits. See program descriptions below for details.

The B.A. programs in psychology provide a foundation for a career in psychological research, clinical practice, industry, or non-profits. Some careers in psychology require master's or doctoral degrees, for instance focused on research or clinical practice. Students primarily interested in clinical and counseling psychology should understand that training in these areas does not occur at the undergraduate level but requires professional training through an advanced degree. UC Santa Cruz does not offer advanced degrees in clinical or counseling psychology.

Cognitive Science B.S.

Cognitive science focuses on achieving a scientific understanding of how human cognition works. Its subject matter encompasses cognitive functions (such as memory and perception), the structure and use of human language, the evolution of the mind, artificial intelligence, and more.

The cognitive science degree provides a strong grounding in the principles of cognition through courses in cognitive psychology, and, in addition, provides breadth in the interdisciplinary aspects of cognitive science such as anthropology, linguistics, biology, philosophy, and computer science. Graduates will be well prepared for advanced training in research fields of cognitive psychology and cognitive neuroscience, technology industries such as human-computer interaction, and health fields, such as the treatment of brain disorders.

The cognitive science major is intended for students seeking jobs in industry fields such as human-computer interaction or user-experience research, or students wishing to enter graduate programs in cognitive fields or health science fields

GRADUATE PROGRAM

The psychology program offers three areas of specialization leading to the doctoral degree: cognitive, developmental, and social psychology. The program prepares students for research, teaching, and administrative positions in colleges and universities as well as for positions in schools, government, and other public and private institutions. Each student is primarily associated with one of the three research areas and participates in the courses and research forums sponsored by the faculty in that area. The program requires full-time enrollment as a graduate student. Although applicants for a master's degree are not accepted, students in the doctor of philosophy (Ph.D.) program may obtain a master of science (M.S.) degree by fulfilling requirements listed in the department's Graduate Student Handbook. Note that the program does not offer courses, training, or supervision in clinical psychology.

The cognitive psychology graduate program focuses on foundational cognitive processes and how they function in the real world. We investigate three interconnected areas that form the core of cognitive psychology: perception and performance, learning and memory, and language and interaction. Using a combination of human behavior, neuroscience, and computational modeling to characterize human cognitive processes, we are exploring topics such as reading, speaking, and discourse processing; language production and comprehension; bilingualism and multilingualism; remembering and forgetting; metacognition in learning and memory; creative cognition; cognitive offloading and transactive memory; socially distributed remembering and collective memory; human performance, information processing, and computational cognitive modeling; working memory and executive control; visual psychophysics; face perception; sensory integration; music perception; perception in virtual reality; cognitive and computational neuroscience; perceptual decision-making, attention, and awareness. Beyond addressing basic scientific questions in these areas, our faculty also consider real-world implications (e.g., techniques for learning better in the classroom), cross-disciplinary connections (e.g., with biologists, computer scientists, and linguists), and clinical applications (e.g., misophonia, schizophrenia, and other cognitive disorders). Our Ph.D. graduates go on to successful careers in both academia — as postdoctoral fellows and tenure-track faculty at teaching and research institutions across the country — and industry — with some of our recent graduates leading user experience (UX) and data science teams.

The developmental psychology graduate program focuses on research that integrates cultural, interpersonal, and individual aspects of human development. We emphasize understanding the lived experience of children, youth, and young adults in their cultural communities and social-structural contexts. We focus especially on issues of diversity in relation to culture, ethnicity, race, gender, sexuality, and social-economic opportunity as people engage across contexts of family, peers, schools, museums, community, technology, and media. Our programs of research include language and cognitive development; social development; personal and social identities; gender development; political development; neurodiversity; learning through observation and social interaction; children and playable media; communication technologies; stress and well-being; prejudice and discrimination; STEM learning; school climate, belonging,

and motivation; the transition to adulthood; and diversity issues in university outreach programs. Several of our faculty carry out research in cultural communities outside the U.S. and collaborate with faculty in the U.S. and other countries. At UC Santa Cruz, our interdisciplinary collaborations with other programs (such as education, computer engineering, computational media, biology, Latin American and Latino studies, linguistics, and philosophy) help nurture students' research and prepare them for a wide variety of careers. Graduates of our program hold positions in academia, research institutes, and community and non-profit organizations.

The social psychology graduate program at UC Santa Cruz has a unique mission and focus. We use Kurt Lewin's model of "full-cycle" social psychology (theory-application-action) to study a broad range of topics related to social justice. In this way, knowledge gained in action-oriented research, in turn, leads to the development of new theory. Accordingly, our students learn to apply psychological theories and data to the analysis and solution of a wide range of social problems. Our students are trained to use a variety of research methods (e.g., survey, participatory action research, ethnography, lab or field experiments) and to examine justice-related issues in different cultural, political, and policy contexts. They are also encouraged to attend to issues of race, class, sexuality, ethnicity, gender, and ableness; and, in addition to traditional social psychological approaches, are steeped in critical theoretical perspectives such as feminist theory, critical race theory, and intersectionality. Our graduates go on to successful careers in academia as well as in community, government, and non-profit settings. Our approach to research and training, combined with the quality and competencies of our faculty, make our program among the nation's best for the psychological study of social justice issues. Current faculty research interests include: aggression and trauma; educational equity, access, and servingness; feminisms; institutional analysis; intersectionality; narrative and identity; race as a social process; social identities and stigmatization of immigrant-origin students; poverty and economic justice; power and oppression; critical carceral studies; psychology and law; political psychology; sexual and gender diversity; sexuality; social identity; social policy analysis; and structural inequality.

Graduate students in psychology may obtain a designated emphasis on the psychology Ph.D. diploma indicating that they have obtained additional training in another discipline such as critical race and ethnic studies, data science, feminist studies, Latin American and Latino studies, or sociology. For the full list of programs that offer a designated emphasis, see the Academic Programs section of the catalog. For specific requirements for a designated emphasis in a program, please refer to the program statement for that department.

Details on the policies for admission to graduate standing and requirements for the Ph.D. degree, as well as the online application can be found on the Division of Graduate Studies website. The department's graduate program brochure, and faculty research are available on the department website.

PSYCHOLOGY B.A.

Information and Policies

Introduction

Program Learning Outcomes

Students who complete the psychology major should demonstrate competency in:

- **Application of knowledge with critical thinking skills**. Students should be able to use critical thinking to evaluate and interpret evidence, and to apply psychological concepts, theories, and research findings to individual, social, and cultural issues.
- **Application of research methods with values and integrity**. Students should be able to apply basic research methods in psychology, with sensitivity to ethical principles.
- **Communication skills**. Students should be able to demonstrate effective communication skills following professional conventions in psychology appropriate to purpose and context.
- **Awareness of sociocultural diversity and societal inequality**. Students should be able to understand the complexity of sociocultural diversity and societal inequality in the inquiry and analysis of psychological issues.

Academic Advising for the Program

The Psychology Department has an advising office located at 150 Social Sciences 2 and can be reached at psyadv@ucsc.edu. The advisors assist students in obtaining information regarding major requirements and petitions, course planning, substitution of transfer courses for advance enrollment, careers, and graduate schools. Students are encouraged to take advantage of the advising office throughout their college career. Transfer students are encouraged to consult the Transfer Information and Policy Section.

Acceptance to the Psychology Major

Students are admitted to the University of California, Santa Cruz with a "proposed major" in most cases, and later petition to officially declare the major. Admission to UC Santa Cruz does not guarantee acceptance into a particular major. Students must declare a major by the major declaration deadline during their sixth quarter at UCSC. Junior transfer students must declare a major no later than the deadline during their second quarter at UCSC. Learning about and preparing for the major should be primary goals for students.

Getting Started in the Major: Frosh

Students who enter UC Santa Cruz as frosh/first-year students are required to formally declare a major **before enrolling** in their **7th quarter/third year at UCSC**. It is strongly recommended that students interested in pursuing the

psychology major (general or intensive) complete major requirements by the start of their sixth quarter or have no more than one requirement in progress during the sixth quarter. Students should complete PSYC 1, the mathematics requirement, and the statistics requirement (see below for courses that can be used to satisfy these requirements). PSYC 1 and the statistics requirement must be taken for a letter grade. If the minimum grade (B-) is not met for PSYC 1, PSYC 10 or PSYC 20 must be taken for a letter grade with the minimum grade earned (B-).

After completing these three lower-division requirements, students may petition to declare the psychology major subject to the grade requirements described in the Qualification to the Major section below. Students are recommended to fulfill major qualifications as early as possible to avoid delays in the major declaration and enrollment processes. Refer to the Requirements and Planners section below, and consult with a department advisor early to begin the process toward the completion of major qualifications and major declaration.

High school students considering psychology as their university major find that the best preparation is a solid general education in English writing and mathematics (including precalculus), and social sciences.

Transfer Information and Policy

Transfer Admission Screening Policy

Transfer students who want to pursue the psychology major (general or intensive), must have applied and been admitted to UC Santa Cruz as a proposed psychology major. The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall. Some courses may be satisfied via exam credit.

Introduction to Psychology

PSYC 1	Introduction to Psychology	5

Minimum grade of B- (2.7) is required. If a grade of C (2.0) or C+ (2.3) is earned in an equivalent course, a student must earn a minimum grade of B- (2.7) in a course articulated to UC Santa Cruz's PSYC 10 or PSYC 20.

Statistics

One of the following:

	Either this course	
PSYC 2	Introduction to Psychological Statistics	5
	or this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Minimum grade of B- (2.7) is required.

Mathematics

One of the following:

MATH 3	Precalculus	5

Minimum grade of C (2.0) is required. A course in calculus may also be used for this requirement, such as MATH 11A or MATH 19A.

Recommended Prior to Transfer

Though not required, students are recommended to complete the following prior to transfer:

PSYC 10	Introduction to Developmental Psychology	5
PSYC 20	Cognition: Fundamental Theories	5

Getting Started in the Major: Transfer Students

Students are admitted to UC Santa Cruz with a "proposed major" and later petition to officially declare the major. Transfer students who want to pursue the psychology major (general or intensive), must have applied and been admitted to UC Santa Cruz as a proposed psychology major. Admission does not guarantee acceptance into a particular major, although transfer students' records are screened for preparation for psychology at the time of admission. In order to successfully transition to UCSC, transfer students must be formally declared by the deadline in their second quarter of enrollment. Students are advised to set up and check their UCSC email regularly, make contact with their major advisors, submit course descriptions for articulation purposes, and consider taking summer session courses prior to their first fall quarter.

Admitted transfer students who satisfy the requirements of the screening policy can declare the major at any time after matriculation at UC Santa Cruz. See the How to Declare the Major Section.

Major Qualification Policy and Declaration Process

Major Qualification

Students may petition to declare the psychology major once they have demonstrated foundational skills by completing each of the following three requirements. Some courses may be satisfied via exam credit.

One of the following courses

Mathematics requirement

AM 3	Precalculus for the Social Sciences	5
AM 6	Precalculus for Statistics	5
AM 11A	Mathematical Methods for Economists I	5
MATH 3	Precalculus	5
MATH 4	Mathematics of Choice and Argument	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5

MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 300 or higher on the ALEKS Mathematics Placement.

Plus take the following course and obtain a B- or better

PSYC 1	Introduction to Psychology	5

PSYC 1 must be taken in order to declare. If a B- or better grade is not achieved in PSYC 1, achieving a B- or better in PSYC 10 or PSYC 20 will fulfill declaration requirements.

Plus one of the following options and obtain a grade of B- or better

	Either this course	
PSYC 2	Introduction to Psychological Statistics	5
	or this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Appeal Process

Students who did not satisfy the major admission requirements but believe there are extenuating circumstances concerning their performance in the foundational courses may file a written appeal describing these circumstances for review. For more information on the appeals process, please make an appointment with a staff advisor or email psyadv@ucsc.edu. The department will notify the student of the decision within 7-10 days of the receipt of the appeal.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification (MQ) courses or reach their declaration deadline quarter, whichever comes first. Transfer students can petition to declare their major as early as the first day of instruction during their first quarter at UCSC.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh, in the second quarter of enrollment for transfers), will either be approved or denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed MQ courses.

To petition to declare the major, students should follow the instructions on the department's website.

Letter Grade Policy

PSYC 1 and the statistics (major qualification) requirement must be taken for a letter grade. If alternative courses are taken to meet the major qualification requirements, they must also be taken for a letter grade (e.g., PSYC 10 or PSYC 20). A grade of B- or higher is required, or its equivalent exam credit score.

[Optional Catchall]

Course Substitution Policy

Students who want to fulfill requirements with courses taken at other colleges (excluding articulated courses from California community colleges) must petition for the substitution of their transfer courses via email to psyadv@ucsc.edu. PSYC 100, Research Methods in Psychology, and the senior seminar must be taken at UC Santa Cruz. Students planning to transfer to UC Santa Cruz should check with the advising office of their present college or refer to assist.org.

Double Majors and Major/Minor Combinations Policy

Upper-division courses from other departments taken to fulfill the psychology elective requirement may not count toward another major or minor (See “Course Requirements” in the “Upper-Division Courses” section). Students wishing to pursue double majors or a major/minor combination are encouraged to meet with an advisor to create an academic plan to do so.

Students who are interested in adding a double major in psychology must do so by their original major declaration deadline (i.e., in their sixth quarter for students admitted as frosh). **Transfer students who were not originally screened for and admitted as a psychology major may not add psychology as a second major**

Global Learning

Up to three Global Learning courses may be approved for the major and prior course approval is recommended. Global Learning courses equivalent to less than 5 quarter credits (i.e. 4 or 4.5 quarter credits) should be discussed with a psychology undergraduate advisor to ensure major requirements are still met. Please review the department's study abroad webpage if you are considering studying abroad and want to try to obtain approval for such courses to count toward the major.

Honors

Honors in the psychology major are awarded to graduating seniors whose UC Santa Cruz coursework (1-189) averages a 3.6 GPA or higher.

Highest honors in the major are reserved for students who meet the honors criteria as well as successful completion of a senior thesis, or whose UC Santa Cruz coursework (1-189) averages a 3.9 GPA or higher.

Research, Field Study, and Other Educational Opportunities

The Psychology Department offers a range of educational opportunities, including opportunities for undergraduate research and field study. For more information, see the department's educational opportunities website.

Optional Catchall

General Psychology Major

Course Requirements

Thirteen courses are required for the general major. Some courses may be satisfied via exam credit. Here is a brief overview of these courses:

- Five lower-division courses are required before completing most upper-division courses. These should be completed as soon as possible, ideally by the end of the sophomore year. They include:
  - three lower-division courses required for declaration (PSYC 1, mathematics requirement, and statistics requirement), and
  - two additional lower-division courses (PSYC 10, PSYC 20)
- PSYC 100, Research Methods in Psychology, which is a prerequisite for many other upper-division courses and fulfills half of the Disciplinary Communication requirement. This course **MUST** be taken at UC Santa Cruz.
- Six additional upper-division courses in psychology, including a senior seminar (see below for details)
- One non-psychology upper-division course (see below for details)

Lower-Division Courses

Take this course:

PSYC 1	Introduction to Psychology	5

Plus one of the following options:

	Either this course	
PSYC 2	Introduction to Psychological Statistics	5
	or this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Plus:

PSYC 10	Introduction to Developmental Psychology	5

Plus:

PSYC 20	Cognition: Fundamental Theories	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
AM 6	Precalculus for Statistics	5
AM 11A	Mathematical Methods for Economists I	5
MATH 3	Precalculus	5
MATH 4	Mathematics of Choice and Argument	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 300 or higher on the ALEKS Mathematics Placement.

Upper-Division Courses

Eight upper-division courses are required for the general major. At least four must be PSYC courses taken at UC Santa Cruz: PSYC 100, and one from each of the Developmental, Cognitive, and Social subfields, including a senior seminar.

Research Methods:

PSYC 100	Research Methods in Psychology	7

One course in each of the following subfields (three courses):

- Developmental (courses numbered PSYC 101-PSYC 119A-Z)
- Cognitive (courses numbered PSYC 120-PSYC 139A-Z)
- Social (courses numbered PSYC 140-PSYC 159A-Z)

One additional 5-credit upper-division course from THREE of the subfields listed below (i.e., a total of three courses, each from a separate subfield):

- Developmental (PSYC 101-PSYC 119A-Z)
- Cognitive (PSYC 120-PSYC 139A-Z)
- Social (PSYC 140-PSYC 159A-Z)
- Clinical-Personality (PSYC 160-PSYC 179A-Z)
- Methods (PSYC 180-PSYC 189)
- Independent Study (PSYC 193-PSYC 199)

One upper-division course outside of psychology:

One upper-division course, numbered 100-189 from one of the following related areas outside of psychology. The course must be 5 credits, and neither cross-listed with psychology nor taught by psychology faculty. Please check with an advisor if you are a double major or minor in one of the below subjects:

- Anthropology
- Community Studies
- Critical Race and Ethnic Studies
- Ecology and Evolutionary Biology
- Economics
- Education
- Environmental Studies
- Feminist Studies
- History of Consciousness
- Latin American and Latino Studies
- Legal Studies
- Linguistics
- Philosophy
- Politics
- Sociology
- Or a specific course from the list below:

APLX 102	Bilingualism	5
APLX 116	Discourse Analysis: Language Use and Context	5
CMPM 146	Game AI	5
CMPM 148	Interactive Storytelling	5
CSE 104	Computability and Computational Complexity	5
CSE 140	Artificial Intelligence	5
HAVC 141F	The Camera and the Body	5
HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HAVC 141O	Sex, Lies, and Surveillance: Contemporary Documentary Arts	5
HAVC 185	Community Engagement Through the Arts	5
HAVC 186	Horror and Gender in Art and Visual Culture	5
METX 108	Introduction to Research Methods in Global and Community Health	5
METX 135	Functional Anatomy	5
STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

METX 108 will **NOT** be accepted as a substitution for PSYC 100.

Upper-Division Seminar:

One of the upper-division courses must be an upper-division seminar; these courses are psychology courses identified within the General Catalog by their course descriptions containing the phrase “satisfies seminar requirement.” These are any course in the PSYC 119, 139, 159, or 179 series.

Students can access a full list of courses on the department’s website. Upper-division courses and their catalog descriptions are grouped within each of the subfields.

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in Psychology is satisfied by completing PSYC 100 and a seminar. Seminar courses are Psychology courses identified within the General Catalog by their course descriptions containing the phrase “satisfies seminar requirement,” and are numbered PSYC 119A-Z, PSYC 139A-Z, PSYC 159A-Z, and PSYC 179A-Z.

Comprehensive Requirement

UC Santa Cruz requires that every student satisfy a senior exit/comprehensive requirement prior to graduation. Psychology students will satisfy this requirement by receiving a passing grade in a Psychology seminar which is also part of the DC requirement (see above). These are any course in the PSYC 119, 139, 159, or 179 series. To ensure that all students can meet the seminar requirement, students will enroll in only one senior seminar. Students are only allowed to enroll in additional seminars after all other students who still need to fulfill their seminar requirement have enrolled.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Following are two recommended academic plans for frosh, a three-year plan for frosh, and one additional plan for transfer students. Plan One is a suggested guideline for frosh who are committed to the major early in their academic career. Plan Two is for frosh who are considering the major or who need more preparation. Students should note that precalculus (AM 3, or see Lower Division Courses section for other qualifying courses or test scores) is a requirement for the major and is a prerequisite for PSYC 2 and PSYC 100. The three-year plan

for frosh is most appropriate for students who plan on a single major, who have satisfied the Entry Level Writing and Composition requirements before their first quarter, and who are committed to enrolling in Summer Session courses after their first and second years. The fourth planner is a suggested two-year guideline for transfer students.

Frosh Plan One

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)		PSYC 1 WRIT 1/WRIT 1E (if needed)	AM 3	
2nd (soph)	WRIT 2*	PSYC 2	PSYC 20	
3rd (junior)	PSYC 10 out of dept. course	PSYC 100	upper-division social	
4th (senior)	upper-division cognitive	upper-division PSYC elective (seminar) upper-division developmental	upper-division PSYC elective upper-division PSYC elective	

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the PE, SR, and DC general education requirements. All other GE requirements have to be satisfied.

Frosh Plan Two

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 2	AM 3 WRIT 1/WRIT 1E (if needed)	PSYC 1	
2nd (soph)	PSYC 20 WRIT 2*	PSYC 2	PSYC 10	
3rd (junior)	out of dept. course	PSYC 100 upper-division cognitive	upper-division developmental	

4th (senior)	upper-division social	upper-division PSYC elective (seminar)	upper-division PSYC elective	
	upper-division cognitive	upper-division PSYC elective		

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the PE, SR, and DC general education requirements. All other GE requirements have to be satisfied.

Frosh Three-Year Plan

	Fall	**Winter**	**Spring**	**Summer**
1st (frosh)	MATH 2 (if needed) or any 5-credit class	PSYC 1 (PE GE)	PSYC 2 (SR GE)	PSYC 100 (7 credits, 1/2 DC GE)**
	College Core Course	AM 3 (MF GE)*	CC Gen Ed	Any 5-credit class
	SI Gen Ed	Any 5-credit class	Writing 2 (C GE)	
		STEV 26		
	Total credits for quarter: 17	**Total credits for quarter: 17**	**Total credits for quarter: 15**	**Total credits for quarter: 12**
2nd (soph)	PSYC 20	PSYC 10	Upper-division Social	Upper-division PSYC elective
	Upper-division Outside PSYC	ER General Education Class	IM General Education Class	Any 5 credit class
	TA General Education Class	Any 5 credit class	Any 5 credit class	Any 5 credit class
	PR General Education Class (2 credits)	Any 2 credit class	Any 2 credit class	
	Total credits for quarter: 17	**Total credits for quarter: 17**	**Total credits for quarter: 17**	**Total credits for quarter: 15**
3rd (junior)	Upper-division Developmental	Upper-division Cognitive	Upper-division PSYC Seminar (1/2 DC GE)	Any 5 credit class
	Any 5 credit class	Upper-division PSYC elective	Any 5 credit class	Any 5 credit class
	Any 5 credit class	Any 5 credit class	Any 5 credit class	
	Total credits for quarter: 15	**Total credits for quarter: 15**	**Total credits for quarter: 15**	**Total credits for quarter: 10**
				Total credits in plan: 183* **

* Students who place higher than MATH 3, Precalculus, may substitute another course that satisfies the MF GE requirement.

** To successfully complete the three-year pathway, students must take PSYC 100 during Summer Session of Year 1. Prerequisites to this course are Precalculus, PSYC 2, and completion of the C general education requirement. Therefore it is crucial these classes be completed in the first year.

***Total credit count includes the 1-unit Orientation Course taken the summer before the start of year 1

The following General Education requirements will be satisfied through required courses in the Psychology major: PE, SR, DC.

Transfer Plan

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	PSYC 100 PSYC 10	PSYC 20 upper-division Social	upper-division Developmental	
4th (senior)	upper-division Cognitive upper-division PSYC elective	out of dept. course upper-division PSYC elective	upper-division PSYC elective (seminar)	

Intensive Psychology Major

Course Requirements

The Intensive Psychology major involves additional upper-division coursework, including a requirement of an advanced methods class and independent study. Students intending to pursue the Intensive concentration should declare this on their proposed study plan during the junior year to ensure there is enough time to complete the additional requirements.

Note: The intensive major designation appears on the transcript, but it does not formally appear on students' diplomas.

Sixteen courses are required for the Intensive concentration. Some courses may be satisfied via exam credit. Here is a brief overview of these courses:

- Five lower-division courses (course numbers 1-99) are required before completing most upper-division courses. These should be completed as soon as possible, ideally by the end of the sophomore year. They include:
  - three lower-division courses required for declaration (PSYC 1, mathematics requirement, and statistics requirement), and
  - two additional lower-division courses (PSYC 10, PSYC 20)
- PSYC 100, Research Methods in Psychology, which is a prerequisite for many other upper-division courses and fulfills half of the Disciplinary Communication requirement. This course **MUST** be taken at UC Santa Cruz.
- Seven additional upper-division courses in Psychology, including an advanced research course and a senior seminar (see below for details)
- Two quarters of independent study (research, field study, or senior thesis- see below for details)
- One non-psychology upper-division course (see below for details)

Lower-Division Courses

Take this course:

PSYC 1	Introduction to Psychology	5

Plus one of the following options:

	Either this course	
PSYC 2	Introduction to Psychological Statistics	5
	or this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental,	2

	and Health Sciences Laboratory	

Plus:

PSYC 10	Introduction to Developmental Psychology	5

Plus

PSYC 20	Cognition: Fundamental Theories	5

Plus one of the following courses:

AM 3	Precalculus for the Social Sciences	5
AM 6	Precalculus for Statistics	5
AM 11A	Mathematical Methods for Economists I	5
MATH 3	Precalculus	5
MATH 4	Mathematics of Choice and Argument	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5

May also be satisfied with a score of 300 or higher on the ALEKS Mathematics Placement.

Upper-Division Courses

Eleven upper-division courses are required for the intensive major:

Research Methods:

PSYC 100	Research Methods in Psychology	7

One course in each of the following subfields (three courses):

- Developmental (courses numbered PSYC 101-PSYC 119A-Z)
- Cognitive (courses numbered PSYC 120-PSYC 139A-Z)
- Social (courses numbered PSYC 140-PSYC 159A-Z)

One additional 5-credit upper-division course from THREE of the subfields listed below (i.e., a total of three courses, each from a separate subfield):

- Developmental (PSYC 101-PSYC 119A-Z)
- Cognitive (PSYC 120-PSYC 139A-Z)
- Social (PSYC 140-PSYC 159A-Z)
- Clinical-Personality (PSYC 160-PSYC 179A-Z)
- Methods (PSYC 180-PSYC 189)
- Independent Study (PSYC 193-PSYC 199)

One of the following:

PSYC 181	Psychological Data Analysis	5
PSYC 182	Qualitative Research Methods	5

Two quarters of study from one of the following:

PSYC 193	Field Study	5
PSYC 193I	International Field Study	10
PSYC 194A	Research Internship in Developmental Psychology	5
PSYC 194B	Research Internship in Cognitive Psychology	5
PSYC 194C	Research Internship in Social Psychology	5
PSYC 194D	Research Internship Clinical Psychology	5
PSYC 195A	Senior Thesis	5
PSYC 195B	Senior Thesis	5
PSYC 195C	Senior Thesis	5

PSYC 193I is equivalent to two quarters of field study and will satisfy the Advanced Requirement in its entirety.

One upper-division course outside of psychology:

One upper-division course, numbered 100-189, from one of the following related areas outside of Psychology. The course must be 5 credits, and neither cross-listed with Psychology nor taught by Psychology faculty. Please check with an advisor if you are a double major or minor in one of the following subjects:

- Anthropology
- Community Studies
- Critical Race and Ethnic Studies
- Ecology and Evolutionary Biology
- Economics
- Education
- Environmental Studies
- Feminist Studies
- History of Consciousness
- Latin American and Latino Studies
- Legal Studies
- Linguistics
- Philosophy
- Politics
- Sociology
- Or a specific course from the list below:

APLX 102	Bilingualism	5
APLX 116	Discourse Analysis: Language Use and Context	5

CMPM 146	Game AI	5
CMPM 148	Interactive Storytelling	5
CSE 104	Computability and Computational Complexity	5
CSE 140	Artificial Intelligence	5
HAVC 141F	The Camera and the Body	5
HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HAVC 141O	Sex, Lies, and Surveillance: Contemporary Documentary Arts	5
HAVC 185	Community Engagement Through the Arts	5
HAVC 186	Horror and Gender in Art and Visual Culture	5
METX 108	Introduction to Research Methods in Global and Community Health	5
METX 135	Functional Anatomy	5
STAT 131	Introduction to Probability Theory	5
STAT 132	Classical and Bayesian Inference	5

METX 108 will **NOT** be accepted as a substitution for PSYC 100.

Upper-Division Seminar:

One of the upper-division courses must be an upper-division seminar; these courses are Psychology courses identified within the General Catalog by their course descriptions containing the phrase “satisfies seminar requirement.” These are any course in the PSYC 119, 139, 159, or 179 series.

Students can access a full list of courses on the department’s website. Upper-division courses and their catalog descriptions are grouped within each of the subfields.

Electives

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in Psychology is satisfied by completing PSYC 100 and a seminar. Seminar courses are Psychology courses identified within the General Catalog by their course descriptions containing the phrase “satisfies seminar requirement” and are numbered PSYC 119A-Z, PSYC 139A-Z, PSYC 159A-Z, and PSYC 179A-Z.

Comprehensive Requirement

UC Santa Cruz requires that every student satisfy a senior exit/comprehensive requirement prior to graduation. Psychology students will satisfy this requirement by receiving a passing grade in a Psychology seminar, which is also part of the DC requirement (see above). Passing a seminar course is also required for the major. Courses that meet this requirement are designated as seminars in the campus catalog as “satisfies seminar requirement.” These are any course in the PSYC 119, 139, 159, or 179 series.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Following are two recommended academic plans for frosh and one additional plan for transfer students. Plan One is a suggested guideline for frosh who are committed to the major early in their academic career. Plan Two is for frosh who are considering the major or who need more preparation. Students should note that precalculus (AM 3, or see Lower Division Courses section for other qualifying courses or test scores) is a requirement for the major and is a prerequisite for PSYC 2 and PSYC 100. The third planner is a suggested two-year guideline for transfer students.

Frosh Plan One

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	College 1	PSYC 1 WRIT 1/WRIT 1E (if needed) AM 3	PSYC 2	
2nd (soph)	PSYC 20 WRIT 2*	PSYC 10	PSYC 100	
3rd (junior)	Upper-division Cognitive	Upper-division Developmental Out of department course	Upper-division Social	
4th	PSYC	PSYC 193/	Upper-	

(senior)	193/ PSYC 194/ PSYC 195	PSYC 194/ PSYC 195	division PSYC elective
	Upper-division PSYC elective	PSYC 181/ PSYC 182	Upper-division PSYC elective (seminar)

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the PE, SR, and DC general education requirements. All other GE requirements have to be satisfied.

Frosh Plan Two

	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 2	PSYC 1 WRIT 1/WRIT 1E (if needed)	PSYC 20	
2nd (soph)	AM 3 WRIT 2*	PSYC 2	PSYC 10	
3rd (junior)	PSYC 100	Upper-division Cognitive Out of department course	Upper-division Developmental	
4th (senior)	PSYC 193/ PSYC 194/ PSYC 195	PSYC 193/ PSYC 194/ PSYC 195	Upper-division PSYC elective	
	Upper-division PSYC elective	PSYC 181/ PSYC 182	Upper-division PSYC elective (seminar)	
	Upper-division Social			

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the PE, SR, and DC general education requirements. All other GE requirements have to be satisfied.

Transfer Plan

	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	PSYC 100	Upper-division Developmental	Upper-division Social	
	PSYC 10	Out of department course	PSYC 20	
4th (senior)	PSYC 193/ PSYC 194/	PSYC 193/ PSYC 194/ PSYC 195	Upper-division PSYC	

PSYC 195		elective (seminar)
Upper-division PSYC elective	PSYC 181/ PSYC 182	Upper-division PSYC elective
Upper-division Cognitive		

COGNITIVE SCIENCE B.S.

Information and Policies

Introduction

Program Learning Outcomes

Students who complete the cognitive science major should demonstrate competency in:

- **Application of knowledge with critical thinking skills.** Students should be able to use critical thinking to evaluate and interpret evidence, and to apply cognitive science concepts, theories, and research findings to individual, social, and cultural issues.
- **Application of research methods with values and integrity.** Students should be able to apply basic research methods in cognitive science, with sensitivity to ethical principles.
- **Communication skills.** Students should be able to demonstrate effective communication skills following professional conventions in cognitive science appropriate to purpose and context.
- **Awareness of methodological and theoretical diversity.** Students should be able to understand the complexities of cognition using neural, embodied, social, and/or technological approaches.

Academic Advising for the Program

The Psychology Department has an advising office located at 150 Social Sciences 2 and can also be reached at psyadv@ucsc.edu. The advisors assist students in obtaining information regarding major requirements and petitions, course planning, substitution of transfer courses for advance enrollment, careers, and graduate schools. Students are encouraged to take advantage of the advising office throughout their college career. Transfer students are encouraged to consult the Transfer Information and Policy Section.

Acceptance to the Cognitive Science Major

Students are admitted to the University of California, Santa Cruz with a "proposed major" in most cases, and later petition to officially declare the major. Admission to UC Santa Cruz does not guarantee acceptance into a particular major. Students must declare a major by the major declaration deadline during their sixth quarter at UCSC. Junior transfer students must declare a major no later than the deadline during their second quarter at UCSC. Learning about and preparing for the major should be primary goals for students.

Getting Started in the Major: Frosh

Students who enter UC Santa Cruz as frosh/first-year students are required to formally declare a major before enrolling in their 7th quarter/third year at UCSC. It is strongly recommended that students interested in pursuing the cognitive science major complete major requirements by the start of their 6th quarter or have no more than one requirement in progress during the 6th quarter. Students should complete PSYC 20, the statistics requirement, the calculus requirement, and the computer programming requirement. These classes should be taken for a letter grade. After completing these four lower-division required courses, students may petition to declare the cognitive science major subject to the grade requirements described in the Major Qualification section below. Students are recommended to fulfill major qualifications as early as possible to avoid delays in the major declaration and enrollment processes. Refer to the Requirements and Planners section below and consult with a department advisor early to begin the process toward the completion of major qualifications and major declaration. High school students considering cognitive science as their university major find that the best preparation is a solid general education in English writing, mathematics at least through precalculus, biological and physical sciences, and social sciences.

Transfer Information and Policy

Transfer Admission Screening Policy

Transfer students who want to pursue the cognitive science major, must have applied and been admitted to UC Santa Cruz as a proposed cognitive science major. The following calculus, statistics, and programming courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall. Some courses may be satisfied via exam credit.
All courses must be passed with a grade of C (2.0) or better and a cumulative GPA of 2.8 must be obtained across the required courses. Students with exam credit for any of the courses need only receive a 2.8 GPA in the remaining coursework.

Calculus

One of the following:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5

MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Statistics

One of the following

	Either this course	
PSYC 2	Introduction to Psychological Statistics	5
	or this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Programming

One of the following:

CSE 13S	Computer Systems and C Programming	7
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
ECE 13	Computer Systems and C Programming	7

Recommended Prior to Transfer

Though not required, students are recommended to complete the following prior to transfer:

PSYC 20	Cognition: Fundamental Theories	5

Getting Started in the Major: Transfer Students

Students are admitted to UC Santa Cruz with a "proposed major", and later petition to officially declare the major. Transfer students who want to pursue the cognitive science major, must have applied and been admitted to UC Santa Cruz as a proposed cognitive science major. Transfer students' records are screened for preparation for the cognitive science major at the time of admission. In order to successfully transition to UCSC, transfer students must be formally declared by the deadline in their second quarter of enrollment. Students are advised to set up and check their UCSC email regularly, make contact with their major advisors, submit course descriptions for articulation purposes, and consider taking summer session courses prior to their first fall quarter.

Admitted transfer students who satisfy the requirements of the screening policy can declare the major at any time after matriculation at UC Santa Cruz and by their second quarter declaration deadline. See the How to Declare the Major Section.

Major Qualification Policy and Declaration Process

Major Qualification

Students may petition to declare the cognitive science major once they have completed the lower-division requirements by the start of their 6th quarter or have no more than one requirement in progress during the 6th quarter (for students who enter as frosh) or their second quarter of enrollment (for transfer students).

All courses must be passed with a grade of C (2.0) or better and a cumulative GPA of 2.8 must be obtained across the required courses. Some courses may be satisfied via exam credit. Students with exam credit for any of the courses need only receive a 2.8 GPA in the remaining coursework.

Transfer students might be able to petition to substitute equivalent courses they have taken from other institutions. Some courses taken at community colleges may already qualify to satisfy some of our lower-division requirements. Students not meeting the grade requirements in the lower-division courses may take any of the listed alternatives as substitutions; the department will use the highest grade to compute GPA.

Introduction to Cognition

Take the following course:

PSYC 20	Cognition: Fundamental Theories	5

Statistics

Choose one of the following courses:

	Either this course	
PSYC 2	Introduction to Psychological Statistics	5
	or this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Lecture and lab combinations count as a single course

Calculus

Choose one of the following courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5

MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Computer Programming

Choose one of the following courses:

CSE 13S	Computer Systems and C Programming	7
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
ECE 13	Computer Systems and C Programming	7

CSE 20 may be satisfied by successfully completing the CSE 20 Test Out Exam.

Appeal Process

Students who did not satisfy the major admission requirements by their declaration deadline, but believe there are extenuating circumstances concerning their performance in the foundational courses may file an appeal for department review.;. For more information on the appeals process, please make an appointment with a staff advisor or email psyadv@ucsc.edu. The department will notify the student of the decision within 7-10 days of the receipt of the appeal.

How to Declare a Major

Students should submit a petition to declare as soon as they complete the major qualification (MQ) courses or reach their declaration deadline quarter, whichever comes first. Transfer students can petition to declare their major as early as the first day of instruction during their first quarter at UCSC.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh, in the second quarter of enrollment for transfers), will either be approved or denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed MQ courses.

To petition to declare the major, students should follow the instructions on the department's website.

Letter Grade Policy

All lower-division courses required for major declaration have to be taken for a letter grade. In the instance that they are taken for Pass/No Pass, a Pass grade will be accepted, but will be considered as equivalent to a C in the 2.8 GPA calculation requirement.

[Optional Catchall]

Course Substitution Policy

Students who want to fulfill requirements with courses taken at other colleges (excluding articulated courses from California Community Colleges) must petition for the substitution of their transfer courses via email to psyadv@ucsc.edu. PSYC 100, Research Methods in Psychology, and the senior seminar must be taken at UC Santa Cruz. Students planning to transfer to UC Santa Cruz should check with the advising office of their present college, or refer to assist.org.

Double Majors and Major/Minor Combinations Policy

Students wishing to pursue double majors or a major/minor combination are encouraged to meet with an advisor to create an academic plan to do so.

Students who are interested in adding a double major in cognitive science must do so by their original major declaration deadline (i.e. in their sixth quarter for students admitted as frosh). **Transfer students who were not originally screened for and admitted as a cognitive science major may not add cognitive science as a second major.**

Global Learning

Up to three Global Learning courses may be approved for the major and prior course approval is recommended. Global Learning courses equivalent to less than 5 quarter credits (i.e. 4 or 4.5 quarter credits) should be discussed with a psychology undergraduate advisor to ensure major requirements are still met. Please review this webpage if you are considering studying abroad and want to try to obtain approval for such courses to count toward the major.

Honors

Honors in the cognitive science major are awarded to graduating seniors whose UC Santa Cruz grade point average is a 3.6 or higher in psychology courses (1-189).

Highest honors in the major are reserved for students who meet the honors criteria as well as successful completion of a senior thesis, or whose UC Santa Cruz grade point average is a 3.9 or higher in psychology courses (1-189).

Research, Field Study, and Other Educational Opportunities

The Psychology Department offers a range of educational opportunities, including opportunities for undergraduate research and field study. For more information, see the department's educational opportunities website.

Requirements and Planners

Course Requirements

The undergraduate degree program in cognitive science is a program offering a course of study leading to the bachelor of science (B.S.) degree. Fifteen courses (77 credits) are required. Because some courses have additional prerequisites, students should read the descriptions of courses carefully, noting the prerequisites for courses of interest to them. Some courses may be satisfied via exam credit.

Lower-Division Courses

Introduction to Cognition

Take the following course:

PSYC 20	Cognition: Fundamental Theories	5

Statistics

Choose one of the following courses:

	Either this course	
PSYC 2	Introduction to Psychological Statistics	5
	or this course	
STAT 5	Statistics	5
	or these courses	
STAT 7	Statistical Methods for the Biological, Environmental, and Health Sciences	5
STAT 7L	Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory	2

Lecture and lab combinations count as a single course.

Calculus

Choose one of the following courses:

AM 11A	Mathematical Methods for Economists I	5
MATH 11A	Calculus with Applications	5
MATH 16A	Mathematics for Life Sciences	5
MATH 19A	Calculus for Science, Engineering, and Mathematics	5
MATH 20A	Honors Calculus	5

Computer Programming

Choose one of the following courses:

CSE 13S	Computer Systems and C Programming	7
CSE 20	Beginning Programming in Python	5
CSE 30	Programming Abstractions: Python	7
ECE 13	Computer Systems and C Programming	7

Some of these courses have prerequisites. CSE 20 may be satisfied by successfully completing the CSE 20 Test Out Exam.

Upper-Division Courses

Take the following course:

PSYC 100	Research Methods in Psychology	7

Core Courses

Students must complete a course from three of the four following areas:

Perception

PSYC 121	Perception	5

Neuroscience

PSYC 123	Cognitive Neuroscience	5

Language

PSYC 125	Psychology of Language	5

Memory

PSYC 129	Human Learning and Memory	5

Electives

Cognitive Psychology Electives

Students must complete three additional upper-division psychology courses as follows:

One Senior Seminar:

Seminar courses are psychology courses identified within the General Catalog by their course descriptions containing the phrase “satisfies seminar requirement.” These are any courses from the PSYC 119, PSYC 139, PSYC 159, or PSYC 179 series.

Students can access a full list of courses on the department’s website. Upper-division courses and their catalog descriptions are grouped within each of the subfields

Plus two additional courses from the following list:

PSYC 103	Adult Development and Aging	5
PSYC 104	Development in Infancy	5
PSYC 105	Children's Thinking	5
PSYC 109	Psychobiology of Stress and Well-being across the Lifespan	5
PSYC 112	Moral Development	5
PSYC 116	Communication Technologies, Culture, and Human Development	5
PSYC 120	Visual and Spatial Cognition	5
PSYC 120D	Deafness and Sign Language	5
PSYC 121	Perception	5
PSYC 122	The Science of Learning	5
PSYC 123	Cognitive Neuroscience	5
PSYC 124	Psychology of Reading	5
PSYC 125	Psychology of Language	5
PSYC 126	Conversations	5
PSYC 129	Human Learning and Memory	5
PSYC 130	Deception, Brain, and Behavior	5
PSYC 133	Bilingualism from a Cognitive Perspective	5

PSYC 138	Computer Programming for the Cognitive Sciences	5
PSYC 138M	Introduction to Matlab Programming for the Cognitive Sciences	5
PSYC 140F	Mind, Society, and Culture	5
PSYC 147A	Psychology and Law	5
PSYC 181	Psychological Data Analysis	5
PSYC 182	Qualitative Research Methods	5
PSYC 193	Field Study	5
PSYC 193I	International Field Study	10
PSYC 194A	Research Internship in Developmental Psychology	5
PSYC 194B	Research Internship in Cognitive Psychology	5
PSYC 195A	Senior Thesis	5

PSYC 193, PSYC 193I, PSYC 194A, PSYC 194B, and PSYC 195A may satisfy only one elective requirement.

One of these electives may be replaced by a core course that was not used to satisfy the core courses requirement. PSYC 204-PSYC 252, graduate cognitive courses, may be substituted by petition.

Interdisciplinary Electives

Students must complete four interdisciplinary electives from lists of courses pre-approved by the Psychology Department, at least one of which must be upper-division. Students are responsible for planning their course of study to complete any necessary prerequisites for electives they wish to take. A list of possible interdisciplinary elective courses, including prerequisites, are given below.

Lecture and lab combinations count as a single course. For courses with a required concurrently enrolled lab, only successful completion of the lecture is required for the major. Successful completion of the lab may count toward total degree credits.

The upper-division School of Engineering courses in this section have additional prerequisites that are not listed here.

LING 111 formerly LING 55

LING 112 formerly LING 52

PHIL 190 satisfies this requirement by petition only.

ANTH 1	Introduction to Biological Anthropology	5
ANTH 100	History and Theory of Biological Anthropology	5
ANTH 101	Human Evolution	5
ANTH 104	Human Variation and Adaptation	5
ANTH 105	Human Paleopathology	5
ANTH 106	Primate Behavior and Ecology	5
ANTH 112	Life Cycles	5
ANTH 139	Language and Culture	5
ANTH 173	Origins of Farming	5
ANTH 174	Origins of Complex Societies	5
ANTH 184	Zooarchaeology	5
ANTH 194B	Chimpanzees: Biology, Behavior, and Evolution	5
ANTH 194H	Paleoanthropology	5
BIOE 20C	Ecology and Evolution	5
BIOE 109	Evolution	5
BIOE 124	Mammalogy	5
BIOE 124L	Mammalogy Laboratory	2
BIOE 129	Biology of Marine Mammals	5
BIOE 129L	Biology of Marine Mammals Laboratory	2
BIOE 140	Behavioral Ecology	5
BIOE 141L	Behavioral Ecology Field Course	7
BIOE 147	Community Ecology	5
BIOE 172	Population Genetics	5
BIOL 105	Genetics	5
BIOL 120	Developmental Biology	5
BIOL 125	Introduction to Neuroscience	5
METX 41	Physiology of Disease	5
METX 135	Functional Anatomy	5
PHIL 127	Philosophy of Biology	5
PHIL 190	Senior Seminar	5

ARTG 80G	Visual Communication and Interaction Design	5
ARTG 80H	Critical History of Digital Games	5
CMPM 25	Introduction to 3D Modeling	5
CMPM 26	Introduction to 3D Animation	5
CMPM 35	Data Structures for Interactive Media	5
CMPM 80A	Accessible Games	5
CMPM 80H	Human-Centered AI	5
CMPM 80I	Introduction to Human Computer Interaction	5
CMPM 80K	Foundations of Video Game Design	5
CMPM 125	Game Technologies	5
CMPM 131	User Experience for Interactive Media	5
CMPM 146	Game AI	5
CMPM 148	Interactive Storytelling	5
CMPM 177	Creative Strategies for Designing Interactive Media	5
CMPM 178	Human-Centered Design Research	5
CSE 80A	Universal Access: Disability, Technology, and Society	5
CSE 107	Probability and Statistics for Engineers	5
ECE 8	Introduction to Robotics, Automation and Intelligent Control	5
ECE 9	Statics and Mechanics of Materials	5
ECE 167	Sensing and Sensor Technologies	7

MUSC 80L	Artificial Intelligence and Music	5
STAT 131	Introduction to Probability Theory	5

ANTH 139	Language and Culture	5
APLX 102	Bilingualism	5
APLX 116	Discourse Analysis: Language Use and Context	5
LING 50	Introduction to Linguistics	5
LING 53	Semantics I	5
LING 80C	Language, Society, and Culture	5
LING 80D	Language and Mind	5
LING 80K	Invented Languages, from Elvish to Esperanto	5
LING 101	Phonology I	5
LING 102	Phonology II	5
LING 105	Morphology	5
LING 111	Syntactic Structures	5
LING 112	Syntax I	5
LING 113	Syntax II	5
LING 116	Semantics II	5
LING 117	Pragmatics	5
LING 124	Language Typology	5
LING 125	Foundations of Linguistic Theory	5
LING 140	Language Change	5
LING 151	Phonetics II	5
LING 152	Applied Phonetics	5
LING 155	Language and Cognition	5
LING 171	Psycholinguistics I	5
LING 172	Psycholinguistics II	5

PHIL 7	Elementary Logic	5
PHIL 9	Introductory Symbolic Logic	5
PHIL 11	Introduction to Philosophy	5
PHIL 23	Philosophy of Cognitive Science	5
PHIL 80S	The Nature of Science	5
PHIL 100B	The Rationalists	5
PHIL 100C	The Empiricists	5
PHIL 121	Epistemology	5
PHIL 123	Philosophy of Language	5
PHIL 125	Philosophy of Science	5
PHIL 127	Philosophy of Biology	5
PHIL 133	Philosophy of Mind	5
PHIL 135	Philosophy of Psychology	5
PHIL 190	Senior Seminar	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The DC requirement in cognitive science is satisfied by completing PSYC 100, Research Methods in Psychology, and one of the seminar courses offered by the department (listed above)

Comprehensive Requirement

UC Santa Cruz requires that every student satisfy a senior exit/comprehensive requirement prior to graduation. Cognitive science students will satisfy this requirement by receiving a passing grade in a senior seminar which is also part of the DC requirement (see above). To ensure that all students can meet the seminar requirement, students are encouraged to enroll in only one senior seminar. Students are only allowed to enroll in additional seminars after all other students who still need to fulfill their seminar requirement have enrolled.

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Following are two recommended academic plans for frosh, and one for transfer students to complete the cognitive science major. Plan 1 (for frosh) assumes typical curriculum selections. Plan 2 (for frosh) includes two additional interdisciplinary prerequisites, which some students find they need in order to take the upper-division courses they desire. Students who place out of MATH 2 and MATH 3 do not need these courses, which are otherwise prerequisites to calculus, PSYC 2 and PSYC 100.

Frosh Plan One

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	MATH 2 College 1	MATH 3 Programming	Calculus WRIT 2*	

		WRIT 1/WRIT 1E (if needed)	
2nd (soph)	PSYC 20	PSYC 2	
	Interdisciplinary prerequisite	Interdisciplinary prerequisite	
3rd (junior)	PSYC 100	Cognitive core	Cognitive core
	Interdisciplinary elective	Interdisciplinary elective (UD)	Interdisciplinary elective
4th (senior)	Interdisciplinary elective	Senior Seminar	Cognitive elective
	Cognitive core	Cognitive elective	

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the SR, MF, and DC general education requirements. All other GE requirements have to be satisfied.

Frosh Plan Two

Year	**Fall**	**Winter**	**Spring**	**Summer**
Entering				College 1A
				Summer Edge (optional)
1st (frosh)	MATH 2	MATH 3	Calculus	
	College 1	Programming	WRIT 2*	
		WRIT 1/WRIT 1E (if needed)		
2nd (soph)	PSYC 20	PSYC 2		
	Interdisciplinary prerequisite	Interdisciplinary prerequisite	Interdisciplinary prerequisite	
3rd (junior)	PSYC 100	Cognitive core	Cognitive core	
	Interdisciplinary elective	Interdisciplinary elective (UD)	Interdisciplinary elective	
4th (senior)	Cognitive core	Senior Seminar	Cognitive elective	
	Interdisciplinary elective	Cognitive elective		

* WRIT 2 should be taken in or before spring quarter of the second year.

The courses listed above will satisfy the SR, MF, and DC general education requirements. All other GE requirements have to be satisfied.

Transfer Plan

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
3rd (junior)	PSYC 20 PSYC 100	Cognitive core Interdisciplinary elective	Cognitive core Interdisciplinary elective	
4th (senior)	Cognitive elective Interdisciplinary elective	Cognitive core Cognitive elective	Senior Seminar Interdisciplinary elective (upper-division)	

PSYCHOLOGY PH.D.

Introduction

The psychology program offers three areas of specialization leading to the doctoral degree: cognitive, developmental, and social psychology. The program prepares students for research, teaching, and administrative positions in colleges and universities as well as for positions in schools, government, and other public and private institutions. Each student is primarily associated with one of the three research areas and participates in the courses and research forums sponsored by the faculty in that area. The program requires full-time enrollment as a graduate student. Although applicants for a master's degree are not accepted, students in the doctor of philosophy (Ph.D.) program may obtain a master of science (M.S.) degree by fulfilling requirements listed in the department's Graduate Student Handbook. Note that the program does not offer courses, training, or supervision in clinical psychology.

The cognitive psychology graduate program focuses on foundational cognitive processes and how they function in the real world. We investigate three interconnected areas that form the core of cognitive psychology: perception and performance, learning and memory, and language and interaction. Using a combination of human behavior, neuroscience, and computational modeling to characterize human cognitive processes, we are exploring topics such as reading, speaking, and discourse processing; language production and comprehension; bilingualism and multilingualism; remembering and forgetting; metacognition in learning and memory; creative cognition; cognitive offloading and transactive memory; socially distributed remembering and collective memory; human performance, information processing, and computational cognitive modeling; working memory and executive control; visual psychophysics; face perception; sensory integration; music perception; perception in virtual reality; cognitive and computational neuroscience; perceptual decision-making, attention, and awareness. Beyond addressing basic scientific questions in these areas, our faculty also consider real-world implications (e.g., techniques for learning better in the classroom), cross-disciplinary connections (e.g., with biologists, computer scientists, and linguists), and clinical applications (e.g., misophonia, schizophrenia, and other cognitive disorders). Our Ph.D. graduates go on to successful careers in both academia — as postdoctoral fellows and tenure-track faculty at teaching and research institutions across the country — and industry — with some of our recent graduates leading user experience (UX) and data science teams.

The developmental psychology graduate program focuses on research that integrates cultural, interpersonal, and individual aspects of human development. We emphasize understanding the lived experience of children, youth, and young adults in their cultural communities and social-structural contexts. We focus especially on issues of diversity in relation to culture, ethnicity, race, gender, sexuality, and social-economic opportunity as people engage across contexts of family, peers, schools, museums, community, technology, and media. Our programs of research include language and cognitive development; social development; personal and social identities; gender development; political development; neurodiversity; learning through observation and social interaction; children and playable media; communication technologies; stress and well-being; prejudice and discrimination; STEM learning; school climate, belonging, and motivation; the transition to adulthood; and diversity issues in university outreach programs. Several of our faculty carry out research in cultural communities outside the U.S. and collaborate with faculty in the U.S. and other countries. At UC Santa Cruz, our interdisciplinary collaborations—spanning fields such as education, computer engineering, computational media, epigenetics, Latin American and Latino studies, linguistics, and philosophy—nurture students' research and prepare them for a wide variety of careers. Graduates of our program hold positions in academia, research institutes, and community and non-profit organizations.

The social psychology graduate program at UC Santa Cruz has a unique mission and focus. We use Kurt Lewin's model of "full-cycle" social psychology (theory-application-action) to study a broad range of topics related to social justice. In

this way, knowledge gained in action-oriented research, in turn, leads to the development of new theory. Accordingly, our students learn to apply psychological theories and data to the analysis and solution of a wide range of social problems. Our students are trained to use a variety of qualitative, quantitative, and mixed research methods (e.g., survey, participatory action research, ethnography, lab or field experiments) and to examine justice-related issues in different cultural, political, and policy contexts. They are also encouraged to attend to issues of race, class, sexuality, ethnicity, gender, and ableness; and, in addition to traditional social psychological approaches, they learn about critical theoretical perspectives such as feminist and queer theory, critical race theory, decolonial theory, social constructivism, and intersectionality. Our graduates go on to successful careers in academia as well as in community, government, and non-profit settings. Our approach to research and training, combined with the breadth of scholarship among our faculty, make our program among the nation's most distinctive for the psychological study of social justice issues. Current faculty research interests include: aggression and trauma; educational equity, access, and servingness; feminisms; institutional analysis; intersectionality; narrative and identity; race as a social process; social identities and stigmatization of immigrant-origin students; poverty and economic justice; power and oppression; emotions; critical carceral studies; psychology and law; collective action and social movements; political psychology; sexual and gender diversity; sexuality; social identity; social policy analysis; and structural inequality.

Graduate students in psychology may obtain a designated emphasis on the psychology Ph.D. diploma indicating that they have obtained additional training in another discipline such as critical race and ethnic studies, data science, feminist studies, Latin American and Latino studies, or sociology. For the full list of programs that offer a designated emphasis, see the Academic Programs section of the catalog. For specific requirements for a designated emphasis in a program, please refer to the program statement for that department.

Details on the policies for admission to graduate standing and requirements for the Ph.D. degree, as well as the online application can be found on the Division of Graduate Studies website. The department's graduate program brochure, and faculty research are available on the department website.

Advancement to Candidacy

Course Requirements

First-Year and Second-Year Project:

Students enrolled in the psychology graduate program will complete a first-year and second-year research project. All students must enroll and participate in the colloquium series in their graduate program each quarter that they are in residence.

PSYC 230	Research in Cognitive Psychology Seminar	5
PSYC 231	Research in Social Psychology Seminar	5
PSYC 242	Research in Developmental Psychology Seminar	5

Statistics

First-year students must take two courses in statistics:

PSYC 204	Quantitative Data Analysis	5
PSYC 214A	Multivariate Techniques for Psychology	5

Plus a Two-Quarter Proseminar Sequence During Fall and Winter Quarters

For Cognitive

PSYC 224A	Proseminar: Cognitive I	5
PSYC 224B	Proseminar: Cognitive II	5
PSYC 224C	Proseminar: Cognitive III	5

For Developmental

PSYC 244A	Proseminar I: Cognitive and Language Development	5
PSYC 244B	Proseminar II: Social and Personality Development	5

Additional Requirements for the Developmental Area

PSYC 225A	Introduction to Developmental Research I	3
PSYC 225B	Introduction to Developmental Research II	3
PSYC 225C	Introduction to Developmental Research III	5
PSYC 246	Cultural Diversity in Human Development	5

For Social

PSYC 211A	Proseminar: Social Justice and the Individual	5
PSYC 211B	Social Justice, Society, and Policy	5
PSYC 211C	Communicating in Social Psychology	3

Additional Requirements for the Social Area

Both of these courses

PSYC 210	The Experimental Method in Social Psychology	5
PSYC 248	Survey Methods	5

Plus four additional courses

One other advanced social graduate seminar; a graduate course in cognitive psychology; a graduate course in developmental psychology; and a substantive advanced course in a discipline other than psychology.

Plus one of the following

PSYC 249	Field Methodologies and Social Ethnography	5
PSYC 255	Qualitative Inquiry in Psychology	5
PSYC 261	Participatory Action Research	5

Letter Grade

Students are required to take their graduate courses as satisfactory/unsatisfactory.

Foreign Language Requirements

Teaching Requirements

Students are required to serve as a teaching assistant for at least two courses during their graduate career, one of which must be PSYC 10 for developmental and any social psychology course (numbered PSYC 40 or PSYC 140 - PSYC 158) for social.

Pre-Qualifying Requirements

Qualifying Examination

After satisfying the formal course and research requirements, psychology graduate students must take an oral examination to qualify as a candidate for the Ph.D., ideally by the end of their third year. The qualifying examination is intended to assess a student's knowledge of psychology and competence to conduct the dissertation research. For the qualifying examination, students prepare a list of readings representative of their expertise in three areas of psychology, write a major paper that reflects a conceptual analysis of their main research area, and satisfactorily complete an oral qualifying examination.

Post-Qualifying Requirements

[Optional Catchall]

Dissertation

Dissertation

Within a year of advancing to candidacy, students will prepare a written dissertation proposal that should demonstrate the student's in-depth knowledge of some research topic, along with a detailed outline of the empirical research to be conducted for the dissertation. The student's dissertation committee reviews the proposal, and the student will orally defend the proposal for approval by the committee.

Dissertation Defense

After the final draft of the dissertation has been completed and submitted to the faculty committee members, students defend their thesis in an oral exam. In exceptional circumstances students may request a waiver of this requirement.

The Ph.D. degree is awarded upon successful completion and submission of the dissertation.

Academic Progress

Applying for Graduation

[Optional Catchall]

Sociology

226 Rachel Carson College
(831) 459-4888
https://sociology.ucsc.edu/

PROGRAMS OFFERED

Sociology B.A. (p. 854)

Digital Justice Studies (DJS) Minor (p. 863)

Sociology Ph.D. (p. 863)

Sociology Designated Emphasis (p. 865)

OTHER PROGRAMS OF INTEREST

Latin American and Latino Studies/Sociology Combined B.A. (p. 807)

Sociology is the study of social interactions among individuals and social groups. More specifically, sociologists examine the cultural, ideological, economic and political contexts of human action including the processes whereby social institutions are created, maintained, and transformed.

Sociology was born as an intellectual response to the democratic and industrial revolutions that ushered in the modern era. As such, it considers how society is organized in relationship to a vision of a just, free, and equal society—a vision that may require fundamental social change. Developing an understanding of both social change and social justice as part of the sociological tradition is one of the teaching goals of sociologists at UCSC. In the process, we expect to develop in students an appreciation for the craft of social science: disciplined inquiry, observation, and research as part of informed global citizenship.

Our faculty have expertise in topics that include, but are not limited to:

- Children, youth, and families
- Civic engagement, voting, and citizenship
- Community-engaged research
- Critical Race and Ethnic Studies
- Cultural politics and the politicization of culture
- Cultural politics of sex work
- Critical ethnography
- Digital media

- Drugs, botanicals, and pharmaceuticals in society
- Education (K-12 and higher education)
- Environmental sociology
- Feminist studies
- Global and community health
- Globalization and international development
- Health, medicine, and wellness
- Human rights and health justice
- Identities and identity changes
- Immigration and migration
- International law
- Intersection of race, class, gender and sexualities
- Labor studies
- Latinx communities
- Law and society
- Mass media and digital technology
- Medicine and technology
- Mortality studies
- Political economy
- Popular culture and cultural studies
- Public policy
- Queer studies
- Science and technology studies
- Social movements
- Sociology of emotion and affect
- Survey design and quantitative data analysis
- Sustainability
- Technology and social change
- Traditional and holistic medicine
- Urban studies

Sociology faculty use a number of approaches and methods, including field research, critical ethnography, cultural analysis, comparative historical analysis, and quantitative techniques.

UNDERGRADUATE PROGRAM

The sociology major at UC Santa Cruz is a rigorous program of study that retains enough flexibility to accommodate students with diverse career goals and plans. It ensures that all students are trained in the main theoretical and methodological traditions of sociology, yet permits considerable variation in students' own areas of specialization. The major provides the necessary intellectual foundation for students who are considering graduate studies in sociology and related social sciences. It also can be used as preparation for careers in fields as diverse as law, social work, management, environmental planning, public service, education, health services, journalism, and counseling. Finally, the sociology major can provide a general liberal arts education for undergraduates interested in the study of contemporary society and social problems.

Because of the interdisciplinary emphasis among sociology faculty, undergraduates find the department amenable for double majors and minors, and non-majors find many sociology courses of interest. In recent years, students have conducted independent studies and written senior theses on a variety of subjects including undocumented immigrants, cultural diversity and inclusion in education, low-wage workers in Santa Cruz County, housing shortage, race and musical theater, homelessness, critical environmental education, food sovereignty, Hispanic-Serving Institution (HSI) Initiatives at UCSC, using technology for social good, incarceration and health care, weight stigmas and eating disorders, and belonging and exclusion.

The Sociology Department offers two undergraduate majors: 1) a general sociology major; 2) a sociology major with an intensive concentration in Digital Justice Studies (DJS). Students also have the option of a combined major in Latin American and Latino studies (LALS) and sociology, which can be found through the LALS Department. Additionally, there is a minor in DJS that is open to students in any major.

Digital Justice Studies

Digital Justice Studies (DJS) is sponsored by the Sociology Department at UC Santa Cruz. It is a rigorous and innovative program, developed in collaboration with the Everett Program for Technology and Social Change, that focuses on the equitable and fair access to, participation in, and governance of digital technologies and digital ecosystems. It aspires to create a new generation of well-trained advocates for social justice and sustainable development, who use the tools of information technology and social enterprise to solve global problems. Practically, students develop projects in solidarity with local and global organizations to democratize globalization, deepen social justice, reduce poverty, support digital education, and advance the transition to a sustainable world. The Everett Program combines social entrepreneurship with peer-to-peer and near-to-peer trainings in information technologies with the aim that students learn how to be innovative and creative problem-solvers in order to increase the informational, communication and organizational capacity of community and non-governmental organizations (NGOs). The DJS program provides an excellent foundation for students pursuing careers in non-profit management, social advocacy, sustainable businesses, and technology. Depending on a student's major, there are two ways to enter the DJS program. If a student is a sociology major and wishes to

participate in DJS, they should declare the sociology major with intensive concentration in DJS. A student who majors in any field other than sociology should declare DJS as a minor.

GRADUATE PROGRAM

The Sociology Department at UC Santa Cruz is intellectually innovative, both in its interdisciplinary emphasis and in its commitment to inquiry that is engaged with the world beyond the university. The Ph.D. program is designed to educate students in sociological theory and methods and in the discipline's major substantive areas while simultaneously exposing students to other arenas of intellectual inquiry that will aid them as they pursue their research questions and interests. After completing a group of required courses, students work closely with individual faculty members in designing their course of study. The program leads to a doctor of philosophy (Ph.D.) degree in sociology and prepares students for both academic and non-academic careers. The department does not offer a terminal master of arts (M.A.) program. However, students have the option of applying for a non-terminal master's degree en route to the Ph.D.

SOCIOLOGY B.A.

Information and Policies

Introduction

Program Learning Outcomes

The sociology curriculum prepares students graduating with a bachelor of arts degree to demonstrate the following program learning outcomes:

1. Critical Thinking: Demonstrate critical thinking skills by analyzing and evaluating social, political, and/or cultural arguments, across a variety of areas such as inequality; social problems; and race, class, and gender.

2. Sociological Understanding: Demonstrate sociological understandings of phenomena, for example, how individual biographies are shaped by social structures, social institutions, cultural practices, and multiple axes of difference and/or inequality.

3. Written and Oral Communication: Formulate effective and convincing written and/or oral arguments.

4. Social Theory: Demonstrate the ability to use several of the major classical or contemporary perspectives in social theory.

5. Research Methodology: Demonstrate the ability to use several of the major social science research methodologies.

Academic Advising for the Program

For sociology-related advising inquiries contact:

socyadvising@ucsc.edu
831-459-4888

Visit the sociology website for additional advising information, including advising hours, appointments, and peer advising.

Sociology advising is located in Rachel Carson College Academic Building, Rm 226.

Transfer students must also review the Transfer Information and Policy section below.

Getting Started in the Major: Frosh

This major is not highly sequential or course intensive. Although it is advisable to begin taking courses toward the major in the first year, it is not required. This major does not require a math placement nor a language placement exam.

Transfer Information and Policy

Transfer Admission Screening Policy

The following courses or their equivalents are required prior to transfer, by the end of the spring term for students planning to enter in the fall:

SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5

A minimum grade of C or better must be obtained in each of the courses listed above.

Getting Started in the Major: Transfer Students

Transfer students who meet the selection criteria and are offered admission are admitted as proposed sociology majors and are eligible to declare the Sociology B.A. upon matriculation. They must work with the sociology department advising office when they arrive on campus to begin the process to declare the major and prepare for enrollment. Declaration of the major for transfer students must be completed by the campus declaration deadline, in the second term of residency.

If a student enters in the winter quarter, it is highly recommended to have taken SOCY 3A or its articulated equivalent at their previous institution. If possible, having taken SOCY 3B or its equivalent is recommended to ensure timely graduation.

If a student enters in the fall quarter as a proposed sociology major, they must take SOCY 3A at UC Santa Cruz that quarter if they have not satisfied the articulated equivalent at their previous institution.

If a student transfers in either fall or winter quarter and they have already taken SOCY 3A or its articulated equivalent at their previous institution, they are recommended to take SOCY 105A in their quarter of entry.

In addition, transfer students who are pursuing the DJS intensive concentration are required to take SOCY 30A in order to qualify for the concentration and to begin the yearlong DJS course series.

Transfer students who are proposed in a different major when they come to UC Santa Cruz require permission from the department to change into the sociology major. Students must work with the sociology department advising office to discuss the change of major process.

Major Qualification Policy and Declaration Process

Major Qualification

General Sociology Major

Students must take two of the following courses, and pass each with C+ or better, to qualify:

SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Sociology Major with an Intensive Concentration in DJS

Students must take three courses, for a letter grade, to qualify for Sociology with a Concentration in Digital Justice Studies (DJS). The following course is required:

SOCY 30A	Introduction to Digital Justice Studies	5

Plus two of the following courses

SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Students are required to pass each of the courses with a B- or better, and obtain approval from the faculty director, to qualify for the DJS concentration. Students transferring in the articulated equivalents to SOCY 1 and SOCY 10 will only be required to meet the B- or better requirement in SOCY 30A. SOCY 1 and SOCY 10 taken outside of UC Santa Cruz will be accepted with grades of C or better. Students will begin the approval process while enrolled in SOCY 30A. Prior to enrollment into the second course in the series, SOCY 107A, the faculty director works with students to ensure there is an appropriate match between student interests and project partners.

How to Declare a Major

Students should submit a petition to declare their major through the MyUCSC Undergraduate Student eForms as soon as they have met the major qualification requirements and/or reach their declaration deadline quarter, whichever comes first.

Students petitioning when the campus declaration deadline is imminent (i.e., in their sixth quarter, for students admitted as frosh), will either be approved, denied, or provided with conditions (e.g., completion of some courses with certain grades) that will be resolved within at most one more enrolled quarter, even if they have not completed courses.

Students pursuing a double major or major/minor must also work with the department advising office to create an academic plan for the major. For information about the declaration process please review the Sociology Department website.

Appeal Process

Students who are informed that they are not eligible to declare the major may appeal this decision by submitting a letter to the Sociology Department Undergraduate Education chair within 15 days from the date of notification. Within 15 days of receipt of the appeal, the department will notify the student and college of the decision. Letters of appeal should describe any extenuating circumstances that might have affected the student's record. Students should submit the appeal letter via email to socyadvising@ucsc.edu. Students may contact the sociology department advising office for any questions.

Letter Grade Policy

All major qualification courses must be taken for letter grades. All other major requirements may be taken as a letter grade or Pass/No Pass. No more than 25 percent of credits earned at UC Santa Cruz may be graded on a Pass/No Pass basis. Students must be in good academic standing to choose the Pass/No Pass option.

[Optional Catchall]

Course Substitution Policy

Sociology B.A. students may substitute two of the upper-division advanced coursework requirements with upper-division electives from other UC Santa Cruz departments, individual study courses, Global Learning electives, or other four-year institution electives. Students pursuing the DJS concentration or minor have no course substitution limits of the upper-division advanced coursework requirement. Course substitutions must be pre-approved through the department for both the Sociology B.A. (p. 870) and the DJS concentration or minor, or students may submit a petition for approval of the course prior to applying it to the major. Review the sociology webpage for information about the petition process.

Double Majors and Major/Minor Combinations Policy

Global Learning

Students seeking to participate in a Global Learning program must be declared in their major prior to their departure.

It is recommended that the students have the courses intended to be taken abroad reviewed and approved by the Sociology Department prior to departure, if possible. Up to two relevant courses taken through Global Learning programs from which credits are transferable to UC Santa Cruz may be used toward satisfaction of the sociology B.A. elective requirements when the content is deemed appropriate and approved by the Sociology Department. Up to five relevant courses taken through Global Learning programs from which credits are transferable to UCSC may be used toward satisfaction of the sociology B.A. with an intensive concentration in DJS

elective requirements when the content is deemed appropriate and approved by the Everett/DJS program faculty director.

Visit the sociology webpage for additional information and planners for Global Learning.

Honors

The Sociology Department awards honors in the major based on the student's cumulative GPA for all courses taken though UC Santa Cruz to satisfy the program's major requirements. Students with a GPA of 3.75 or above will be considered for honors in the major. Students with a GPA of 3.9 or above will be considered for highest honors in the major. No more than approximately 15 percent of the graduating class will be considered for honors or highest honors in the major. Comprehensive honors is awarded to students who complete the senior thesis option, and their faculty thesis sponsor and one additional reader evaluate the thesis to be of honors quality.

[Optional Catchall]

General Sociology Major

Course Requirements

Sociology majors are required to take a total of 11 courses (two lower-division courses in preparation for the major, two prescribed lower-division core courses, two prescribed upper-division core courses, and five upper-division electives). In addition, they must successfully complete the comprehensive requirement prior to graduation.

Lower-Division Courses

Lower-division preparation:

All sociology majors are required to take two lower-division preparation courses, or their articulated equivalents.

Select two from the following three courses:

SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Lower-division core courses:

The following two sociology courses, or their articulated equivalents, are required as the foundation of statistical and research methods in the discipline.

SOCY 3A	The Evaluation of Evidence	5
SOCY 3B	Statistical Methods	5

Sociology majors who are pursuing a double major or minor in Latin American and Latino Studies (LALS) may substitute SOCY 3A with LALS 100A. Sociology majors who are double majoring in psychology or cognitive science, may substitute SOCY 3A with PSYC 100. The opposite substitution does not apply; neither LALS 100A nor PSYC 100 can be substituted with SOCY 3A.

STAT 5, STAT 7, PSYC 2, or their articulated equivalents, as well as an AP Statistics score of 4 or more, may substitute for SOCY 3B.

Upper-Division Courses

Upper-division core courses:

The following two sociology courses are required as the foundation of theoretical training in the discipline.

SOCY 105A	Classical Social Theory	5
SOCY 105B	Contemporary Social Theory	5

Upper-division advanced coursework:

Five sociology electives of 5 credits or more, numbered 110-189 are required. The Sociology Department offers electives that reflect a wide range of ideas within the discipline and the diversified research interests of the faculty. Up to two pre-approved outside courses can count toward the upper-division advanced coursework. See the Course Substitution Policy section for more details.

The annual course offerings can be viewed on the sociology webpage.

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The goal of the Sociology Department's Disciplinary Communication requirement is to ensure that students acquire and develop the skills in writing and other forms of communication that will best serve them in their study of sociology, and as future learners. The following courses satisfy the Disciplinary Communication requirement for students in programs administered by the Sociology Department.

SOCY 105A	Classical Social Theory	5
SOCY 105B	Contemporary Social Theory	5

Comprehensive Requirement

Prior to graduation, all sociology majors are required to complete one of the following comprehensive requirements.

Senior Seminar

SOCY 196S	Senior Seminar	5

Sociology Graduate Course

Students may satisfy the comprehensive requirement by successfully completing a 5-credit graduate-level sociology course, numbered SOCY 201-SOCY 294. Enrollment into a graduate-level sociology course is by invitation or approval of the course instructor.

Senior thesis

SOCY 195A	Senior Thesis	5
SOCY 195B	Senior Thesis	5
SOCY 195C	Senior Thesis	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sociology Four-Year Major Planner

The following is a recommended academic plan for students in the sociology major.

Option One

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	SOCY 1	SOCY 10 WRIT 1/WRIT 1E (if needed)		
2nd (soph)	SOCY 3A WRIT 2*	SOCY 3B		
3rd (junior)	SOCY 105A SOCY upper-division elective	SOCY 105B SOCY upper-division elective	SOCY upper-division elective	
4th (senior)	SOCY upper-division elective	SOCY upper-division elective	SOCY 196S or SOCY graduate course (or in fall or winter) (or thesis fall-winter-spring)	

* WRIT 2 should be taken in or before spring quarter of the second year.

Option Two

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)		WRIT 1/WRIT 1E (if needed)	SOCY 1	
2nd (soph)	SOCY 15 WRIT 2*			
3rd (junior)	SOCY 3A	SOCY 3B	SOCY upper-division electiv	

			e
	SOCY upper-division elective	SOCY 105A	SOCY 105B
4th (senior)	SOCY upper-division elective	SOCY upper-division elective	SOCY 196S or SOCY graduate course (or in fall or winter) (or thesis fall-winter-spring)
	SOCY upper-division elective		

* WRIT 2 should be taken in or before spring quarter of the second year.

All sociology majors are required to take SOCY 3B which also satisfies the SR general education (GE) requirement. SOCY 15, which satisfies the CC GE, may be selected as one of the major qualification course options. In addition, students may satisfy the CC, ER, IM, SI, TA, PE, and PR GE requirements by selecting certain upper-division sociology electives. Visit the Office of the Registrar's website for an up-to-date list of the sociology upper-division electives that satisfy GE requirements. The MF and composition GE requirements are not offered through the sociology department.

Sociology Three-Year Major Planner

Three-year pathways are most appropriate for students who plan a single major, who have satisfied the Entry-Level Writing Requirement before their first quarter, and who are committed to enrolling in Summer Session after their first and second years. Courses listed as “Any X credit course” may be decreased based on AP or other transfer credit.

This is a sample plan. Work with your major/program advisor to devise a plan that takes into account your transfer credit, interests, and career goals.

Year	Fall	Winte	Sprin	Summ
Entering			r	g	er
					College 1A
					Summer Edge (optional)
1st (frosh)	College Core Course	WRIT 2	MF Gen Ed	Any 5-credit course
	SOCY 1	SOCY 10	CC Gen Ed	Any 5-credit course
	SI Gen Ed	Any 5-credit course	Any 5-credit course	Any 5-credit course
		STEV 26		
2nd (soph)	SOCY 3A	SOCY 3B	ER Gen Ed	SOCY 105A
	SOCY upper-division elective	SOCY upper-division elective	IM Gen Ed	SOCY 105B
	Any 5-credit course	Any 5-credit course	Any 5-credit course	
	PR Gen Ed		Any 5-credit course	
	WRIT 2*			
3rd (junior)	SOCY 196S	SOCY upper-division elective	SOCY upper-division elective	Any 5-credit course
	TA Gen	PE Gen	SOCY	Any 5-credit

	Ed	Ed	upper-division elective	course
	Any 5-credit course	Any 5-credit course	Any 5-credit course	Any 5-credit course

* WRIT 2 should be taken in or before spring quarter of the second year.

Sociology lower-division, upper-division core, and several upper-division electives may be available in the summer in the event you are not able to enroll in the regular academic year.

The following general education requirements will be satisfied through required courses in the sociology major: SR, DC.

Sociology Two-Year Major Planner

The following is a recommended academic plan for transfer students entering the sociology major. It is assumed that SOCY 1 and SOCY 10 equivalencies were completed at the previous college.

Option One

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	SOCY 3A* SOCY upper-division elective	SOCY 3B* SOCY 105A	SOCY 105B SOCY upper-division elective	
2nd (senior)	SOCY upper-division elective SOCY upper-division elective	SOCY upper-division elective SOCY upper-division elective	SOCY 196S or SOCY graduate course (or in fall or winter) (or thesis fall-winter-spring)	

*Articulated equivalent courses may be taken prior to transfer.

Option Two

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T Summer Edge (optional)
1st (junior)	SOCY 3A* SOCY 105A	SOCY 3B* SOCY 105B	SOCY upper-division elective SOCY upper-division elective	
2nd (senior)	SOCY upper-division elective SOCY	SOCY upper-division elective	SOCY 196S (or in fall or winter) (or thesis fall-winter-spring)	

	upper-division elective	

*Articulated equivalent courses may be taken prior to transfer.

Sociology Major with Intensive Concentration in DJS

The DJS intensive concentration is an option for students wishing to major in sociology and focus in the area of Digital Justice Studies (DJS). The major is sponsored and administered by the Department of Sociology. This major is designed for highly motivated, self-directed and enterprising students who have demonstrated the capacity to design and complete an honors-quality project in partnership with a civil society group. Students are required to take a total of 15 courses (three prescribed lower-division courses in preparation for the major, two prescribed lower-division core courses, two prescribed upper-division DJS courses, two prescribed upper-division core courses, five upper-division electives, and a project practicum course). In addition, they must successfully complete the comprehensive requirement prior to graduation.

Course Requirements

Lower-Division Courses

Lower-division preparation:

Students must take the following three courses or their articulated equivalents.

SOCY 30A	Introduction to Digital Justice Studies	5

And select two from the following three options:

SOCY 1	Introduction to Sociology	5
SOCY 10	Issues and Problems in American Society	5
SOCY 15	World Society	5

Lower-division core courses:

The following two sociology courses, or their articulated equivalents, are required as the foundation of statistical and research methods in the discipline.

SOCY 3A	The Evaluation of Evidence	5
SOCY 3B	Statistical Methods	5

Sociology students who are pursuing a double major or minor in Latin American and Latino Studies (LALS) may substitute SOCY 3A with LALS 100A. Sociology students who are double majoring in psychology or cognitive science, may substitute SOCY 3A with PSYC 100. The opposite substitution does not apply, LALS 100A nor PSYC 100 can be substituted with SOCY 3A.

STAT 5, STAT 7, PSYC 2, or their articulated equivalents, as well as an AP Statistics score of 4 or more, may substitute for SOCY 3B.

Upper-Division Courses

Upper-division DJS core courses

The following two courses are required for the design and implementation of the DJS project.

SOCY 107A	Designing Digital Justice Projects	5
SOCY 107B	Project Implementation for Digital Justice	5

Upper-division core courses

The following two sociology courses are required as the foundation of theoretical training in the discipline.

SOCY 105A	Classical Social Theory	5
SOCY 105B	Contemporary Social Theory	5

Upper-division advanced coursework

Five upper-division electives of 5 credits or more are required, selected from Sociology 110-189, or from the list of pre-approved courses. Students are strongly recommended to consult with the director of DJS before choosing their electives to ensure their choices contribute to their selected project and/or their growth as a technology activist or technology linked social change advocate. Courses outside the list of approved courses may also be approved by the director of DJS. For more information on the process students must follow to have their courses approved, please visit the Sociology Department webpage.

Project Practicum

Students must enroll in SOCY 196G, Project Practicum, and complete their DJS capstone project. SOCY 196G is offered every fall quarter. Students may review the DJS webpage, or contact the program director of DJS (everettprogram@ucsc.edu) for more detailed guidelines regarding the DJS capstone project. Prior to enrolling in SOCY 196G, students must have completed SOCY 107A and SOCY 107B, which prepares and supports students in completing a project that makes a contribution to advancing a solution to a problem associated with global social justice and/or sustainable development. To complete the final requirements for DJS, the integrated project practicum—narrative and digital deliverable—must be mounted on the appropriate web-enabled database managed by the Everett Program.

SOCY 196G	Project Practicum: Digital Justice Studies	5

Disciplinary Communication (DC) Requirement

Students of every major must satisfy that major's upper-division Disciplinary Communication (DC) requirement. The goal of the Sociology Department’s Disciplinary Communication requirement is to ensure that students acquire and develop the skills in writing and other forms of communication that will best serve them in their study of

sociology, and as future learners. The following courses satisfy the Disciplinary Communication requirement for students in programs administered by the Sociology Department.

SOCY 105A	Classical Social Theory	5
SOCY 105B	Contemporary Social Theory	5

Comprehensive Requirement

Prior to graduation, students are required to complete one of the following comprehensive requirements.

Senior Seminar

SOCY 196S	Senior Seminar	5

Sociology Graduate Course

Students may satisfy the comprehensive requirement by successfully completing a 5-credit graduate-level sociology course, numbered SOCY 201-SOCY 294. Enrollment into a graduate-level sociology course is by invitation or approval of the course instructor.

Senior thesis

SOCY 195A	Senior Thesis	5
SOCY 195B	Senior Thesis	5
SOCY 195C	Senior Thesis	5

Planners

The tables below are for informational purposes and do not reflect all university, general education, and credit requirements. See Undergraduate Graduation Requirements for more information.

Sociology Major with Intensive Concentration in DJS Planner One

The following is a recommended academic plan for students in the sociology major with intensive concentration in DJS.

Option One

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)
1st (frosh)	SOCY 1 College 1	SOCY 10 WRIT 1/WRIT 1E		
2nd (soph)	SOCY 3A SOCY 30A WRIT 2*	SOCY 3B SOCY 107A	SOCY 107B	
3rd (junior)	SOCY 105A SOCY 196G	SOCY 105B Upper-division elective	Upper-division elective Upper-division elective	
4th (senior)	Upper-division elective	Upper-division elective	SOCY 196S or SOCY Graduate Course (or in fall or winter) (or thesis fall-winter-spring) (if needed)	

* WRIT 2 should be taken in or before spring quarter of the second year.

Option Two

Year	Fall	Winter	Spring	Summer
Entering				College 1A Summer Edge (optional)

1st (frosh)		WRIT 1/WRIT 1E (if needed)	SOCY 1
2nd (soph)	SOCY 15	SOCY 3B	
	SOCY 3A		
	WRIT 2*		
3rd (junior)	SOCY 30A	SOCY 107A	SOCY 107B
	Upper-division elective	SOCY 105A	SOCY 105B
4th (senior)	SOCY 196G	Upper-division elective	SOCY 196S or SOCY Graduate Course (or in fall or winter) (or thesis fall-winter-spring)
	Upper-division elective	Upper-division elective	Upper-division elective

* WRIT 2 should be taken in or before spring quarter of the second year.

All students majoring in sociology with concentration in DJS are required to take SOCY 3B which also satisfies the SR general education (GE) requirement, as well as SOCY 30A which satisfies the PE-H GE. SOCY 15, which satisfies the CC GE, may be selected as one of the major qualification course options. In addition, students may satisfy the CC, ER, IM, SI, TA, PE, and PR GE requirements by selecting certain upper-division sociology electives. Visit the Office of the Registrar's website for an up-to-date list of the sociology upper-division electives that satisfy GE requirements. The MF and composition GE requirements are not offered through the Sociology Department.

Sociology Major with Intensive Concentration in DJS Planner Two

The following is a recommended academic plan for transfer students entering the sociology major with intensive concentration in DJS. It is assumed that SOCY 1 and SOCY 10 equivalencies were completed at the previous college.

Year	Fall	Winter	Spring	Summer
Entering				KRSG 1T
				Summer Edge (optional)
1st (junior)	SOCY 3A*	SOCY 3B*	SOCY 107B	
	SOCY 30A	SOCY 107A	SOCY 105B	
		SOCY 105A		
2nd (senior)	Upper-division elective	Upper-division elective	SOCY 196S or SOCY Graduate Course (or in fall or winter) (or thesis fall-winter-spring)	
	Upper-division elective	Upper-division elective	Upper-division elective	
	SOCY			

196G

*Articulated equivalent courses may be taken prior to transfer

This planner also assumes that a student has completed most of the general education requirements, beyond major preparation requirements, before transferring to UC Santa Cruz.

DIGITAL JUSTICE STUDIES MINOR (FORMERLY GISES)

Digital Justice Studies (DJS) is sponsored by the Sociology Department at UC Santa Cruz. It is a rigorous and innovative program, developed in collaboration with the Everett Program for Technology and Social Change, that focuses on the equitable and fair access to, participation in, and governance of digital technologies and digital ecosystems. It aspires to create a new generation of well-trained advocates for social justice and sustainable development who use the tools of information technology and social enterprise to solve global problems. Practically, students develop projects in solidarity with local and global organizations to democratize globalization, deepen social justice, reduce poverty, support digital education, and advance the transition to a sustainable world. The Everett Program combines social entrepreneurship with peer-to-peer and near-to-peer trainings in information technologies with the aim that students learn how to be innovative and creative problem-solvers in order to increase the informational, communication, and organizational capacity of community and non-governmental organizations (NGOs).

The DJS program provides an excellent foundation for students pursuing careers in non-profit management, social advocacy, sustainable businesses, and technology. Depending on a student's major, there are two ways to enter the DJS program. If a student is a sociology major and wishes to participate in DJS, they should declare the sociology major with intensive concentration in DJS. A student who majors in any field other than sociology should declare DJS as a minor.

Students must take one course prior to petitioning for entry to the DJS minor: SOCY 30A, Introduction to Digital Justice Studies. In order to declare the DJS minor, students must first have declared a major and must also connect with the sociology advising office to review and complete the declaration process. For details, please review the Sociology Department webpage.

Course Requirements

Students minoring in DJS are required to complete the following courses and requirements. Courses may be taken for a letter grade or Pass/No Pass.

Lower-Division Courses

Lower-division preparation:

SOCY 30A	Introduction to Digital Justice Studies	5

Upper-Division Courses

Upper-division DJS core courses:

SOCY 107A	Designing Digital Justice Projects	5
SOCY 107B	Project Implementation for Digital Justice	5

Upper-division advanced coursework:

Three additional upper-division electives of 5 credits or more are required, selected from the Sociology Department elective courses (Sociology 110-189), or from the list of pre-approved courses. Students are strongly recommended to consult with the director of DJS before choosing their electives to ensure that their choices contribute to their selected project and/or their growth as a technology activist or technology linked social change advocate. Courses outside the list of approved courses may also be approved by the director of DJS. For more information on the process students must follow to have their courses approved, please visit the Sociology Department page.

Project practicum:

Students must enroll in SOCY 196G, Project Practicum, and complete their DJS capstone project. SOCY 196G is offered every fall quarter. Students may review the DJS webpage, or contact the program director of DJS (everettprogram@ucsc.edu) for more detailed guidelines regarding the DJS capstone project. Prior to enrolling in SOCY 196G, students must have completed SOCY 107A and SOCY 107B, which prepares and supports students in completing a project that makes a contribution to advancing a solution to a problem associated with global social justice and/or sustainable development. To complete the final requirements for DJS, the integrated project practicum—narrative and digital deliverable—must be mounted on the appropriate web-enabled database managed by the Everett Program.

SOCIOLOGY PH.D.

Introduction

Features of the Program

The core curriculum is divided into two parts, 1) basic grounding in sociological theory and methods, and 2) exposure to research in five areas of concentration: a) political economies and political ecologies; b) space, place, and mobility; c) culture, knowledge, and power; d) publics, policy, and law; and e) world building, political imaginaries, and alternative futures. To prepare students to conduct their own research projects, the department trains students in multiple methods—field research, critical ethnography, cultural analysis, comparative historical analysis, and quantitative data analysis.

Graduate students are supported through teaching assistantships, teaching fellowships, research fellowships and other grant/fellowship opportunities. A number of faculty

receive research grants that support graduate student research assistantships.

When asked what they most appreciate about the sociology graduate program, most students cite the students' and faculty's commitment to social change in combination with their dedication to teaching, scholarly research, and understanding of the social forces of our society. The Sociology Department's colloquium series enhances scholarship, practice, and collegial networks. The diversity in age, ethnicity, and work experience of the student body creates a vibrant atmosphere for learning.

Many of the faculty in the Sociology Department have affiliations with other departments and programs on campus, and the graduate program consequently encourages interdisciplinary work. Seminars in the anthropology, environmental studies, history, history of consciousness, politics, psychology, and feminist studies programs are open to sociology students. Graduate students in sociology may obtain a designated emphasis on the sociology Ph.D. diploma which indicates that in addition to sociology, they have also specialized in another field , such as feminist studies, Latin American and Latino studies, critical race and ethnic studies, environmental studies, philosophy, or education. Students must meet requirements for the designated emphasis as spelled out by the relevant department. For a complete list of programs that offer a designated emphasis, refer to the fields of study in the General Catalog. Students also participate in research projects under the auspices of a number of interdisciplinary social science research centers including but not limited to: the Science and Justice Research Center; the Center for Agroecology and Sustainable Food Systems; the Center for Labor and Community; the Dolores Huerta Research Center for the Americas; and the Affect Studies Working Group. Research opportunities also are available in the areas of environmental studies, feminist studies, and lesbian/gay/queer studies.

Many of our graduate students present papers at professional conferences and publish articles during the course of their graduate studies. The sociology master's paper is designed to prepare students to write for professional journals. Advanced graduate students also participate in faculty seminars organized around specific research topics.

The sociology program provides graduate students with a diverse range of teaching opportunities so they can practice the skills required for good teaching—the ability to articulate ideas, to organize and present materials in logical sequence, and to listen attentively and discern someone else's comprehension. Graduate students typically serve as teaching assistants for at least three quarters, if not more, in the department's core classes of the undergraduate curriculum.

Details of the policies for admission to the graduate program, the requirements for the Ph.D. degree, and information on financial support opportunities are available from the Department of Sociology. For more information, please refer to the Graduate Studies section of the catalog.

Advancement to Candidacy

Course Requirements

Students are required to take at least 10 courses as follows.

A four-course core group:

SOCY 203	Sociological Methods	5
SOCY 200A	Social Theory 1	5
SOCY 200B	Social Theory 2	5
SOCY 200C	Social Theory 3	5

Two methods courses:

This course

SOCY 204	Methods of Quantitative Analysis	5

And one of the following eight courses:

SOCY 205	Field Research Methods	5
SOCY 206	Comparative Historical Methods	5
SOCY 209	The Analysis of Cultural Forms	5
SOCY 241	Cross-National and Cross-Cultural Research	5
SOCY 242	Feminist Research Seminar	5
SOCY 268A	Science and Justice: Experiments in Collaboration	5
SOCY 282	Social Policy Research	5
PSYC 248	Survey Methods	5

Elective Courses

A minimum of four elective graduate seminars, one of which may be from outside sociology (excluding SOCY 250 and SOCY 293). The elective course offerings change yearly. This courses listed are offerings from the recent past.

SOCY 208	Writing Practicum	5
SOCY 209	The Analysis of Cultural Forms	5
SOCY 220	Global Transformation: Macrosociological Perspectives	5
SOCY 223	Sociology of the Environment	5
SOCY 225	Political Economy for Sociologists	5
SOCY 229	Work and Labor Markets in the New Economy	5
SOCY 240	Inequality and Identity	5
SOCY 242	Feminist Research Seminar	5
SOCY 244	Race and Ethnicity	5
SOCY 246	Class, Culture, and Movement	5
SOCY 249	Feminisms and Cultural Politics	5
SOCY 255	Engaging Cultural Studies	5
SOCY 256	Urban Sociology	5
SOCY 257	Colonialism, International Law, and Global Justice	5
SOCY 259	Space and the Politics of Difference	5
SOCY 260	Culture, Knowledge, Power	5
SOCY 263	Cultural Politics of Difference	5
SOCY 268A	Science and Justice: Experiments in Collaboration	5

SOCY 268B	Science and Justice Research Seminar	5
SOCY 290	Advanced Topics in Sociological Analysis	5

Any course listed as a methods course and elective course may be used to fulfill either the methods requirement or be counted as an elective course, but no course can be used for both.

Foreign Language Requirements

Teaching Requirement

Pre-Qualifying Requirements

Graduate students initiate work on their master's paper by the end of the first year.

Completion of the master's paper and required coursework is expected by the end of the second year.

Graduate students prepare field statements in two distinct areas of sociology as a written pre-qualifying stage to the oral qualifying examination.

Qualifying Examination

The qualifying examination is an oral defense of the student's dissertation proposal and occurs one quarter after the pre-qualifying field statement stage has been passed.

Students are expected to take their oral qualifying examination by the end of the third year, and no later than the end of the fourth year.

Post-Qualifying Requirements

[Optional Catchall]

Dissertation

Dissertation

After passing the qualifying examination, a student advances to candidacy and begins work on the dissertation under the guidance of a three-person dissertation committee.

Dissertation Defense

After the complete dissertation has been submitted to and accepted by the dissertation committee, students must pass an oral dissertation defense.

Academic Progress

Applying for Graduation

[Optional Catchall]

SOCIOLOGY DESIGNATED EMPHASIS

Introduction

Graduate students interested in pursuing the Designated Emphasis in Sociology should contact the Sociology graduate program coordinator.

Requirements

To receive the Designated Emphasis (DE) in Sociology, a graduate student from another department must complete the following requirements in addition to the degree requirements for the doctorate in their degree-granting department. Students must initiate the request for the DE through their home departments. Then the student must meet with the Sociology graduate director who will: a) decide whether to approve the application; b) help find a Sociology faculty advisor; and c) oversee progress in the Designated Emphasis.

Committee Composition and Departmental Approvals

Advisor: In addition to the student's advisor(s) in their home department, the student must have a faculty advisor from among the core faculty of the Sociology Department who commits to serve on the qualifying examination (QE) committee. Outside members of a QE committee must be tenured.

Course Requirements

The student must take five (5) Sociology graduate seminar courses:

Three (3) core courses:

SOCY 200A	Social Theory 1	5
SOCY 200B	Social Theory 2	5
SOCY 200C	Social Theory 3	5

One (1) methods course from the following:

SOCY 203	Sociological Methods	5
SOCY 204	Methods of Quantitative Analysis	5
SOCY 205	Field Research Methods	5
SOCY 206	Comparative Historical Methods	5
SOCY 209	The Analysis of Cultural Forms	5
SOCY 241	Cross-National and Cross-Cultural Research	5
SOCY 242	Feminist Research Seminar	5
SOCY 268A	Science and Justice: Experiments in Collaboration	5
SOCY 282	Social Policy Research	5

One (1) other graduate seminar elective offered by the Sociology Department

*SOCY 208, SOCY 250, SOCY 293, SOCY 297, SOCY 299 cannot be counted toward the requirements for the Designated Emphasis.

All courses must be offered by the Sociology Department. Courses offered by other departments do not count towards the requirements for the Designated Emphasis in Sociology.

Writing, Research and/or Teaching Requirements

The student must prepare a significant piece of scholarly writing in the area of sociology. This may take the form of a substantial seminar paper, a master's essay, a paper submitted for publication, or a chapter of the doctoral dissertation. The student's Sociology faculty advisor will determine whether a particular piece of writing meets the requirement.

Academic Progress

[Optional Catchall]

SOCIOLOGY BA DJS CONCENTRATION AND DJS MINOR COURSE LIST

Pre-Approved Course Substitutions

Anthropology

ANTH 104	Human Variation and Adaptation	5
ANTH 110A	Public Life and Contemporary Issues	5
ANTH 110E	Anthropology of Global Environmental Change	5
ANTH 110I	Cultures of Sustainability and Social Justice	5
ANTH 110J	Emerging Humanity	5
ANTH 110Q	Queer Sexuality in Black Popular Culture	5
ANTH 110Y	Feeding California	5
ANTH 129	Beyond Borders: Other Globalizations and Histories of Interconnection	5
ANTH 130A	Anthropology of Africa.	5
ANTH 130B	Brazil	5
ANTH 130C	Politics and Culture in China	5
ANTH 130E	Culture and Politics of Island Southeast Asia	5
ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
ANTH 130G	Asian Americans in Ethnography and Film	5
ANTH 130H	Ethnography of Russia and Eastern Europe	5
ANTH 130O	Native Feminisms, Gender, and Settler Colonialism	5
ANTH 130I	Cultures of India	5
ANTH 130IG	Cultures of India Abroad	5
ANTH 130J	Politics and Statemaking in Latin America	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130M	Inside Mexico	5
ANTH 130N	Native Peoples of North America	5
ANTH 130P	Ethnography of Southern Cone Chile and Argentina	5
ANTH 130S	Ethnography of Russia and Eastern Europe, Abroad	5
ANTH 130T	Religion and Politics in the Muslim World	5
ANTH 130U	Central America	5
ANTH 130V	Ethnography of Russia	5
ANTH 130W	Ethnography of Eastern Europe	5
ANTH 130X	Special Topics in Ethnography	5
ANTH 131	Gender in Cross-Cultural Context	5
ANTH 134	Medical Anthropology: An Introduction	5
ANTH 138	Political Anthropology	5
ANTH 140	The Body in Rain: Environmental and Medical Intersections	5
ANTH 142	Anthropology of Law	5
ANTH 144	Anthropology of Poverty and Welfare	5
ANTH 146	Anthropology and the Environment	5
ANTH 148	Gender and Global Development	5
ANTH 158	Feminist Ethnographies	5
ANTH 159	Race and Anthropology	5

Art

ART 101	Introduction to Computer Programming for the Arts	5
ART 181	Art, Power & Politics	5

Community Studies

CMMU 101	Communities, Social Movements, and the Third Sector	5
CMMU 132	American Cities and Social Change	5
CMMU 133	Making California: Landscapes, People, Politics, Economy	5
CMMU 134	No Place Like Home	5
CMMU 141	Economic Justice in Theory and Practice	5
CMMU 145	Global Capitalism: a History of the Present	5
CMMU 149	Political Economy of Food and Agriculture	5
CMMU 160	Public Health	5
CMMU 161	Gender Health and Justice	5
CMMU 163	Health Care Inequalities	5
CMMU 186	Food and Agriculture Social Movements	5
CMMU 189	Mentoring in Community Studies	5
CMMU 193	Field Study	5

Computational Media

CMPM 131	User Experience for Interactive Media	5

Computer Science and Engineering

CSE 101	Introduction to Data Structures and Algorithms	5
CSE 118	Mobile Applications	5

Critical Race and Ethnic Studies

CRES 100	Comparative Theories of Race and Ethnicity	5
CRES 101	Research Methods and Writing in Critical Race and Ethnic Studies	5
CRES 185	Race, Gender, and Science	5

Earth and Planetary Sciences

EART 106	Coasts in Crisis	5

Economics

ECON 101	Managerial Economics	5
ECON 104	Is There Truth in Numbers: The Role of Statistics in Economics	5
ECON 115	Introduction to Management Sciences	5
ECON 120	Development Economics	5
ECON 121	Economic Growth	5
ECON 128	Poverty and Public Policy	5
ECON 131	International Financial Markets	5
ECON 136	Business Strategy	5
ECON 138	The Economics and Management of Technology and Innovation	5
ECON 139A	The Economics of Electronic Commerce	5
ECON 139B	E-Commerce Strategy	5
ECON 141	International Finance	5
ECON 142	Advanced Topics in International Economics	5
ECON 143	Policy Issues in the International Economy	5
ECON 149	The Economies of East and Southeast Asia	5
ECON 156	Health Economics and Policy	5
ECON 159	The Economics of Organizations	5
ECON 160A	Industrial Organization	5
ECON 160B	Government and Industry	5
ECON 161A	Marketing	5
ECON 162	Legal Environment of Business	5
ECON 169	Economic Analysis of the Law	5
ECON 170	Environmental Economics	5
ECON 171	Natural Resource Economics	5
ECON 175	Energy Economics	5
ECON 180	Labor Economics	5
ECON 183	Women in the Economy	5

Education

EDUC 102	Education, Media, and Society	5
EDUC 104	Ethical Issues and Teaching	5
EDUC 128	Immigrants and Education	5
EDUC 135	Gender and Education	5
EDUC 140	Language, Diversity, and Learning	5
EDUC 141	Bilingualism and Schooling	5
EDUC 160	Issues in Educational Reform	5
EDUC 164	Urban Education	5
EDUC 166	Technology and Education	5
EDUC 173	Seminar in Critical Pedagogy	5
EDUC 174	Ethnographic Research in Schools and Communities	5
EDUC 177	Teaching Linguistically Diverse Students	5
EDUC 178	Special Topics in Education	5
EDUC 180	Introduction to Teaching	5
EDUC 181	Race, Class, and Culture in Education	5
EDUC 182	Social and Political Contexts of Teachers' Work	5
EDUC 187	Cognition and Instruction	5
EDUC 198	Independent Field Study	5

Electrical & Computer Egineering

ECE 179	Decision Analysis in Management	5

Environmental Studies

ENVS 104A	Introduction to Environmental Field Methods	2
ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 115A	Geographic Information Systems and Environmental Applications	5
ENVS 115B	Intermediate Geographic Information Systems (GIS)	5
ENVS 115C	Advanced Geographic Information Systems	5
ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 140	National Environmental Policy	5
ENVS 141	Ecological Economics	5
ENVS 142	Sustainable Energy	5
ENVS 143	The Future of Sustainable Development	5
ENVS 145	Green Cities	5
ENVS 147	Global Environmental Justice	5
ENVS 149	Environmental Law and Policy	5
ENVS 150	Coastal and Marine Policy	5
ENVS 151	Environmental Assessment	5
ENVS 154	Amazonian Cultures and Conservation	5
ENVS 156	Environmental Action Through Writing	5
ENVS 160	Restoration Ecology	5

ENVS 165	Sustainable Water Systems	5
ENVS 166	Agroecosystem Analysis and Watershed Management	5
ENVS 172	Environmental Risks and Public Policy	5
ENVS 173	An Introduction to World Environmental History	5
ENVS 176	Vulnerability, Complex Systems, and Disasters	5
ENVS 177	Teaching Environmental Education	5
ENVS 179	Environmental Interpretation	5
ENVS 183	Environmental Studies Internship	5
ENVS 194	Teaching Environmental Studies	5

Feminist Studies

FMST 102	Feminist Critical Race Studies	5
FMST 112	Women and the Law	5
FMST 115	Gender, Sexuality, and Transnational Migration Across the Americas	5
FMST 120	Transnational Feminisms	5
FMST 123	Feminism and Cultural Production	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 125	Race, Sex, and Technology	5
FMST 126	Images, Power, and Politics: Methods in Visual and Textual Analysis	5
FMST 131	The Politics of Matter and the Matter of Politics	5
FMST 132	Gender and Postcoloniality	5
FMST 133	Science and the Body	5
FMST 135	Topics in Science and Sexuality	5
FMST 139	African American Women's History	5
FMST 175	Gender and Sexualities in Latina/o America	5
FMST 189	Advanced Topics in Feminist Theory	5

Film and Digital Media

FILM 136C	Visual Culture and Technology: History of New Media	5
FILM 136D	Documentary Film and Video	5
FILM 170A	Fundamentals of Digital Media Production	5
FILM 171S	Special Topics in Film and Digital Media Production	5
FILM 172	Narrative Video Workshop	5
FILM 173	Narrative Digital Media Workshop	5
FILM 175	Documentary Video Workshop	5
FILM 176	Experimental Video Workshop	5
FILM 177	Digital Media Workshop: Computer as Medium	5
FILM 178A	Personal Computers in Film and Video	5
FILM 178B	Advanced Personal Computers in Film and Video	5
FILM 189	Advanced Topics in Digital and Electronic Media Studies	5
FILM 192	Directed Student Teaching	5
FILM 194B	Electronic Media Theory Seminar	5
FILM 199	Tutorial	5

History

HIS 105	Nations and Nationalism	5
HIS 110A	Colonial America, 1500-1750	5
HIS 110E	Rise of the Machines: Technology, Inequality, and the United States, 1877 to 1914	5
HIS 114	Market Revolution in Antebellum U.S.	5
HIS 117	Wired Nation: Broadcasting & Telecommunications in the US from the Telegraph to the Internet	5
HIS 166	Northern Ireland: Communities in Conflict	5
HIS 185O	The Holocaust and the Arab World	5
HIS 190K	Wired Planet: Readings on the Global History of Broadcasting and Telecommunications	5

History of Art and Visual Culture

HAVC 127F	The Politics of Exclusion: Asian American Visual Culture	5
HAVC 141H	Media History and Theory	5
HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HAVC 141P	Networks and Natures: Art, Technology, and the Nonhuman	5
HAVC 143E	History of Design: The Objects of Technology, 1850-The Present	5
HAVC 164A	Art and Visual Culture of Indigenous California	5

History of Consciousness

HISC 112	Foundations in Critical Theory	5
HISC 117	Making the Refugee Century: Non-Citizens and Modernity	5
HISC 150	Radical Political Theory	5
HISC 185T	Marxism and Feminism	5

Jewish Studies

John R Lewis College/College Ten

JRLC 191	Teaching Social Justice	5

Kresge College

Latin American and Latino Studies

LALS 122	Media and Nationalism	5
LALS 128	Latino Media in the U.S	5
LALS 129	America Latina: Cine, Dictadura y Memoria	5
LALS 143J	Global Political Economy	5
LALS 145	Grassroots Social Change in Latin America	5
LALS 150	Afro-Latinos/as: Social, Cultural, and Political Dimensions	5
LALS 152	Consumer Cultures Between the Americas	5
LALS 155	Latin American and Latino Youth Movements	5
LALS 156	Human Rights and Transitional Justice in the Americas	5
LALS 158	Latin American Political Economy	5
LALS 168	Inter-American Solidarities	5
LALS 169	South America: History, Society, and Culture	5
LALS 170	Indigenous Struggles in the Americas	5
LALS 172	Visualizing Human Rights	5
LALS 175	Migration, Gender, and Health	5
LALS 178	Gender, Transnationalism, and Globalization	5
LALS 180	Borders: Real and Imagined	5

Legal Studies

LGST 108	Gender, Sexuality, and Law	5
LGST 109	Legal Theory	5
LGST 111B	Civil Liberties	5
LGST 111C	The First Amendment	5
LGST 113	Gay Rights and the Law	5
LGST 114	Jews, Anti-Semitism, and the American Legal System	5
LGST 116	Comparative Law	5
LGST 125	History of the U.S. Penal Culture	5
LGST 130	Inequality and Law	5
LGST 131	Wildlife, Wilderness, and the Law	5
LGST 133	Law of Democracy	5
LGST 137	International Environmental Law and Policy	5
LGST 152	Courts and Litigation	5
LGST 159	Property and the Law	5
LGST 193	Field Study	5

Literature

LIT 120H	American Poetry Since World War II	5
LIT 138A	Culture and Nation	5
LIT 160F	Topics in Cultural Studies	5
LIT 160G	Topics in Literary Theory	5

Oakes College

OAKS 152	Transformative Literacies	5
OAKS 153	Community Mapping	5
OAKS 155	Research for Social Justice: Special Topics	5
OAKS 167	Food Systems: Culture, Social Justice, Sustainability	5

Philosophy

PHIL 126	Philosophy of Social Sciences	5
PHIL 144	Topics in Social and Political Philosophy	5

Politics

POLI 103	Feminist Interventions	5
POLI 105C	Modern Political Thought	5
POLI 110	Law and Social Issues	5
POLI 111A	Constitutional Law	5
POLI 115	Foundations of Political Economy	5
POLI 118	Critical Political Thought and Critical Theory	5
POLI 120A	Congress, President, and the Court in American Politics	5
POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5
POLI 121	Racism & Justice in America	5
POLI 122	Politics, Labor, and Markets	5
POLI 124	Economic Inequality in America	5
POLI 125	Political Organizations in American Politics	5
POLI 128	American Elections and Voting Behavior	5
POLI 129	Policies and Politics of American Defense	5
POLI 132	California Water Law and Policy	5
POLI 134	Congress: Representation and Legislation	5
POLI 140A	European Politics	5
POLI 140C	Latin American Politics	5
POLI 140D	Politics of East Asia	5
POLI 141	Politics of China	5
POLI 143	Comparative Post-Communist Politics	5
POLI 144	Andean Politics	5
POLI 146	The Politics of Sub-Saharan Africa	5
POLI 151	Politics of Law	5
POLI 160A	Theories of International and World Politics	5
POLI 160B	International Law	5
POLI 160C	Security, Conflict, Violence, War	5

POLI 160D	The Politics of Global Capitalism	5
POLI 161	The Rise of China	5
POLI 165	Global Organization	5
POLI 167	Politics of International Trade	5
POLI 168	Topics in International Relations and Global Politics	5
POLI 169	Politics of Development	5
POLI 172	Liberalism, the State, and the War on Terror	5
POLI 174	Global Political Ecology	5
POLI 175	Human Rights	5
POLI 185	Political Psychology	5

Psychology

PSYC 108	Educational Psychology	5
PSYC 119P	Children and Technology	5
PSYC 119T	Media Contexts of Adolescent and Young Adult Development	5
PSYC 129	Human Learning and Memory	5
PSYC 138	Computer Programming for the Cognitive Sciences	5
PSYC 140F	Mind, Society, and Culture	5
PSYC 140M	Legitimizing (In)Equality: Attitudes, Beliefs, and Social Policy	5
PSYC 141	Privacy and Surveillance	5
PSYC 142	Psychology of Oppression and Liberation	5
PSYC 144	Latinx Psychology	5
PSYC 145	Social Influence	5
PSYC 145D	Social Psychology of Autocracy and Democracy	5
PSYC 146	The Social Context	5
PSYC 147A	Psychology and Law	5
PSYC 147B	Psychology and Law	5
PSYC 149	Community Psychology: Transforming Communities	5
PSYC 153	The Psychology of Poverty and Social Class	5
PSYC 155	Social-Community Psychology in Practice	5
PSYC 159H	Community-Based Interventions	5
PSYC 159R	Achievement Disparities: A Social Psychological Perspective	5
PSYC 159X	Psychology of Social Activism	5
PSYC 167	Clinical Psychology	5
PSYC 169	Community Mental Health (CMH)	5

Rachel Carson College

CRSN 151A	Sustainability Praxis in the Natural and Built Environment	5
CRSN 151B	Innovation and Professionalization for Sustainability Designers, Engineers, and Entrepreneurs	5
CRSN 152	IDEASS Laboratory Practicum	3
CRSN 160	Developing Leadership to Facilitate Environmental Education	5
CRSN 161	Education for Sustainable Living Program	5

CRSN 152 is a 2-credit course. This course may be taken three times to count as one GISES elective.

Sociology Individual Studies

SOCY 193I	Sociology Global Internship	10

Stevenson College

STEV 192	Directed Student Teaching	5

Technology & Information Management

TIM 172A	Introduction to Management of Technology I	5
TIM 172B	Introduction to Management of Technology II	5
TIM 173	Financial Engineering and Management in High Technology Firms	5
TIM 175	Business Strategy and Information Systems	5

UCDC

UCDC 194A	UCDC Core Seminar	5
UCDC 194B	UCDC Internship	7

UC Online and Global Learning

Courses outside the above list of approved courses may also be approved, such as courses from Global Learning and UC Online. For more information about approved Global Learning and UC online courses, or to petition for a new course, please visit the Sociology Department page.

SOCIOLOGY GENERAL MAJOR COURSE LIST

Pre-Approved Course Substitutions

Anthropology

ANTH 110A	Public Life and Contemporary Issues	5
ANTH 110D	Tourism Imaginaries and Encounters	5
ANTH 110G	Westside Stories: Race, Place and the California Imaginary	5
ANTH 110K	Culture Through Food	5
ANTH 110Q	Queer Sexuality in Black Popular Culture	5
ANTH 110T	Motherhood in American Culture	5
ANTH 110Y	Feeding California	5
ANTH 119	Indigenous Visual Culture	5
ANTH 125	Magic, Science, and Religion	5
ANTH 128	Contemporary American Evangelical Cultures	5
ANTH 130C	Politics and Culture in China	5

ANTH 130F	Blackness In Motion: Anthropology of the African Diasporas	5
ANTH 130L	Ethnographies of Latin America	5
ANTH 130M	Inside Mexico	5
ANTH 130N	Native Peoples of North America	5
ANTH 130O	Native Feminisms, Gender, and Settler Colonialism	5
ANTH 130U	Central America	5
ANTH 130X	Special Topics in Ethnography	5
ANTH 131	Gender in Cross-Cultural Context	5
ANTH 133	Narratives of the Popular	5
ANTH 136	The Biology of Everyday Life	5
ANTH 137	Consuming Culture	5
ANTH 139	Language and Culture	5
ANTH 140	The Body in Rain: Environmental and Medical Intersections	5
ANTH 143	Performance and Power	5
ANTH 144	Anthropology of Poverty and Welfare	5
ANTH 145X	Special Topics in Socio-Cultural Anthropology	5
ANTH 148	Gender and Global Development	5
ANTH 149	Anthropology of Activism	5
ANTH 158	Feminist Ethnographies	5
ANTH 159	Race and Anthropology	5
ANTH 160	Reproductive and Population Politics	5
ANTH 161	The Anthropology of Food	5
ANTH 161S	Anthropology of Food, Abroad	6
ANTH 187	Cultural Heritage in Colonial Contexts	5
ANTH 194S	Hearing Culture: The Anthropology of Sound	5

Applied Linguistics

APLX 112	Language and Gender	5
APLX 113	Inter-Cultural Communication	5

Biology: Ecology and Evolutionary

BIOE 118	Plants and Society: the Biology of Food, Shelter, and Medicine	5

Rachel Carson College

CRSN 161	Education for Sustainable Living Program	5

Community Studies

CMMU 101	Communities, Social Movements, and the Third Sector	5
CMMU 132	American Cities and Social Change	5
CMMU 134	No Place Like Home	5
CMMU 141	Economic Justice in Theory and Practice	5
CMMU 145	Global Capitalism: a History of the Present	5
CMMU 149	Political Economy of Food and Agriculture	5
CMMU 151	Sex, Race, and Globalization	5
CMMU 156	Politics of Food and Health	5
CMMU 157	Ageism and Activism	5
CMMU 160	Public Health	5
CMMU 161	Gender Health and Justice	5
CMMU 162	Community Gardens and Social Change	5
CMMU 163	Health Care Inequalities	5
CMMU 164	Health Justice in Conflict	5
CMMU 165	Community Analysis for Global Health	5
CMMU 186	Food and Agriculture Social Movements	5

Cowell College

COWL 138A	The Place of Higher Education in a Democratic Society	5
COWL 175A	Imagination	5

Critical Race and Ethnic Studies

CRES 100	Comparative Theories of Race and Ethnicity	5
CRES 112	AsianAm Enviro Justice	5
CRES 114	Race and Disability in American Drama	5
CRES 118	Abolitionist Futures	5
CRES 121	The Struggle for K-12 Ethnic Studies	5
CRES 150	Race, Gender and Algorithms	5
CRES 185A	Race, Gender, and Science	5
CRES 188B	Topics in Black Studies	5
CRES 188T	Topics in Race, Science and Technology	5

Economics

ECON 110	Managerial Cost Accounting and Control	5
ECON 120	Development Economics	5
ECON 125	Economic History of the U.S	5
ECON 149	The Economies of East and Southeast Asia	5
ECON 164	Economics and the Telecommunications Industry	5
ECON 169	Economic Analysis of the Law	5

Education

EDUC 115	K-12 Student Assessment	5
EDUC 125	Multicultural Children's Literature for Elementary Classrooms	5
EDUC 128	Immigrants and Education	5
EDUC 135	Gender and Education	5
EDUC 140	Language, Diversity, and Learning	5

EDUC 141	Bilingualism and Schooling	5
EDUC 160	Issues in Educational Reform	5
EDUC 164	Urban Education	5
EDUC 173	Seminar in Critical Pedagogy	5
EDUC 178	Special Topics in Education	5
EDUC 181	Race, Class, and Culture in Education	5

Environmental Studies

ENVS 100L	Ecology and Society Writing Laboratory	5
ENVS 130B	Justice and Sustainability in Agriculture	5
ENVS 143	The Future of Sustainable Development	5
ENVS 147	Global Environmental Justice	5
ENVS 158	Political Ecology and Social Change	5

Film and Digital Media

FILM 132B	International Cinema, 1960 to Present	5
FILM 136B	History of Television	5
FILM 165A	Film, Video, and Gender	5
FILM 165B	Race on Screen	5
FILM 165C	Lesbian, Gay, and Queer Film and Video	5
FILM 165D	Asian Americans and Media	5
FILM 168	National Cinema and Culture	5
FILM 171S	Special Topics in Film and Digital Media Production	5

Feminist Studies

FMST 100	Feminist Theories	5
FMST 102	Feminist Critical Race Studies	5
FMST 105	Feminist Methodologies	5
FMST 112	Women and the Law	5
FMST 123	Feminism and Cultural Production	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 126	Images, Power, and Politics: Methods in Visual and Textual Analysis	5
FMST 131	The Politics of Matter and the Matter of Politics	5
FMST 132	Gender and Postcoloniality	5
FMST 133	Science and the Body	5
FMST 139	African American Women's History	5
FMST 145	Racial and Gender Formations in the U.S	5
FMST 150	Mediating Desire	5
FMST 188	Topics in Feminist Studies	5
FMST 189	Advanced Topics in Feminist Theory	5

History of Art and Visual Culture

HAVC 118	Art of the Contemporary African Diaspora	5
HAVC 123A	Modernity and the Arts of India	5
HAVC 123B	Religions and Visual Culture of South Asia	5
HAVC 124B	History of Photography in Southeast Asia	5
HAVC 124C	Arts and Politics in Theravada Traditions	5
HAVC 127A	Buddhist Visual Worlds	5
HAVC 127F	The Politics of Exclusion: Asian American Visual Culture	5
HAVC 140B	Victorian America	5
HAVC 140C	Race and American Visual Arts	5
HAVC 140D	Chicano/Chicana Art: 1970-Present	5
HAVC 141C	Modern Art: Pop to Present	5
HAVC 141E	Histories of Photography	5
HAVC 141H	Media History and Theory	5
HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HAVC 142	Contemporary Art and Ecology	5
HAVC 143A	Contemporary Architecture and Critical Debates	5
HAVC 143B	History of Urban Design	5
HAVC 143G	After Utopia: Architecture and the City, 1968-Present	5
HAVC 160A	Indigenous American Visual Culture Before 1550: Mexico	5
HAVC 160B	Indigenous American Visual Culture Before 1550: The Andes	5
HAVC 164A	Art and Visual Culture of Indigenous California	5
HAVC 170	Art of the Body in Oceania	5
HAVC 180A	Contemporary Art in a Globalized World	5
HAVC 185	Community Engagement Through the Arts	5
HAVC 186	Horror and Gender in Art and Visual Culture	5
HAVC 186I	Indigenous Art and Activism	5

History

HIS 101C	Oceans in World History	5
HIS 104D	Museums and the Representation of Native American History, Memory, and Culture	5
HIS 105	Nations and Nationalism	5
HIS 106B	Asian and Asian American History, 1941-Present	5
HIS 109A	Race, Gender, and Power in the Antebellum South	5
HIS 110A	Colonial America, 1500-1750	5
HIS 110E	Rise of the Machines: Technology, Inequality, and the United States, 1877 to 1914	5

HIS 110G	Strange Days: The USA and its National Security State, 1945-1991	5
HIS 110H	Greater Reconstruction: Race, Empire, and Citizenship in the Post-Civil War United States	5
HIS 114	Market Revolution in Antebellum U.S.	5
HIS 117A	From the Player Piano to Pandora	5
HIS 118	The Global Cold War, 1945-1991	5
HIS 118A	Conspiracy Planet: How Conspiracies, Conspiracy Theories, and Conspiracy Scandals Shape History	5
HIS 120	W.E.B. Du Bois	5
HIS 121A	African American History to 1877	5
HIS 121B	African American History, 1877 to the Present	5
HIS 122B	Jazz and United States Cultural History, 1945 to the Present	5
HIS 123	Immigrants and Immigration in U.S. History	5
HIS 128	Chicana/Chicano History	5
HIS 130	History of Modern Cuba	5
HIS 131	Women in Colonial Latin America	5
HIS 139C	Queer Pasts: A Radical Telling of LGBTQ History in the United States	5
HIS 146A	Colonial South Asia 1750-1947	5
HIS 150A	Emperors and Outcasts: Ancient Japan	5
HIS 150F	Engendering Empires: Women in Modern Japan and Korea	5
HIS 154	Post-Colonial North Africa	5
HIS 155	History of Modern Israel	5
HIS 167A	The First World War	5
HIS 172B	German Film, 1919-1945	5
HIS 176	Eastern Europe, 1848-2000	5
HIS 178C	European Intellectual History, 1870-1970	5
HIS 181B	Africa and Britain in an Imperial World	5
HIS 184B	Racism and Antiracism in Europe: From 1870 to the Present	5
HIS 185M	Zionism: An Intellectual History	5

History of Consciousness

HISC 102	Philosophy and Poetics	5
HISC 111	States, War, Capitalism	5
HISC 112	Foundations in Critical Theory	5
HISC 113	History of Capitalism	5
HISC 120	What is a State?	5
HISC 150	Radical Political Theory	5
HISC 160	Advanced Topics in History of Consciousness	5

Italian

ITAL 106	Italian Culture Through Film	5

John R Lewis College

JRLC 105	The Making and Influencing of Environmental Policy	5
JRLC 135	Apprenticeship in Community Engaged Research	5
JRLC 191	Teaching Social Justice	5

Kresge College

KRSG 105	STARS Intensive Internship Curriculum	5

Latin American and Latino Studies

LALS 100	Concepts and Theories in Latin American and Latina/o Studies	5
LALS 100A	Research in LALS	5
LALS 115	Mexico-United States Migration	5
LALS 122	Media and Nationalism	5
LALS 126	Digit@l Americ@s/Digit@l Latin@s	5
LALS 128	Latino Media in the U.S	5
LALS 131	Latino Literatures: Assimilation and Assimilability	5
LALS 143	Race and Ethnicity	5
LALS 143J	Global Political Economy	5
LALS 144	Mexicana/Chicana Histories	5
LALS 149	Whiteness in Latin America	5
LALS 150	Afro-Latinos/as: Social, Cultural, and Political Dimensions	5
LALS 151	Race & Mobility	5
LALS 152	Consumer Cultures Between the Americas	5
LALS 155	Latin American and Latino Youth Movements	5
LALS 163	The Amazon: Cultures and Perspectives	5
LALS 165	Contemporary Peru	5
LALS 168	Inter-American Solidarities	5
LALS 169	South America: History, Society, and Culture	5
LALS 170	Indigenous Struggles in the Americas	5
LALS 172	Visualizing Human Rights	5
LALS 175	Migration, Gender, and Health	5
LALS 178	Gender, Transnationalism, and Globalization	5
LALS 180	Borders: Real and Imagined	5
LALS 186	Field Research Methods	5
LALS 194E	Unfree Migrations	5
LALS 194G	Chile: Social and Political Change	5

Linguistics

LING 154	Language and Social Identity	5

Legal Studies

LGST 108	Gender, Sexuality, and Law	5
LGST 113	Gay Rights and the Law	5
LGST 114	Jews, Anti-Semitism, and the American Legal System	5
LGST 125	History of the U.S. Penal Culture	5
LGST 130	Inequality and Law	5
LGST 133	Law of Democracy	5
LGST 146	Philosophy of Law	5
LGST 153	Immigration, Citizenship, and Law	5

Literature

LIT 121N	RAGE: Race and Performance	5
LIT 126A	International Cyberpunk	5
LIT 131A	Problems	5
LIT 131C	Worldings	5
LIT 131D	Literature in a Global Context	5
LIT 135E	The Historical Imaginary	5
LIT 136B	Beat Literature and the World	5
LIT 141A	Early Mediterranean Cultures	5
LIT 147A	Twain, Slavery, and the Literary Imagination	5
LIT 149C	The 1960s	5
LIT 160E	Theorizing Race and Comics	5
LIT 160F	Topics in Cultural Studies	5
LIT 161A	African American Literature	5
LIT 164C	Global Jewish Writing	5
LIT 164D	Jewish Diaspora, Ethnicity, and Urban Life	5
LIT 164G	Literature and the Holocaust	5
LIT 166A	Representations of Gender in Medieval Literature	5
LIT 166C	Early Modern Italian Women Writers	5
LIT 189C	Introducción a Spanish Studies	5
LIT 189U	Modernidad y literatura: El Boom de la novela latinoamericana	5

Oakes College

OAKS 150	Queer History and Theory in the United States	5
OAKS 151A	Corre la Voz: Community Literacies and Power Seminar	2
OAKS 151B	Community Literacies Field Study	3
OAKS 152	Transformative Literacies	5
OAKS 153	Community Mapping	5
OAKS 155	Research for Social Justice: Special Topics	5
OAKS 167	Food Systems: Culture, Social Justice, Sustainability	5

OAKS 151A and OAKS 151B must be taken concurrently to count as one sociology elective

Philosophy

PHIL 121	Epistemology	5
PHIL 126	Philosophy of Social Sciences	5
PHIL 144	Topics in Social and Political Philosophy	5
PHIL 153	Philosophy of Race	5

Politics

POLI 101	Analyzing Political Data	5
POLI 103	Feminist Interventions	5
POLI 105A	Ancient Political Thought	5
POLI 105B	Early Modern Political Thought	5
POLI 105C	Modern Political Thought	5
POLI 110	Law and Social Issues	5
POLI 111A	Constitutional Law	5
POLI 118	Critical Political Thought and Critical Theory	5
POLI 120B	Society and Democracy in American Political Development	5
POLI 120C	State and Capitalism in American Political Development	5
POLI 121	Racism & Justice in America	5
POLI 125	Political Organizations in American Politics	5
POLI 128	American Elections and Voting Behavior	5
POLI 132	California Water Law and Policy	5
POLI 135	Immigration Policy and Debate in the U.S.	5
POLI 140A	European Politics	5
POLI 140C	Latin American Politics	5
POLI 140D	Politics of East Asia	5
POLI 148	Social Movements	5
POLI 149	Democratic Transitions	5
POLI 154	The Philippines and the World	5
POLI 160A	Theories of International and World Politics	5
POLI 160B	International Law	5
POLI 160C	Security, Conflict, Violence, War	5
POLI 160D	The Politics of Global Capitalism	5
POLI 161	The Rise of China	5
POLI 167	Politics of International Trade	5
POLI 172	Liberalism, the State, and the War on Terror	5
POLI 174	Global Political Ecology	5
POLI 175	Human Rights	5
POLI 186	Global Health Politics	5
POLI 187	Decolonial Global Health: A View from the Middle East and Africa	5

Psychology

PSYC 112	Moral Development	5
PSYC 118A	Children and War	5

PSYC 118B	Children in Extreme Circumstances	5
PSYC 140B	African American Psychology	5
PSYC 140G	Women's Lives in Context	5
PSYC 140H	Sexual Identity and Society	5
PSYC 140Q	Social Psychology of Gender	5
PSYC 142	Psychology of Oppression and Liberation	5
PSYC 145	Social Influence	5
PSYC 146	The Social Context	5
PSYC 147A	Psychology and Law	5
PSYC 147B	Psychology and Law	5
PSYC 149	Community Psychology: Transforming Communities	5
PSYC 153	The Psychology of Poverty and Social Class	5
PSYC 155	Social-Community Psychology in Practice	5
PSYC 168	The Study of Dreams	5
PSYC 169	Community Mental Health (CMH)	5
PSYC 175	Personality, Relationships, and Emotions	5
PSYC 183	History and Systems of Psychology	5

Sociology Individual Studies

SOCY 193	Field Study	5
SOCY 193I	Sociology Global Internship	10
SOCY 194	Group Tutorial	5
SOCY 198	Independent Field Study	5
SOCY 199	Tutorial	5

Spanish

SPAN 156E	Spanish Culture	5
SPAN 156M	Mexico and the Southwest	5

Theater Arts

THEA 161P	Theater in the Chicano Power Movement	5

UCDC

UCDC 194A	UCDC Core Seminar	5
UCDC 194B	UCDC Internship	7

UC Online and Global Learning

Courses outside the above list of approved courses may also be approved, such as courses from Global Learning and UC Online. For more information about approved Global Learning and UC Online courses, or to petition for a new course, please visit the Sociology Department page.

Writing

WRIT 161	Academic Writing and Research Methods	5

THE COLLEGES

UC Santa Cruz combines the resources of a world-class public research university with a distinctive undergraduate experience characterized by our college system. Each college is a vibrant living/learning community supported by enrichment courses, advising and academic support, and faculty and staff who organize student activities and sponsor events to enhance the intellectual and social life of the campus. The colleges are committed to fostering a nurturing and academically thriving environment for students of all backgrounds. Each college strives to promote the attributes of a diverse and multicultural community in its own unique way.

In order of founding, the colleges are Cowell, Stevenson, Crown, Merrill, Porter, Kresge, Oakes, Rachel Carson College, College Nine, and John R. Lewis College. Self-contained and architecturally distinct, each college is a relatively small community of 30 to 110 faculty members and between 1,500 and 1,800 students, about half of whom live on campus. Each college has its own housing, as well as academic, social, and educational programming, and each is an integral part of the larger campus. The colleges have their own academic emphases and cultural traditions, although each seeks faculty and students from a variety of disciplines to foster broad intellectual interests. The colleges play a primary role in academic advising and are the center of student life. Students graduate from their college. At the same time, all university academic programs, resources, and student services are open to students of every college.

College Nine

College Office
217 Social Sciences 1
(831) 459-5034
https://collegenine.ucsc.edu

ACADEMIC EMPHASIS

College Nine's theme of International and Global Perspectives emphasizes the causes and consequences of our increasingly interconnected world. We challenge students to grapple with complex, controversial, and multi-scalar issues, for which there exist vastly differing opinions about the nature of problems and how to solve them. Becoming a global citizen requires critical thinking, cultural awareness, and effective communication, all skills our training provides to our students. Our academic and co-curricular programs analyze economic and cultural globalization, immigration, environmental crises, ethnic conflicts, genocide, and human rights, among other issues. Students interested in these issues either as their major focus or as part of their general education are invited to join the College Nine community.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in CLNI 1A, College Nine 1A: Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. CLNI 1A and KRSG 1T integrate introductions to academic skills with the online Slug

Orientation process, and begin student preparation for their studies at College Nine and throughout UC Santa Cruz.

CLNI 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

CORE COURSE

CLNI 1: Academic Literacy and Ethos: International and Global Perspectives

First-year students examine current issues pertinent to the college's intellectual theme. This course challenges students to address what it means to be a global citizen, in recognition of our growing interconnections and interdependencies, and the fact that certain intractable problems cannot be addressed without large-scale collective action. Topics address issues such as globalization, inequities in wealth and poverty across the world, human rights, climate change, and social movements. The seminar teaches foundational concepts for intellectual exploration and personal development within an academic community—analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. The instructors work closely with each student throughout the quarter.

All students admitted as frosh are required to complete the core course. Students admitted as transfer students with sophomore standing or above (45 or more credits in transfer) are exempt from the core course requirement.

COLLEGE ADVISING

Contact information:

nineadvising@ucsc.edu
Phone: 831-459-5034
217 Social Sciences 1

Located on the second floor of Social Sciences 1, our team of dedicated, knowledgeable and caring advisors are here to guide students throughout their journey at UC Santa Cruz, from being admitted to the university through graduation. Our approach is collaborative and student-centered, assisting undergraduates with identifying and exploring their academic interests and capacities, and providing advice as to how to make the most of their time at UCSC. Our advisors answer questions about navigating the policies and life at UC Santa Cruz, course scheduling and selection, degree and general education requirements, qualifying for a major, educational support and opportunities, and much more. Close partnerships with units across campus mean that if we do not know the answer to a question, we usually know someone who does.

Students who wish to connect with advising should visit the College Nine Academic Advising website for open hours, drop-ins, and appointments.

OTHER ACADEMIC PROGRAMS

Optional programs are available to involve College Nine students in academic and co-curricular activities beyond the first-quarter course. They are designed to promote students' academic achievement and success by connecting them with faculty mentors and helping them pursue leadership experiences.

Global Action

Global Action, CLNI 85, is a peer facilitated course where students learn about current international and global issues through interactive exercises, small group discussions, and faculty presentations. Students will develop an "action plan" to raise awareness about one or more of these concerns and take practical steps to create positive change in the world. Projects in past years have partnered with organizations doing outstanding work in countries like Ecuador, India and Nepal. Students who have taken and excelled in CLNI 85 are eligible to teach the course in a future year, enrolling in CLNI 191: Teaching Global Action, where they gain the skills, techniques and tools to facilitate their own section. Mentoring by our experienced staff is vital to realizing the potential of such peer-to-peer learning.

Apprenticeship in Community Engaged Research

The Apprenticeship in Community Engaged Research (or (H)ACER) is a new program at College Nine and John R. Lewis College designed to teach students qualitative research methods with a focus on community-engaged and participatory methodologies. The objectives of our work encompass student enrichment, uplifting the work of our community partners, and conducting relevant, critical research to solve real-life challenges at the intersections of education, health, economics, immigration, nutrition, labor and the environment. The benefits for students of experiential learning in the community are multiple: abstract academic concepts become more tangible, students expand their web of social connection, and skills such as teamwork and problem solving are heightened. Students reach outside of their comfort zone, have their assumptions challenged, and meet remarkable local heroes.

(H)ACER offers a scaffolded progression of opportunities for students: students can begin by getting involved with Praxis, participating in Alternative Spring Break, or signing up for internships with community partners such as an after-school, garden-based educational program at Calabasas Elementary School in Watsonville. Praxis is a student club for community service in which College Nine and John R. Lewis College students undertake monthly volunteer opportunities throughout Santa Cruz County and neighboring communities. During campus meetings, Praxis participants engage in discussion, reading, and reflection to increase their awareness and knowledge about key issues.

Alternative Spring Break (ASB) in Watsonville centers on issues of food security, sovereignty, and justice. After getting to know each other at a retreat, discussing readings, and

hearing from a panel of Watsonville leaders, ASB participants undertake five days of experiential learning with a variety of community partners (e.g., schools, artists, non-profits). After Spring Break, a final gathering is held for students to share their final projects.

These community learning opportunities for students then transition in our (H)ACER class series. The classes train students in research methodologies, support data collection and analysis with our community and university partners, and provide cutting-edge and methodologically rich research experiences for UCSC undergraduate students. These classes set students up to develop their own research projects that can then extend into senior theses and pathways to distinction in Colleges Nine and Ten.

Practical Activism: Tools for Local and Global Change

The annual Practical Activism Conference is a day-long, student-led event featuring keynote speakers, multiple workshops, tabling by on- and off-campus organizations, performances, and a variety of hands-on activism activities. Students gain valuable leadership and organizing skills through developing and planning this exceptional program, which involves collaboration among faculty, staff, and the local community. Visit Practical Activism for more information.

Community Garden Class

In cooperation with the work of the Community Garden Club, this course explores such topics as collaborative garden design, community gardening best practices, building regenerative social and ecological systems, sustainability, and food justice, while also offering hands-on experience in the College Nine and John R. Lewis College community garden.

Education Abroad

The UC Education Abroad Program places students at a university in another country for one or more quarters. Studying abroad can be a valuable way to expand one’s understanding of the world. Given the international focus at College Nine, students are encouraged (but not required) to develop a second language or to study abroad.

College Nine Pathways to Distinction

Another feature of College Nine is that qualified students may graduate with College Nine Distinction. This recognition is intended to serve as an incentive for students to pursue activities (research, course work, service, leadership, internships, etc.) that are especially apt to help them succeed in college and beyond related to the theme of international and global perspectives.

Cowell College

Cowell 118
831-459-2253
https://cowell.ucsc.edu

ACADEMIC EMPHASIS

The academic theme of the college encourages students to pursue their general and disciplinary study with attention to the values of a liberal arts education: understanding one’s individual perspectives by the exploration of one's historical background and world context. Students affiliated with Cowell college pursue majors from all departments on campus.

In satisfying their general education requirements, first-year Cowell students are required to take the Cowell core course in the fall term. The core course is taught in small seminar sections and seeks to develop critical reading and seminar discussion skills through engagement with a selection of classic and contemporary texts focused on the theme of justice.

Elective courses are offered every term at the college. Students from any college are invited to take an elective course at Cowell College. Some courses emphasize the development of skills such as public speaking or financial literacy. Some courses take a broader perspective, examining the theory and practice of oral history. We also offer a series of courses connected to the Gary D. Licker Chair that expose students to cutting-edge research across multiple disciplines. Many of the elective courses at Cowell College carry a general education requirement and are offered in-person, synchronously online, or asynchronously online. A full listing of the elective courses offered can be found here.

The college also enriches the intellectual and cultural life of the campus by sponsoring events of various kinds: lectures and presentations by affiliated faculty and visiting scholars, theatrical and musical performances, and forums and debates on topics of current interest.

Students who develop ideas for research, creative projects, community service, or internship experiences may apply to the college provost for financial support. The college also awards several annual scholarships and sponsors prizes for outstanding academic work and service to the college or to the greater community. Submissions for all awards, prizes and scholarships are due in spring quarter. More information regarding the guidelines and how to send in submissions can be found here.

The faculty fellows affiliated with the college represent all academic divisions (arts, engineering, humanities, physical and biological sciences, and social sciences). The faculty fellows guide the college academic programs and help the college and its students form connections with faculty in the other divisions, thus adding to the richness of academic dialogue within a college.

The college academic buildings house humanities faculty, with notable concentrations in philosophy, classics (study of ancient Greek and Latin language and civilization), and modern foreign languages, especially Chinese, French, Italian, Russian, German, and Japanese.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in COWL 1A, Cowell 1A: Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. Cowell 1A and Kresge 1T integrate introductions to academic skills with the online Slug Orientation process, and begin student preparation for their studies at Cowell College and throughout UC Santa Cruz.

COWL 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

CORE COURSE

COWL 1, Academic Literacy and Ethos: Imagining Justice

Cowell College One, Imagining Justice, is a first-year analytical reading and critical thinking seminar required of all first-year students, offered only in the fall quarter. It provides intensive practice in critical thinking and analysis, while also giving students opportunities to increase their speaking and presentation skills, and to engage in creative expression. More broadly, it introduces students to university-level discourse including key skills and common practices, and UC Santa Cruz's academic expectations. It works to build an intellectual community here at Cowell College not only within the incoming class, but across all students at Cowell, since some texts are held over from year to year, so that students from frosh to seniors have reading and ideas in common.

All students admitted as frosh are required to complete the core course. Students admitted as transfer students with sophomore standing or above (45 or more credits in transfer) are exempt from the core course requirement.

COLLEGE ADVISING

Contact information:

cowell@ucsc.edu
831-459-2253
Cowell College Administration Building, Room 118

Cowell College advisors help students interpret academic policies and procedures and clarify educational goals. They provide support to students to ensure their academic success and progress toward their degree throughout their time at UC Santa Cruz. Advisors help students make informed decisions, develop resiliency, and develop the ability to take ownership of their academic choices. Advisors also connect students to resources that will enrich their academic experiences.

Cowell College hosts several campuswide programs including the Chancellor's Undergraduate Internship Program (CUIP), the Smith Society, the Center for Public Philosophy, and the Eloise Pickard Smith Gallery.

Crown College

Crown College Administration Building
831-459-2412
https://crown.ucsc.edu

Crown College seeks to provide students with a living and learning environment in which they can positively develop intellectually and socially. Crown is traditionally viewed as the "science college," and it does have a strong presence of engineering, biology and other STEM (Science, Technology, Engineering, and Math) students but a large number of students majoring in the social sciences and some arts and humanities students call Crown home as well.

Crown is located on a hilltop surrounded by a redwood forest. The award-winning architecture with its white walls and high-pitched tiled roofs suggests a hillside Mediterranean village. The college's residential facilities house approximately 800 students. The facilities at Crown College were built through a partnership of public funds and a gift from the Crown Zellerbach Foundation.

We enjoy the strong support of generations of Crownies and they continue to be a part of the community they formed as students. Alumni participate in an advisory capacity in the college's governance and their generous contributions have allowed Crown to renovate Crown's Library and its Fireside Lounge, enrich our student's Core experience, and develop our extensive curriculum of elective classes.

For more information on the Crown's academic and social environment please visit Crown's website and also see this feature article: Crown College: Science Minded, Socially Mindful.

ACADEMIC EMPHASES

From the time of its founding in 1967, issues pertaining to the role of science and technology in society have been a focus of special interest at Crown College. We approach these issues from an interdisciplinary perspective that recognizes the influence of social and cultural factors on the scientific enterprise, as well as the ways in which science and technology influence our society.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh enroll in CRWN 1A, Crown 1A: Introduction to University Life and Learning. Transfer students enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. Crown 1A and Kresge 1T integrate introductions to academic skills with the online Slug

Orientation process, and begin student preparation for their studies at UC Santa Cruz.

CRWN 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

CORE COURSE

CRWN 1, Academic Literacy and Ethos: Ethical and Societal Implications of Emerging Technologies

Crown College's entering frosh enroll in our core course, CRWN 1, which explores Crown's theme, Ethical and Societal Implications of Emerging Technologies. Students work individually, in small groups of four to five students, and in sections of 25 to 30 students, thereby modeling and embracing the diversity found across campus. CRWN 1 looks at technological revolutions and at their implications both locally and globally. CRWN 1 also explores issues of inequality and the ethical dilemmas involved and what we can do as responsible citizens to address the challenges facing our society. Deeper goals of this course include fostering a sense of belonging, and ensuring that our students develop the analytical reading, critical thinking, and effective communication skills that they need to succeed in their studies.

A central component of the course is a group research project, in which students study the impact of a technology of their choice, while learning strategies for effective group work. Crown's core course is enhanced through our plenary series, which gives students opportunities to hear intellectual leaders speak and to interact with them, while getting to know our team of Core faculty.

All students admitted as frosh are required to complete the core course. Students admitted as transfer students with sophomore standing or above (45 or more credits in transfer) are exempt from the core course requirement.

OTHER ACADEMIC PROGRAMS

Complementing its focus on science and technology, Crown provides experiential learning opportunities and supports the development of transferable skills. This includes providing funding for materials needed for class projects (Crown Student Project Funds) and an extensive curriculum of elective classes. These classes are open to all majors and can be grouped into three areas: entrepreneurship, digital literacy, and communication skills.

Crown offers three entrepreneurship classes: Start-up Entrepreneurship Academy (CRWN 90), Social and Creative Entrepreneurship (CRWN 92), and Fundamentals of Starting and Scaling an Organization (CRWN 100). Crown also offers two exciting opportunities for experiential learning in the area of entrepreneurship: GetVirtual Business Assistance (CRWN 95), and Marketing for Good (CRWN 91), and facilitates access to incubator space and to funding opportunities for student ventures through its partnership with the Center for Innovation and Entrepreneurial Development. Opportunities to explore the ethical implications of emerging technologies and to develop tools for ethical assessment are available through Crown's Center for Applied Ethics and Values of Emerging Technologies.

Crown supports digital literacy through two classes: Computational Futurology: Use of Data Analysis for Predicting Human Behavior and Activity (CRWN 88), and Workshop in Computational Biology (CRWN 89). CRWN 88 covers statistical and computational approaches available to predict human activity, both at the individual and at the collective level, and culminates in a group project that integrates the concepts learned in the course. CRWN 89 engages students in genomics research by forming teams of complementary expertise in coding, advanced statistics and biology and guiding them through the process of academic inquiry.

Crown also offers a variety of classes supporting multimodal communication and artistic expression. This includes two classes offered by the KZSC FM radio station: Introduction to Broadcast Media: Radio (CRWN 70) and Broadcast Production: Radio (CRWN 70L) and also a Sci-Fi class, Science Fictions (CRWN 80F) and a Sci-Fi drama class tied to Core, Digital Theater Workshop (CRWN 96), a videography class, Storytelling in a Digital Age (CRWN 86), a podcasting class, Podcasting: Digital Storytelling (CRWN 98).

Finally, Crown has also established a collaboration with the departments of Mathematics and Statistics to develop a data science track. The first class in this track is Mathematical Problems in Data Science (CRWN 85).

STUDENT WELL-BEING

Crown a class to promote student resiliency (CRWN 81). In a workshop series, students explore their identity while managing and letting go of stress, anxiety, and depression. This program focuses on understanding: 1) how we process our thoughts and feelings; 2) how society (family and friends) and culture impacts us; and 3) ways to experience and create meaning and value in life.

SUMMER CLASSES

Crown College will offer a great curriculum in Summer 2024! These classes are open to all UCSC students from any and all colleges and majors, as well as students from other universities or high schools.

Summer Classes

CRWN 80F Science Fictions
CRWN 90 Start Up Entrepreneurship Academy (SEA)
CRWN 95 GetVirtual Business Assistance
CRWN 98 Podcasting: Digital Storytelling

CRWN 100 Fundamentals of starting and scaling an organization

Enrollment opens May 1, all students are welcome.

Global Seminars

Netherlands: CRWN 94, Ecoentrepreneurship; CRWN 92G, Social and Creative Entrepreneurship

Ireland: CRWN 98B, Podcasting: Digital Storytelling; in conjunction with WRIT 2, Research and Travel Writing

By application only—see website for details, info sessions, and deadlines.

Through Summer Session Summer UCSC, Crown offers a large part of its curriculum in the summer.

These classes are open not only to all UCSC students but also to students from other higher education institutions and are delivered in 5-week, 8-week or 10-week periods.

COLLEGE ADVISING

Crown Advising is located in the Crown Administration Building and is staffed by the college assistant, professional academic advisors, and a team of peer advisors. Crown Advising offers appointment advising (phone, in-person, or remotely via Zoom) every weekday in fall, winter, spring, and summer. To schedule an appointment, students should use Slug Success. For quick questions or completion of most forms, students are encouraged to email crownadvising@ucsc.edu. Please visit our website for the most up to date information about advisor availability.

Crown Staff Directory

Crown College Core Faculty Core Faculty

Crown College Fellows Fellows

John R Lewis College

College Office
217 Social Sciences 1
(831) 459-5034
https://johnrlewis.ucsc.edu/

Formerly known as College Ten, the college was dedicated as John R Lewis College on May 6, 2022, a naming that was made possible by the generosity of anonymous donors who are inspired by the life and legacy of the Civil Rights Leader and member of Congress. All of us at John R. Lewis College are humbled by this honor, and committed to continuing, deepening, and strengthening our efforts toward our theme of social justice and community.

ACADEMIC EMPHASIS

John R Lewis College's theme of Social Justice and Community addresses a range of social problems and their impacts on society. Understanding the contemporary United States, for instance, requires social and historical frameworks that address concepts like racialized and gendered social hierarchies, the construction of marginalization and difference, the impacts of class differences, and many manifestations of unequal power relationships. A flourishing society that progresses toward social and environmental justice depends on informed, critical, and empathetic people willing to make the efforts necessary to create social change. At John R Lewis College, we strive toward the goals of analyzing, embodying, and implementing ideas that help our students become knowledgeable and critical social actors who recognize and practice the principle that all people possess equal intrinsic worth. Our academic and co-curricular programs consider the injustices that many people confront in their lives, and possible policies for overcoming social, political, and economic inequalities. In addition, the college provides students with opportunities to make their own positive contributions to social change through community involvement and/or scholarly research.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in JRLC 1A, John R. Lewis College 1A: Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. JRLC 1A and KRSG 1T integrate introductions to academic skills with the online Slug Orientation process, and begin student preparation for their studies at John R Lewis College and throughout UC Santa Cruz.

JRLC 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

CORE COURSE

JRLC 1: Academic Literacy and Ethos: Social Justice and Community

First-year students examine current issues pertinent to the college's intellectual theme. The core curriculum explores the causes and consequences of social injustice in several ways. Students examine the roots of prejudice, discrimination, and violence directed toward groups based on their ethnicity, skin color, gender, sexual orientation, religious practices, or political views. They also consider the causes and consequences of economic inequality both within the United States and around the world. In addition to articulation with

the college theme, the core seminar teaches foundational concepts for intellectual exploration and personal development within an academic community—analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. The instructors work closely with each student throughout the quarter.

All students admitted as frosh are required to complete the core course. Students admitted as transfer students with sophomore standing or above (45 or more credits in transfer) are exempt from the core course requirement

COLLEGE ADVISING

Contact information:
jrlcadvising@ucsc.edu
Phone: 831-459-5034
Social Sciences 1, Room 217

Located on the second floor of Social Sciences 1, our team of dedicated, knowledgeable and caring advisors is here to guide students throughout their journey at UC Santa Cruz, from admission to the university through graduation. Our approach is collaborative and student-centered, assisting undergraduates with identifying and exploring their academic interests and capacities, and providing advice as to how to make the most of their time at UCSC. Our advisors answer questions about navigating the policies and life at UC Santa Cruz, course scheduling and selection, degree and general education requirements, qualifying for a major, educational support and opportunities, and much more. Close partnerships with units across campus mean that if we do not know the answer to a question, we usually know someone who does.

Students who wish to connect with Advising should visit the John R Lewis College Academic Advising website for open hours, drop-ins, and appointments.

OTHER ACADEMIC PROGRAMS

Optional programs are available to involve John R Lewis College students in academic and co-curricular activities beyond the first-quarter core course. They are designed to promote students' academic achievement and success by connecting them with faculty mentors and helping them pursue leadership experiences and experiential learning opportunities.

Social Justice Issues Workshop

Social Justice Issues Workshop is a two-credit course, taught by student facilitators that meets once per week and can be taken in addition to a regular 15-credit academic load. The workshop offers a small, dynamic learning community in which members explore important issues of personal and cultural identity; social, political, and environmental concerns; and community-mindedness. The class emphasizes small-group experiential learning through structured exercises and group activities, and also includes discussions, film presentations, and guest speakers. Mentoring by our experienced staff is vital to realizing the potential of such peer-to-peer learning.

Apprenticeship in Community Engaged Research

The Apprenticeship in Community Engaged Research (or (H)ACER) is a new program at College Nine and John R Lewis College designed to teach students qualitative research methods with a focus on community-engaged and participatory methodologies. The objectives of our work encompass student enrichment, uplifting the work of our community partners, and conducting relevant, critical research to solve real-life challenges at the intersections of education, health, economics, immigration, nutrition, labor and the environment. The benefits for students of experiential learning in the community are multiple: abstract academic concepts become more tangible, students expand their web of social connection, and skills such as teamwork and problem solving are heightened. Students reach outside of their comfort zone, have their assumptions challenged, and meet remarkable local heroes.

(H)ACER offers a scaffolded progression of opportunities for students: students can begin by getting involved with Praxis, participating in Alternative Spring Break, or signing up for internships with community partners such as an after-school, garden-based educational program at Calabasas Elementary School in Watsonville. Praxis is a student club for community service in which College Nine and John R Lewis College students undertake monthly volunteer opportunities throughout Santa Cruz County and neighboring communities. During campus meetings, Praxis participants engage in discussion, reading, and reflection to increase their awareness and knowledge about key issues.

Alternative Spring Break (ASB) in Watsonville centers on issues of food security, sovereignty, and justice. After getting to know each other at a retreat, discussing readings, and hearing from a panel of Watsonville leaders, ASB participants undertake five days of experiential learning with a variety of community partners (e.g., schools, artists, non-profits). After Spring Break, a final gathering is held for students to share their final projects.

Practical Activism: Tools for Local and Global Change

The annual Practical Activism Conference is a day-long, student-led event featuring keynote speakers, multiple workshops, tabling by on-and off-campus organizations, performances, and a variety of hands-on activism activities. Students gain valuable leadership and organizing skills through developing and planning this exceptional program, which involves collaboration among faculty, staff, and the local community. Visit Practical Activism for more information.

Community Garden Class

In cooperation with the work of the Community Garden Club, this course explores such topics as collaborative garden design, community gardening best practices, building regenerative social and ecological systems, sustainability, and

food justice, while also offering hands-on experience in the College Nine and John R. Lewis College community garden.

Radical Joy Class

This course focuses on *radical joy,* the feelings and practices of freedom in social justice movements. This course explores social and psychological effects of joy on social movement participants in terms of the growth of movements, well-being and creativity of participants, and evolution of ideas. The course takes a structural perspective looking at radical joy in movements against white supremacy, patriarchy, ableism, queer/trans-phobia and other intersections of liberation movements. Theories of art, esthetics, and artivism are centered, while also building students' art praxis through zines, music, podcasting, and crafting. This is achieved with activities and assignments that teach the practice of art for social and personal change.

John R Lewis College Pathways to Distinction

Students are recognized with John R Lewis College Distinction upon successful completion of three quarters (approximately 15 credits) of research experiences, coursework, service and leadership and/or writing intensive courses focused on social justice and community themes. Applicable John R Lewis College courses, service opportunities and research opportunities with faculty can fulfill the criteria for distinction. This recognition is intended to serve as an incentive for students to pursue activities that help them succeed in college and beyond related to the theme of social justice and community.

Kresge College

Kresge College Academic Center - Suite 2202
831-459-2071
https://kresge.ucsc.edu

ACADEMIC EMPHASIS

Kresge was the sixth college to be built on the UC Santa Cruz campus. The college was founded on principles of participatory democracy and experiential education, with a set of core values that remain integral to its academic and co-curricular activities and student organizations: creativity, sustainability, collaboration.

Kresge College is a living-learning community with a distinctive legacy of experimental and interdisciplinary education that emphasizes participatory learning, hands-on experience, and collaborative academic inquiry that transcends the walls of traditional classrooms. Kresge's curriculum is designed to enable students to live and learn with intention and purpose, to attend to the natural world around them, and to work creatively to solve pressing social, political, and ecological problems and facilitate stewardship of a just and sustainable society. Kresge's courses allow students to fulfill general education requirements while participating in practicums and small seminars taught by dedicated and imaginative faculty.

All entering first-year students enroll in KRSG 1: Academic Literacy and Ethos, a fall-quarter seminar that teaches foundational concepts for intellectual and personal development in an academic community.

The rest of Kresge's curriculum consists of 2- and 3-credit practice-oriented courses, including small, experiential-learning seminars like Power of Filmmaking (KRSG 2), Natural History Practicum (KRSG 3), Creative Writing (KRSG 65), and Theater Arts for Public Speaking (KRSG 30), as well as courses that help students design their college experience to take full advantage of being at UCSC, like Learning With Intention and Purpose (KRSG 100). KRSG 51 and 52 are practicums for City on a Hill Press, the campus newspaper.

Kresge also offers a number of courses designed specifically for transfer students, including Successful Transfer to the Research University (KRSG 25) and STARRS Internship (KRSG 102), a practicum course that guides students through a project-oriented internship with Services for Transfer, Re-entry, and Resilient Scholars.

Finally, Kresge has begun a new experimental seminar series called Learn to Love Reading Again, anchored by three principles: we read for the sake of reading, not for a test; we engage in discussion with peers to deepen our insight; and we read on paper. Reading Marx (KRSG 10) is the first seminar in the series.

As part of Kresge's commitment to participatory democracy, Kresge's provost and Kresge Parliament work together to further develop this curriculum.

ORIENTATION

All new frosh and transfer students who start in fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in KRSG 1A, Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Introduction to Research Universities and the Liberal Arts. KRSG 1A and KRSG 1T integrate introductions to academic skills with the online Slug Orientation process and begin to prepare students for their studies at UC Santa Cruz.

KRSG 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research

CORE COURSE

KRSG 1 Academic Literacy and Ethos

Offered in fall quarter

Offered to entering frosh, Kresge's "Core" course, KRSG 1, Academic Literacy and Ethos, teaches foundational practices for intellectual and personal development in an academic community—analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy—through a thematic focus on the power of attention to

transform the way we live and learn. The course is framed by three overarching questions: *Why do I learn? How do I learn?* And *From whom can I learn?* Through a variety of texts and assignments, students reflect on the purpose of their education at UCSC; how to approach learning intentionally, with curiosity and presence; and how to learn with and from others. Midway through the quarter, each student interviews an elder (a family member, teacher, or mentor) about a key learning experience in that person's life and creates an oral history from that interview. Then, for the Capstone Creative Project, the student transforms that oral history into a creative genre—a short documentary, graphic novel, storybook, poem, etc.—to tell their elder's story in a new way. Throughout, students continually reflect on the course's three overarching questions. In addition to their regular seminar, students also attend evening plenaries a few times over the quarter, coming together in larger groups for events related to the themes of the course.

All students admitted as frosh are required to complete the Core Course. Students admitted as transfer students with sophomore standing or above (45 or more credits in transfer) are exempt from the Core Course requirement.

Visit Kresge Core Course for additional information.

COLLEGE ADVISING

kresgeadvising@ucsc.edu
Phone: 831-459-2071

Kresge has a team of three academic advisors who work collaboratively with students to support them as they explore majors, navigate university policy, clarify academic goals, and develop strategies for success. Kresge's advisors serve as advocates for students who are experiencing institutional barriers to their success, while also upholding university policy when necessary.

Kresge's advising staff stays up-to-date on new research and best practices in the wider academic advising community. They celebrate and reflect the diversity of the Kresge student body and seek to model the goal of being lifelong learners.

College advisors work with students from the period of Summer Orientation and Welcome Week through graduation, although much of the interaction is concentrated in the student's first year or two on campus, before they've declared a major. Students come to the College Office with all of their questions, and college advisors and front desk staff frequently facilitate connections with other campus resources as appropriate.

In addition to one-on-one in-person and virtual advising, Kresge's advisors collaborate with the provost, Residence Life office, and campuswide academic and student support services to offer holistic programming. Past workshops have covered topics such as options for summer enrollment, how to choose a major, and finding family away from home.

OTHER ACADEMIC PROGRAMS

Kresge is a rich and multidimensional community, uniquely oriented toward creative communication, participatory democracy, and ecological ethics and sustainability.

Kresge is home to a number of co-curricular programs and activities that complement and enhance academic education by enabling learning outside a classroom setting. Kresge's Media & Society series presents lectures and public conversations on the role of media and popular culture in contemporary society, and partners with City on a Hill Press to host events with print, digital, TV, and radio journalists. Writers House is a themed housing floor and accompanying speaker series that brings poets, novelists, journalists, and other writers to Kresge.

The Kresge Garden Co-Op provides a community space where students empower themselves to learn how to grow their own food from seed, dig beds, and create a functional compost system. City on a Hill Press, which covers issues affecting the student population and the Santa Cruz community, is produced by and for UCSC students. TWANAS Communities of Color and Native American Students Press is one of the oldest student-run magazines at UCSC and is dedicated to providing a media outlet for students of color to write about issues affecting students of color. And Kresge Parliament offers opportunities for student government, community service, and activism in a setting that emphasizes participatory democracy.

Merrill College

Merrill College Administration Building
831-459-2144
https://merrill.ucsc.edu

ACADEMIC EMPHASIS

Merrill College was founded in 1968 with a generous gift from Charles E. Merrill, Jr. Since our inception, Merrill College has focused on the challenges posed by global inequality and on solutions that can be imagined when students transform themselves into producers of knowledge in their own right, through engagement with the world beyond the university campus.

The college theme is "Cultural Identities and Global Consciousness." This pairing signals the college's commitment to drawing on the funds of knowledge brought by individual college members to our community of scholars and a corresponding commitment to understanding questions of identity within a larger global context.

ORIENTATION

All new first-year and transfer students who start fall quarter are required to enroll in one of two online orientation courses designed to prepare students for their studies at Merrill College and throughout their time at UC Santa Cruz. First-year students will enroll in MERR 1A, Merrill 1A:

Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. MERR 1A and KRSG 1T integrate introductions to academic skills with the online Slug Orientation process.

MERR 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

CORE COURSE

MERR 1, Academic Literacy and Ethos: Reading Ourselves, Reading the World

MERR 1, also known as "Core," empowers students to develop university-level critical thinking skills with a focus on reading. Students learn strategies for building relationships with professors and other instructors, staff people, and fellow students who are essential for success at our university and beyond. Readings illuminate the rich history of community and activism at Merrill College and raise urgent questions that matter to all students, regardless of major. Topics we will address include the purpose of higher education, global inequality, and climate change. Through active learning, students cultivate skills that enable us to analyze different forms of evidence, formulate arguments, work in collaboration with others, and enter into constructive dialogue with members of our university community and the wider world.

All students admitted as frosh are required to complete the core course. Students admitted as transfer students with sophomore standing (45 or more credits in transfer) are exempt from the core course requirement.

COLLEGE ADVISING

Contact Information:
merrilladvising@ucsc.edu
Phone: 831-459-2144

Merrill College Administration Building

Merrill College advisors help students interpret academic policies and procedures and clarify educational goals. They provide support to students to ensure their academic success and progress toward their degree throughout their time at UC Santa Cruz. Advisors help students make informed decisions, develop resiliency, and develop the ability to take ownership of their academic choices. Advisors also connect students to resources that will enrich their academic experiences.

OTHER ACADEMIC PROGRAMS

A key characteristic of Merrill's academic program from its founding has been the importance of experiencing the world, not just studying it. Merrill offers a field study practicum that teaches methods of responsible participant observation and helps students arrange internships in local agencies and organizations.

Pathways to Graduate School supports junior and senior Latinx and/or Educational Opportunity Program (EOP) students on their journeys to graduate school, including support for creating successful applications and negotiating potential barriers to success. A series of leadership courses, open to students involved in any of UC Santa Cruz's registered student organizations, teaches of principles of critical engagement, collaboration, and organizational leadership for social change.

Merrill College offers several funding opportunities for experiential education. These include the Merrill Undergraduate Research Mentorships, which provide students with paid research internships. These internships provide invaluable research experience, personal and professional development, and prepare advanced undergraduates to pursue graduate studies. The Sandra Frausto Education Abroad Scholarship provides a scholarship to one qualified undergraduate annually to study in Latin America. Students may also apply for Merrill Special Project Funds and campus-backed research funds.

Oakes College

Oakes College Office, Oakes Administration Building
(831) 459-2558
https://oakes.ucsc.edu/

ACADEMIC PROGRAMS

Community-based Advocacy and Research (CARA) Certificate Program (p. 893)

ACADEMIC EMPHASIS

Oakes College is a multicultural community committed to social justice, freedom from oppression, and to providing the highest quality education to students from diverse backgrounds. Oakes is at the leading edge of scholarship, community-building, integrated co-curricular experiences, and community-engaged learning. Oakes students strive to understand the self, community, and systemic oppression, and take action for change in the world.

The Oakes College faculty represents a wealth of expertise from the natural sciences to the humanities, and we are proud to have some of the top scholars in the world among our faculty fellows. Our students major in every discipline at the University of California, Santa Cruz—from economics and computer science, to theater arts and Latin American and Latino studies—and they are well supported by the depth and breadth of the Oakes College faculty and the extensive knowledge of our advising team. Oakes graduates have gone on to successful careers in fields such as medicine, law, education, medical research, and community service.

The Oakes Core Course, Communicating Diversity for a Just Society, helps first-quarter, first year students build deeper critical connections by engaging with some of the most challenging and relevant issues that face us in the world. We do this by examining the intersections between reading, personal identity, and social justice. In our readings, discussions, and assignments, we seek to answer questions about how materials we read connect with our cultural, religious, sexual, ethnic, class, racial, and gender identities. Those who are admitted as transfer students are exempt from the Core Course requirement, but may take the course at their option pending available space.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in OAKS 1A, Oakes 1A: Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. OAKS 1A and KRSG 1T integrate introductions to academic skills with the online Slug Orientation process, and begin student preparation for their studies at Oakes College and throughout UC Santa Cruz.

OAKS 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

CORE COURSE

OAKS 1, Academic Literacy and Ethos: Communicating Diversity for a Just Society (5 credits)

This course examines the intersections between reading as a college student practice, personal and social identities, and social justice. In our readings, discussions, and assignments, we seek to answer questions about how materials we read connect with our cultural, religious, sexual, ethnic, class, racial, and gender identities. How have our own ways of identifying—of naming or defining ourselves—shaped our individual experiences? Where do we position our own stories within our shared family histories? How do our own autobiographies and essays, as written accounts of our process of identification, bring our search for ourselves and our relationship with reading and writing into the same conversation?

COLLEGE ADVISING

https://oakes.ucsc.edu/advising

Mailing address:
The Office of Advising and Records
Oakes College
University of California, Santa Cruz
1156 High Street
Santa Cruz, CA 95064

Contact information:

oakesadvising@ucsc.edu
(831) 459-4531

At Oakes College, our role as college advisors is to serve as the first point of contact for our undergraduate students. We believe that effective advising mandates that we collaborate with students to identify and clarify their goals, develop a sense of self-authorship, and learn to make meaningful decisions about their lives. We ensure our students know that their educational trajectory extends beyond coursework, and includes opportunities and experiences that will enhance their education.

Investing in an advising model where a student's lived experience is an educational asset, we advance our practices and become more engaged and proactive in our work. Our Oakes college advisors advocate for necessary policy and procedural changes. We address institutional barriers by engaging with justice rather than simply adopting it as a value. In turn, we aspire for students to see the greater meaning of their educational experience and how it can transform their lives beyond their undergraduate career.

The purview of colleges advising includes navigating campuswide requirements such as general education, academic progress, time to degree, and major selection and qualification.

OTHER ACADEMIC PROGRAMS

At Oakes College, we foster student engagement and leadership within and beyond the classroom. To this end, we encourage students to develop the knowledge, skills, and cross-cultural understanding necessary to become actively engaged people and future leaders in their own communities, workplaces, and academic disciplines as well as in the larger U.S. society and the world as a whole. We also provide a range of resources and programs that enable all students to succeed in their academic endeavors. Such resources include:

The Learning Center and the Westside Writing Center at Oakes College provide space for study groups as well as tutoring. Special assistance in academic reading and writing in a variety of subjects is offered to Oakes students.

The Oakes Computer Lab provides access to 20 PCs for Oakes students.

Co-curricular programs like the residential Science Community at Oakes College (Biko House) offer living-learning opportunities to enhance student success and to provide students with unique opportunities for interacting with faculty in small group contexts. Oakes College appoints a Scientist in Residence every year who facilitates programs to support STEM diversity in the college.

THE CARA PROGRAM

The Oakes College CARA Program (Community-based Action Research and Advocacy) works to create opportunities for experiential education, leadership, research, and career development; we center the strengths and needs of first-generation college students and projects for transformative social justice. Courses emphasize community-building along with research and communication techniques within the critical frameworks that build confidence and support justice initiatives. The program includes a development and outreach strategy with campus and community groups—including schools, youth sites, direct-service provider networks, and grassroots organizations, both on-campus and off. Upper-division courses are commonly accepted as major requirement substitutions in multiple departments. Oakes students and students in other colleges can earn a CARA certificate by completing a sequence of community-engaged coursework focused on social justice.

Porter College

Porter College Office, D-Building
831-459-2273
https://porter.ucsc.edu

ACADEMIC EMPHASIS

Porter College was founded in 1969 as the fifth of UC Santa Cruz's residential colleges and was later renamed in honor of a generous grant from the Porter-Sesnon family. Its mission is to foster achievement in all areas of study. Porter is especially dedicated to achievement in the arts and humanities, believing that creative and humanistic inquiry are essential parts of a rigorous and broad-minded education, a flourishing society, and a happy life.

Porter College fellows hail from every academic division on campus and from many non-academic professions, but all of them share the philosophy of education that the college's curriculum embodies: first, discover how to learn; then, learn by doing; and finally, let your learning make a difference in the world.

The Porter College curriculum encourages students to explore unusual topics and provocative ideas, to test and revise hypotheses about the meaning of their experiences, to learn from the failures that are an inevitable part of new learning and discovery, and to assume responsibility for the decisions they make in their studies. In addition to the core course for first-year students, which provides rigorous training in critical reading and study skills, Porter offers a variety of smaller interdisciplinary seminars that combine historical and theoretical approaches to the arts, humanities, and sciences with practical experience conducting scholarly research and making creative work.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in PRTR 1A, Porter 1A: Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. Porter 1A and Kresge 1T integrate introductions to academic skills with the online Slug Orientation process, and begin student preparation for their studies at Porter College and throughout UC Santa Cruz.

PRTR 1A Introduction to University Life and Learning (1 credit)
Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)
Offered online in summer quarter

CORE COURSE

PRTR 1, Academic Literacy and Ethos: Arts of Reading

PRTR 1 teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Engages Porter's intellectual tradition of investigating the contribution the arts and humanities make to a good life, a just society, and a flourishing world.

All students admitted as frosh are required to complete the core course. Students admitted as transfer students with sophomore standing or above (45 or more credits in transfer) are exempt from the core course requirement

COLLEGE ADVISING

porteradviser@ucsc.edu
Phone: 831-459-2273
Porter D-Building, Room 104

Porter College advisors help students interpret academic policies and procedures and clarify educational goals. They provide support to students to ensure their academic success and progress toward their degree throughout their time at UC Santa Cruz. Advisors help students make informed decisions, develop resiliency, and develop the ability to take ownership of their academic choices. Advisors also connect students to resources that will enrich their academic experiences.

OTHER ACADEMIC PROGRAMS

Porter College offers fellowships and grants to students and faculty in support of scholarly and creative projects. Among the grants offered annually are the Porter College Undergraduate Fellowship (PCUF), the Porter College Research Assistantship (PCRA) and the Nathan Foley Mendelssohn Memorial Travel Scholarship (NFM).

Rachel Carson College

Rachel Carson College Administration Building, Room 114
831-459-2361
https://rachelcarson.ucsc.edu

ACADEMIC PROGRAMS

Sustainability Studies Minor (p. 887)

ACADEMIC EMPHASIS

Rachel Carson College's academic classes focus on the theme of environment and society. The college sponsors a number of educational initiatives and courses aimed at furthering its theme and mission, as well as programs offering experiential learning for students. CRSN 1 is the required first-year college core course that introduces students to critical and analytical reading at the university level. The core course is mandatory for all incoming frosh.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in CRSN 1A, Rachel Carson 1A: Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. CRSN 1A and KRSG 1T integrate introductions to academic skills with the online Slug Orientation process, and begin student preparation for their studies at Rachel Carson College and throughout the University of California, Santa Cruz.

CRSN 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

CORE COURSE

CRSN 1, Academic Literacy and Ethos: Environment and Society

The Rachel Carson College core course focuses on the theme "Environment and Society." Throughout the quarter, we explore, through multiple perspectives, the complex relationships between people and the places they live. This is a course that focuses on big-picture questions like: What is nature? What does it mean to be "natural?" How do we understand our politics and ourselves at a time when the climate is changing so rapidly? This course is an interdisciplinary course by design—it simultaneously pulls from history, novels, journalism, art, sociology, and science to take on current issues in environmental studies like water rights, food systems, indigenous knowledge, environmental history, and labor. In pursuing these topics, students also delve into some of the environmental and ecological science that underpins them. The course consists of a weekly plenary (large lecture) and a bi- or tri-weekly seminar (discussion section).

COLLEGE ADVISING

carsonadvising@ucsc.edu
Phone: 831-459-2361
Rachel Carson College Administration Building, room 114

Rachel Carson College advisers help students interpret academic policies and procedures and clarify educational goals. They provide support to students to ensure their academic success and progress toward their degree throughout their time at UC Santa Cruz. Advisers help students make informed decisions, develop resiliency, and develop the ability to take ownership of their academic choices. Advisers also connect students to resources that will enrich their academic experiences.

OTHER ACADEMIC PROGRAMS

In addition to the core course, practicum internships, research projects, and a minor in sustainability studies all enable students to acquire skills that they can apply to their career at UC Santa Cruz, including service-learning work with campus and community-based agencies and organizations. Additional college courses include garden internships, academic and STEM preparation classes, student-facilitated classes in sustainability. For more information about academics, see Rachel Carson College.

Sustainability Studies

Rachel Carson College Office
(831) 459-2361
https://rachelcarson.ucsc.edu/

Sustainability Studies Minor (p. 887)

SUSTAINABILITY STUDIES MINOR

The rapidly growing and linked ecological and social crises arising from stresses on supplies of energy, water, food, land use and other natural resources are among the most critical societal challenges of the next 50 years. These crises are not simply about the adequacy of supply relative to demand; they are also the result of the complex social relations within and among societies, in the past, present, and future. Sustainability is not a fixed state that can be achieved once and maintained. Creative solutions for socio-ecological problems require ever-evolving adaptive approaches and robust interdisciplinary collaborations among engineers, social scientists, economists, policy makers, artists and natural scientists. College graduates will need to be flexible and responsive, able to learn new knowledge and skills rapidly, and cognizant of the complex organization of society and technology. The minor in sustainability studies administered by Rachel Carson College takes a "learning by doing" approach to prepare students as

change-makers equipped with professional conduct, analytic abilities, a global perspective and practical know-how.

The pedagogical underpinnings of this minor are anchored in design as a creative process and premised on relationships between classroom learning, character development, non-violent communication, community engagement, and technical innovation through research and application. Broad interdisciplinarity and individual grounding in STEM, social sciences and the arts are critical elements at the center of the minor's core courses. The curriculum is therefore structured to 1) facilitate interdisciplinary academic and research collaborations among faculty and students across multiple UC Santa Cruz divisions (drawing on but **outside** of the divisional structure) and in the off-campus community; 2) teach and train students in **ecology and sustainability** for regenerative design thinking, entrepreneurship and impact assessment in the **built and natural environment**; 3) integrate the use of science, technology, engineering, art and mathematics (STEAM) skills and social science knowledge to these ends; and 4) meet undergraduate demand for a sustainability curriculum with focuses distinct from those offered in existing UCSC departments.

The program is designed to graduate students who can think past mere technology-based solutions to design and implement disruptive innovations that challenge the existing paradigm and invite regenerative systems that support our demands for energy, food, water, mobility and shelter by cultivating mutually beneficial relationships. Students are introduced to concepts and topics such as living-system and cradle-to-cradle design, life-cycle analysis, waste management, coastal and marine conservation, and natural resource management. During the program, students will design and participate in service-learning projects in collaboration with on- and off-campus units, agencies, and organizations; and apply the knowledge and skills acquired through the minor.

No specific prior preparation or prerequisites are required for entry to the minor.

Program learning objectives are as follows:

- Demonstrate whole system awareness with the ability to identify and understand interconnectedness (intersecting, related and/or connected systems; synergies and rebound effects) and how all human-made designs rely upon and are embedded within nested ecological systems.
- Demonstrate awareness that a design is a system, that users interact with designs and that designs and users are embedded in higher level systems that include environmental ecosystems and the life they sustain.
- Demonstrate knowledge and understanding of whole life-cycle and closed-loop systems thinking as related to the impact of mitigation work (e.g., understanding of life-cycle burdens of design alternatives).
- Comprehend and apply understanding of the causes, features, data, complexities, policies, and practices giving rise to and needed to address a perceived crisis in the contemporary global socioecological context including the role of production, consumption, politics, policies, markets and human behavior in this crisis.
- Show proficiency in applying basic STEM skills needed for evaluation and design practices in real-world applications including quantitative and qualitative metrics for impact and risk assessments and a selection of software and hardware-specific skills (e.g.. computer animated design, 3D printing, Arduino programming etc.) Use cognizance of appropriate social science knowledge/methods and entrepreneurial practices to design and implement social enterprise and service learning projects in sustainability and ecological design and practice.
- Demonstrate the ability to forecast the near- and long-term costs and value of their work to the environment and society through the efficient use of resources (e.g., efficient for whom?) and socially/culturally responsible engagement with stakeholders.
- Show awareness of risks and opportunities related to changing environments and stakeholder interests on their work (e.g., extended costs, value, trade-offs, partnerships, regulations, policies, etc.).
- Demonstrate the ability to identify relevant cultural implications and influences in the context of their work (e.g., cultural expressions and sensitivities, services and goods procurement, heritage site appreciation) as well as equity awareness (e.g., gender, race, ethnicity, class, etc.).
- Feel familiar with ways to create robust, dynamic, and resilient systems and ways to develop transdisciplinary stakeholder networks.
- Understand ethical implications relative to social impact of their work.

Course Requirements

A minimum of 25 upper-division credits are required to complete the minor. Substitutes for any of the required courses must be approved by the program director. Courses may be taken for a letter grade or Pass/No Pass.

Introductory Courses

Take this course twice:

CRSN 55	Rachel Carson College: Service Learning Practicum	2

Upper-Division Core Courses

Take all of the following courses:

CRSN 151A	Sustainability Praxis in the Natural and Built Environment	5
CRSN 151B	Innovation and Professionalization for Sustainability Designers, Engineers, and Entrepreneurs	5
CRSN 151C	Sustainability Laboratory Tools, Techniques, and Applications	3

Topics taught in CRSN 151C vary by quarter. It may be repeated for additional upper-division credit or as a capstone option if the repeated course is on a different topic.

Upper-Division Elective

All students must take one 5-credit course from the CRSN or Breadth Electives lists below. The upper-division elective does not count toward the Breadth Capstone requirement. While not required, students are encouraged to take a CRSN course to fulfill this elective.

Capstone

Students choose from one of the following options:

Option 1: IDEASS Capstone

Take the following course three times (9 credits total):

CRSN 152	IDEASS Laboratory Practicum	3

Option 2: Breadth Capstone

Students fulfill the Breadth Capstone by taking one upper-division Breadth Elective and either an upper-division CRSN or additional upper-division Breadth Elective course from the lists below.

Upper-Division Breadth and CRSN Courses

The following courses fulfill the upper-division Elective requirement and Breadth Capstone requirement.

CRSN Electives

CRSN 151C	Sustainability Laboratory Tools, Techniques, and Applications	3
CRSN 155S	Innovation & Sustainability for Global Impact Practicum	3
CRSN 161	Education for Sustainable Living Program	5

Breadth Electives

The following courses are offered outside of Rachel Carson College and are subject to department availability. Check course descriptions for prerequisite or concurrent enrollment requirements. Lecture/lab combos count as one course. Labs are required only when required by the lecture.

ANTH 110E	Anthropology of Global Environmental Change	5
ANTH 110K	Culture Through Food	5
ANTH 110W	Land and Waterscapes Entropology	5
ANTH 111	Human Ecology	5
ANTH 135A	Cities	5
ANTH 137	Consuming Culture	5
ANTH 146	Anthropology and the Environment	5
ANTH 147	Anthropology and the Anthropocene	5
ANTH 160	Reproductive and Population Politics	5
ANTH 161	The Anthropology of Food	5
ART 125	Environmental Art Studio	5
BIOE 107	Ecology	5
BIOE 108	Marine Ecology	5
BIOE 145	Plant Ecology	5
BIOE 147	Community Ecology	5
BIOE 155	Freshwater Ecology	5
CMMU 133	Making California: Landscapes, People, Politics, Economy	5
CMMU 149	Political Economy of Food and Agriculture	5
CMMU 156	Politics of Food and Health	5
CMMU 162	Community Gardens and Social Change	5
CMMU 186	Food and Agriculture Social Movements	5
EART 107	Remote Sensing of the Environment	5
EART 116	Hydrology	5
EART 121	The Atmosphere	5
EART 142	Engineering Geology for Environmental Scientists	5
EART 146	Groundwater	5
EART 191	Earth Sciences Capstone Seminar	5
ECE 175	Energy Generation and Control	5
ECE 175L	Energy Generation and Control Laboratory	2
ECE 176	Energy Conservation and Control	5
ECE 176L	Energy Conversion and Control Laboratory	2
ECE 177	Power Electronics	5
ECE 177L	Power Electronics Laboratory	2
ECE 180J	Advanced Renewable Energy Sources, Storage, and Smart Grids	5
ECON 170	Environmental Economics	5
ECON 171	Natural Resource Economics	5
ECON 175	Energy Economics	5
ENVS 110	Institutions, the Environment, and Economic Systems	5
ENVS 120	Conservation Biology	5

ENVS 130A	Agroecology and Sustainable Agriculture	5
ENVS 130C	Field Experiences in Agroecology and Sustainable Food	5
ENVS 135	Sustainable Aquaculture	5
ENVS 140	National Environmental Policy	5
ENVS 142	Sustainable Energy	5
ENVS 143	The Future of Sustainable Development	5
ENVS 144	Global Climate Change Politics	5
ENVS 145	Green Cities	5
ENVS 149	Environmental Law and Policy	5
ENVS 151	Environmental Assessment	5
ENVS 152	International Environmental Politics	5
ENVS 165	Sustainable Water Systems	5
ENVS 166	Agroecosystem Analysis and Watershed Management	5
FMST 124	Technology, Science, and Race Across the Americas	5
FMST 131	The Politics of Matter and the Matter of Politics	5
FMST 133	Science and the Body	5
HAVC 48	Climate Justice Now! Art, Activism, Environment Today	5
HAVC 141K	Activist Art Since 1960: Art, Technology, Activism	
HAVC 143B	History of Urban Design	5
HIS 101C	Oceans in World History	5
HIS 101F	Global Environmental History	5
HIS 151	Keywords in the History of Science and Medicine	5
HIS 196F	Topics in European Environmental History	5
LALS 80P	Environment and Society in Latin America	5
LALS 152	Consumer Cultures Between the Americas	5
LALS 163	The Amazon: Cultures and Perspectives	5
LGST 137	International Environmental Law and Policy	5
LGST 159	Property and the Law	5
METX 101	Sources and Fates of Pollutants	5
OCEA 101	The Marine Environment	5
OCEA 102	Oceans and Climate: Past, Present, and Future	5
POLI 132	California Water Law and Policy	5
POLI 174	Global Political Ecology	5
PSYC 159E	Peace Psychology	5
SOCY 30A	Introduction to Digital Justice Studies	5
SOCY 119	Sociology of Knowledge	5
SOCY 125	Society and Nature	5
SOCY 130	Sociology of Food	5
SOCY 132	Sociology of Science and Technology	5
SOCY 167	Development and Underdevelopment	5
SOCY 173	Water	5
SOCY 177E	Eco-Metropolis: Research Seminar in Urban and Environmental Studies	5
SOCY 177G	Global Cities	5
SOCY 179	Nature, Poverty, and Progress: Dilemmas of Development and Environment	5
ANTH 110IG	Cultures Of Sustainability And Social Justice Abroad	5
ANTH 110I	Cultures of Sustainability and Social Justice	5

The list of breadth elective courses applies to all of the upper-division options above. This list is updated regularly, but course offerings change. Please consult course lists prior to each quarter to see what is being offered. Some of these courses require permission of the instructor to enroll). You can find the most updated listing of breadth electives here.

Stevenson College

(831) 459-2020
stcollege@ucsc.edu
https://stevenson.ucsc.edu

ACADEMIC EMPHASIS

Stevenson distinguishes itself as the only college with a required two-quarter core course intended to provide all first-year students with a common academic experience. The core course allows for more rigorous development of students' critical reading and analytical skills. It provides a unique learning environment and a supportive intellectual community for all Stevenson first-year students. Those admitted as transfer students are exempt from the core course requirement but may take the core course at their option pending available space.

The Stevenson core course, Self and Society, helps students examine the nature of the self and the relationship of the individual to society. It teaches foundational concepts for intellectual exploration and personal development within an academic community—analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. In addition, the course fosters an intellectual commitment to the general philosophy that has helped to define Stevenson College since its inception: preservation of human dignity, the social cultivation of individual creativity and citizenship, and a belief in ethical responsibility. The core course reflects the college's long-standing commitment to interdisciplinary and culturally diverse readings, while at the same time affording students an opportunity to develop research interests, to acquire greater understanding of the role of research universities in contemporary societies, and to

acquire the requisite skills to engage in increasingly more sophisticated intellectual work while at UCSC.

Stevenson's second quarter of the core course satisfies a further general education requirement, the TA, or textual analysis designation.

Students in majors that have a large number of course requirements should consider how they plan to fit both the two-quarter college core course and their intended major's first-year requirements into their first year at UC Santa Cruz.

Students are encouraged to consult with both their college and major advisors. Stevenson College advisors can be found on the Stevenson advising website.

Students who are placed in the Multilingual Curriculum when they enter UC Santa Cruz will be required to take only the first quarter of the core course requirement.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh will enroll in STEV 1A, Stevenson 1A: Introduction to University Life and Learning. Transfer students will enroll in KRSG 1T, Kresge 1T: Introduction to Research Universities and the Liberal Arts. STEV 1A and KRSG 1T integrate introductions to academic skills with the online Slug Orientation process, and begin student preparation for their studies at Stevenson College and throughout UC Santa Cruz.

STEV 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

Core Courses

STEV 1: Academic Literacy: Self and Society

Introduction to University Discourse: Self and Society. College 1 helps students develop academic and civic proficiency in reading, critical thinking, and "academic ethos," and habits of mind and practice tied to a sense of belonging and academic success. This course prepares students for success in other UC Santa Cruz courses requiring critical thinking, listening, discussion, and effective communication. It explores rhetorical principles and conventions of university discourse and considers the roots of modern society using foundational religious texts and major classical and modern philosophical works. Enrollment is restricted to first-year college members.

STEV 2: Academic Literacy: Self and Society 2

The winter quarter class that follows College 1 continues the development of critical reading, analysis, and effective speaking exploring conflicts inherent in modern society. The course fulfills the TA GE and investigates themes of colonization, race, gender, class, as well as cultural conflict. Enrollment is restricted to first-year and sophomore college members.

All students admitted as frosh are required to complete the core courses. Students admitted as transfer students with sophomore standing or above (45 or more credits in transfer) are exempt from the core course requirement.

OTHER ACADEMIC PROGRAMS

Junior Fellow Program

The Stevenson College Junior Fellows Program offers juniors and seniors an opportunity to serve as instructors in Self and Society. Junior fellows, who must have completed outstanding work in Self and Society during their first year, undergo a rigorous application and selection process. Junior fellows (enrolled in Stevenson 120, Teaching Practicum) earn five course credits.

Scholarships

Students have the opportunity to apply for funding for special research projects each quarter. Stevenson also provides several annual scholarships and service awards, including the Josh Alper Marines Memorial Award, the Michele Guard Memorial Scholarship, the Matthew Graviano Memorial Scholarship, the John Halverson Scholarship, and the Robert Dodge Service Award.

Stevenson Professional and Academic Network

The Stevenson Professional and Academic Network (SPAN) helps students make connections with alumni, local professionals and nonprofits, academic researchers, and fellow Stevensonians. SPAN helps students develop cross-generational relationships on campus and beyond, through a speaker series, networking and professional development opportunities, and internships.

Writing Assistance

Stevenson provides writing assistance for all of its students. Stevenson Writing Assistantships are paid student positions open to juniors and seniors with excellent academic records. Additional information about Stevenson College academic events is available here.

College Advising

Located in the Stevenson College Office in the Stevenson Administration Building, Rooms 118-119 across from the Stevenson Coffee House patio.

To schedule an appointment, log onto Slug Success or call 831-459-4930.

The Stevenson advising staff assists students in their academic endeavors by providing them with guidance, support, and information. They advise students on many issues, ranging from helping them select their first UCSC classes to making sure that they've fulfilled all graduation requirements. Advisors provide students with tools and

resources so that they feel confident and empowered to navigate the university.

Advisors encourage students to enter into an active partnership with staff and faculty to ensure that they will learn about existing programs, deadlines, procedures, and opportunities. Advisors also encourage students to become involved in the many extra-curricular activities available at the college. Stevenson students pride themselves on being the most politically active on campus. With this involvement comes the responsibility of maintaining academic goals as a priority. Advisors help students maximize their potential and balance their commitments inside and outside of the classroom so that they can get the most out of their education during and after their time at Stevenson.

College Scholars Program

PROGRAM OVERVIEW

The UC Santa Cruz College Scholars Program (CSP) offers a congenial and stimulating academic home for a select group of well-prepared first-year students at UC Santa Cruz. Through this honors program, students can expect to challenge themselves academically, find other students who are similarly motivated, and explore undergraduate research. This enriched program of study includes special courses, seminars, colloquia, and other events during each quarter of the student's first academic year and fall of the student's second academic year.

CSP provides an opportunity for outstanding students to engage deeply with the best of UCSC. Early in their career, students are able to explore the full potential of the university setting, beyond the coursework that might be required in their respective disciplines.

CSP has close ties to the college system. In 2018-2019, Fall Start scholars (see below for information about Spring Start scholars) will live at Cowell, Crown, Merrill or Porter College. Each college will have a cohort of about 20-25 College Scholars Program students, and students in each cohort will be housed together. Students receive priority enrollment during their time in the program.

COLLEGE SCHOLARS PROGRAM CURRICULUM

The CSP academic program is designed to both challenge participants and give them the opportunity to develop a strong foundation in our research university.

Year 1

Fall Quarter 1—Supplement to College "Core Course": Students will take part in a series of gatherings led by the Faculty Director and the Provosts at the four Fall Start colleges. These meetings are meant to supplement their college “core course” and to build relationships with other CSP students.

Winter Quarter 1—Service Learning Course: All students will take a two-credit service-learning course offered through Cowell College (COWL 168). This course includes three main components: classroom meetings, journal reflections and papers, and placement in a local organization. Guest speakers are a part of the class and in the past have included local alumni and elected public officials, all working to promote positive social change locally, nationally, or internationally. Over the course of the term, students contribute 40 hours of work to an organization in the community. Organizations that have welcomed students in the past include: the Homeless Service Center, Rising International, Santa Cruz Boys and Girls Club, and the Museum of Art and History.

Spring Quarter 1—Faculty Research Colloquium: Students will take a two-credit course (COWL 89) where weekly faculty lectures are followed by dinner at one of the Provosts' houses. Each student is invited to attend one dinner during the term.

Faculty guests will be drawn from a variety of fields within the university, and students will be encouraged to listen to and appreciate scholars and scholarship beyond their own comfortable niche in engineering, biology, linguistics, music, or whatever their area of interest may be. The invited scholars will be speaking not only about the substance of their work, but also about the types of questions that are particular to their fields of study. By the end of the course, students should have a good sense of the modes of inquiry that animate intellectual life in a research university.

Year 2

Fall Quarter 2—Seminar: Students choose from one of several five-unit research seminars. Each of the seminars focuses on developing significant hands-on skills: whether it is a chance to “do real science” through guided research in the field and in a lab, or address important primary sources directly and debate them together in a text-centered seminar room, students will get training in the real intellectual work that scholars do.

College Scholars Programs: Fall Start and Spring Start

Fall Start—Invitation Only: Admission to the Fall Start cohort of College Scholars Program is by invitation only. A select group of UCSC applicants who are offered admission to the university will be invited to join the program, based on their record of academic achievement. Those students who accept the invitation will be housed together at either Cowell, Crown, Merrill, or Porter College.

Spring Start: Students can apply to the College Scholars Program after the Fall quarter of their first year. In this case, students accepted into CSP will join the program in Spring quarter and will participate in the spring research colloquium. Spring Start students will be selected based on applications reviewed through their college. Students may apply to Spring Start from any of UCSC’s colleges.

Certificates

The Community-based Action and Research Advocacy (CARA) Certificate Program (p. 893)

Innovation and Entrepreneurship Certificate (p. 893)

CARA Certificate Program

The Oakes Community-based Action Research and Advocacy (CARA) program builds on the mission of Oakes College to leverage university-based education for social and political change. Our courses support Oakes students to build connections with community-based organizations and to gain tangible skills they can leverage for social justice in various contexts, from grassroots activism to working with nonprofits, public agencies, and beyond. The CARA program also supports first-generation, low-income, students of color, undocumented and other student communities to make meaningful connections that bridge their academic studies to social justice issues that are most pressing for their communities and their own lives.

CARA courses pose rigorous, interdisciplinary academic questions about how to expand justice within and across contexts. Students connect course readings, seminar practice, reflexivity, and writing with their field-based research projects or internships, often in partnership with local organizations. In the process, students develop a variety of skills, from conducting qualitative research to analyzing data, communication, mentorship, advocacy, and more, deepening their own understanding and capacities to contribute to social justice initiatives. In addition, many CARA courses also support students to complete their general education requirements. We offer courses in three program areas: 1) Building Capacities for Community Voice, Advocacy and Organizing; 2) Community Voice, Advocacy and Organizing in Practice; and 3) Community-based Action Research. Students can choose courses in any combination of these program areas to complete the CARA Certificate.

While any student may enroll in our community-engaged research and learning courses, our aim is to support Oakes students to complete the CARA Certificate. The CARA Certificate is awarded to students upon their successful completion of at least 14 credits. Students should notify the CARA program director via email that they've successfully completed the program courses, or of their intent to complete in their last quarter of the CARA program (oakscara@ucsc.edu). The CARA program director will also accept petition requests for other courses that fit the programmatic themes, per written request of the student and submission of the course syllabus.

Students are encouraged to list the CARA Certificate in their resumes, in addition to articulating the skills they've developed through program courses. The CARA Certificate will not appear on students' transcripts.

Oakes CARA Certificate 2023-24

Students who successfully complete a minimum of 14 credits from the following courses qualify for the Oakes CARA Program Certificate. Students can choose any of the classes in order to qualify.

OAKS 26 Navigating The University From A Black Critical Lens, 2 credits
OAKS 46 Multiracial Visibility Project, 5 credits, ER
OAKS 47 Building An Inner Sanctuary, 2 credits, PR-S
OAKS 48 Slugs Speak, 2 credits, PR-S
OAKS 67 The Politics Of Food: Labor and Social Justice, 2 credits
OAKS 70 Diverse Voices In Contemporary American Women's Poetry, 2, PR-C
OAKS 73B Mentoring, 2 credits, PR-S
OAKS 76 Social Geography & Justice in Santa Cruz, 5 credits, PR-S
THEA 56D/OAKS 80H Rainbow Theater, 5 credits
OAKS 130 Writing Resistance: Creative Writing Workshop, 5 credits, PR-S
OAKS 151A and OAKS 151B Corre la Voz: Community Literacies, 5 credits total (2 credits for A, 3 credits for B; 151B may be re-taken for credit), PR-S
OAKS 152 Transformative Literacies, 5 credits, PR-S
OAKS 153 Community Mapping, 5 credits, PR-S
OAKS 155 Research for Social Justice: Special Topics, 5 credits, SI
OAKS 167 Food Systems: Culture, SJ, Sustainability, 5 credits, PR-S
OAKS 185 Tracing Health, 5 credits, PE-H
LGST 188A/OAKS 188A and OAKS 188B Intro to the Legal Profession and Legal Aid, 5 credits total (2 credits for A, 3 credits for B; 188B may be re-taken for credit), PR-S
OAKS 189 Building Websites For Social Justice, 2 credits, PR-S

INNOVATION AND ENTREPRENEURSHIP CERTIFICATE

UC Santa Cruz's Certificate in Innovation and Entrepreneurship (I&E) combines academic training with hands-on experience in developing solutions to real-world problems.

This certificate is offered by Crown College in partnership with UCSC's Center for Innovation and Entrepreneurial Development, Cowell College, and the Departments of Biomolecular Engineering and Economics. The goal is to equip students with practical, transferable skills in collaboration with employers and community organizations.

While the I&E certificate will not appear on students' transcripts, students who earn recognition of completion are encouraged to list the I&E certificate on their resumés. For more information, visit the program's website or contact cied@ucsc.edu.

The I&E certificate is open to students from any major and it is modular, requiring the completion of four elements in any order: (1) introductory classes, foundational courses in ideation, prototyping, finance, and customer discovery; (2) operational classes, which focus on the practical aspects of

launching and managing ventures; (3) experiential learning opportunities—including internships, consulting projects, and roles beyond the founder track; and (4) participation in a public-facing business pitch competition.

Certificate Level Learning Outcomes

As a result of completing the Center for Innovation & Entrepreneurial Development (CIED) I&E certificate program, students will be able to:

- identify and evaluate new business opportunities in any area of economic or social development;
- work collaboratively in teams;
- design a business plan;
- pitch an idea;
- lead and manage a project effectively;
- understand how to set up and grow an organization, including the basics of hiring, management and commercialization; and
- gain practical experience addressing real-world problems.

Academic Advising for the Program

Undergraduate advising for the I&E certificate program is supported by the CIED. CIED staff offer specific information about navigating through the program and curriculum and assist students with academic planning, requirements, and extra-curricular opportunities related to the program. CIED staff also have the discretion to approve courses not listed below that may fulfill the I&E requirements on an individual basis. Please contact CIED staff at CIED@ucsc.edu.

Students are not required to declare their intent to complete the certificate program in advance. They are strongly encouraged to arrange a meeting with CIED staff early in their academic career, however, and must notify the CIED via email (CIED@ucsc.edu) once their requirements are completed in order to verify their milestones and receive the certificate.

Transfer Information and Policy

Students transferring to UC Santa Cruz are strongly encouraged to pursue the I&E certificate. Transfer students may consult with CIED's staff about transferring credits to count toward the completion of the I&E certificate program; requests will be evaluated on a course-by-course basis.

Faculty

The faculty of the I&E program can be found here.

Requirements

The I&E certificate is awarded on completion of 20–25 credits in I&E courses and participation in a public-facing business pitch competition.

The requirements are explained in detail in the table below, which includes, the four categories of requirements and in the case of classes, the class number, title, # of units, whether the class concurrently satisfies a general education requirement, whether it is an elective for a major or minor and additional notes.

Introductory Classes

Two classes: (CRWN 90 or CRWN 92) and COWL 52

Class Number	Class Title	No. of Credits	Gen. Ed. Satisfaction	Elective Major Requirement	Notes
CRWN 90	Start-Up Academy	5	PR-E		
CRWN 92	Social and Creative Entrepreneurship	5	PE-H		
COWL 51	Personal Finance and Investing	5			

Operational Classes

One class: CRWN 100 or BME 175

Class Number	Class Title	No. of Credits	Gen. Ed. Satisfaction	Elective Major Requirement	Notes
CRWN 100	Building and Scaling Ventures	5		Economics	
BME 172	Entrepreneurship in Biotechnology	5		Biomolecular Engineering	For students interested in biotech

Practical Classes

One of the following options: CRWN 152 or (CRWN 91 & CRWN 191) or CRWN 194 or CRWN 195

Class Number	Class Title	No. of Credits	Gen. Ed. Satisfaction	Elective Major Requirement	Notes
CRWN 152	Deal Sourcing and Investing	5			Focu on financ e
CWN 91	AI & Marketing	5			Focus on graphic design
CRWN 191	Marketing for Good	5	PR-S		Focus on marke ting
CRWN 194	Eco Entrepreneurship in the World	5	PE-E	Economics	Focus on sustainability
CRWN 195	Get Virtual Business Assistance	5	PR-S	Economics	Focus on consulting

Business pitch: participation in at least one public-facing business pitch competitions. Options include campus and community events such as the Ideathon (fall), SlugTank, CruzHacks, and Demo Day (winter), and the Santa Cruz Launchpad (spring)

PHYSICAL EDUCATION

East Field House
(831) 459-5076
goslugs.com
recreation.ucsc.edu

Physical Education (P.E.) at UC Santa Cruz provides students with enriching opportunities to develop and refine skills across a diverse range of activities while deepening their understanding of the vital connection between fitness and overall wellness. Our program is designed to empower students with the knowledge and skills needed to make informed, lifelong choices that support a healthy, active lifestyle.

Currently offered as elective, non-credit courses, our P.E. classes cater to students of all skill levels, from beginners looking to build foundational abilities to advanced participants seeking to refine their techniques. Each course blends expert instruction, hands-on practice, and active engagement, ensuring that every student can participate to the best of their ability.

With a variety of scheduling options, most classes meet twice a week for one-hour sessions, while others may feature longer, more immersive formats. Additionally, select courses are designed exclusively for graduate students, providing tailored opportunities for advanced learning and skill development.

Through our diverse and inclusive P.E. offerings, students not only enhance their physical abilities but also cultivate lifelong habits that support their well-being, resilience, and overall quality of life.

COURSES

AM - APPLIED MATHEMATICS

To view planned offerings for the current academic year, please visit this page.

Lower-Division

AM 3 - Precalculus for the Social Sciences (5)

Introduces mathematical functions and their uses for modeling real-life problems in the social sciences. Includes inequalities, linear and quadratic equations, functions (linear, quadratic, polynomial, rational, power, exponential, logarithmic, trigonometric), inverses, and the composition of functions. Students cannot receive credit for both this course and MATH 3. STEM majors who are taking a precalculus to get into MATH 19A need to take MATH 3.

Prerequisite: Prerequisite(s): score of 200 or higher on the mathematics placement examination (MPE), or MATH 2.

AM 6 - Precalculus for Statistics (5)

Reviews and introduces mathematical methods useful in the elementary study of statistics, including logic, real numbers, inequalities, linear and quadratic equations, functions, graphs, exponential and logarithmic functions, and summation notation. (Formerly AMS 6.)

Prerequisite: Prerequisite(s): MATH 2 or mathematics placement examination (MPE) score of 200 or higher or higher.

AM 10 - Linear Algebra for Engineers (5)

Applications-oriented course on complex numbers and linear algebra integrating Matlab as a computational support tool. Introduction to complex algebra. Vectors, bases and transformations, matrix algebra, solutions of linear systems, inverses and determinants, eigenvalues and eigenvectors, and geometric transformations. Students cannot receive credit for this course and MATH 21. (Formerly Mathematical Methods for Engineers I.)

Prerequisite: Prerequisite(s): score of 400 or higher on the mathematics placement examination (MPE) or MATH 3 or AM 11A or MATH 11A or MATH 19A or MATH 20A.

AM 11A - Mathematical Methods for Economists I (5)

Introduction to mathematical tools and reasoning, with applications to economics. Topics are drawn from differential calculus in one variable and include limits, continuity, differentiation, elasticity, Taylor polynomials, and optimization. Students cannot receive credit for both this course and MATH 11A or MATH 19A or AM 15A or ECON 11A. (AM 11A formerly AMS 11A.)

Prerequisite: Students who have already taken MATH 11A or MATH 19A should not take this course. Prerequisite(s): score of 300 or higher on the mathematics placement examination (MPE), AM 3 or AM 6, or MATH 3.

AM 11B - Mathematical Methods for Economists II (5)

Mathematical tools and reasoning, with applications to economics. Topics are drawn from multivariable differential calculus and single variable integral calculus, and include partial derivatives, linear and quadratic approximation, optimization with and without constraints, Lagrange multipliers, definite and indefinite integrals, and elementary differential equations. Students cannot receive credit for both this course and MATH 11B or MATH 19B or ECON 11B (AM 11B formerly AMS 11B.)

Prerequisite: Prerequisite(s): ECON 11A, or AM 11A, or MATH 11A, or MATH 19A, or MATH 20A.

AM 20 - Ordinary Differential Equations for Engineers (5)

Applications-oriented class on ordinary differential equations (ODEs) and systems of ODEs using Matlab as a computational support tool. Covers linear ODEs and systems of linear ODEs; nonlinear ODEs using substitution and Laplace transforms; phase-plane analysis; introduction to numerical methods. Students cannot receive credit for this course and MATH 24. (Formerly Mathematical Methods for Engineers II.)

Prerequisite: Prerequisite(s): MATH 19B or MATH 20B, and AM 10 or MATH 21.

AM 30 - Multivariate Calculus for Engineers (5)

Advanced multivariate calculus for engineering majors. Coordinate systems, parametric curves, and surfaces; partial derivatives, gradient, Taylor expansion, stationary points, constrained optimization; integrals in multiple dimensions; integrals over curves and surfaces. Applications to engineering form an integral part of the course. Students cannot receive credit for this course and for MATH 22 or MATH 23A.

Prerequisite: Prerequisite(s): AM 10 or MATH 21; and MATH 19B or MATH 20B.

Upper-Division

AM 100 - Mathematical Methods for Engineers (5)

Covers important concepts in applied mathematics, including complex analysis, vector calculus, Fourier Series, and integral transforms. Applications of the methods to various problems in science and engineering are discussed.

Prerequisite: Prerequisite(s): AM 20 and AM 30, or by permission of instructor.

AM 107 - Introduction to Fluid Dynamics (5)

Covers fundamental topics in fluid dynamics: Euler and Lagrange descriptions of continuum dynamics; conservation laws for inviscid and viscous flows; potential flows; exact solutions of the Navier-Stokes equation; boundary layer theory; gravity waves. Students cannot receive credit for this course and AM 217. (AM 107 formerly AMS 107.)

Prerequisite: Prerequisite(s): AM 112 or MATH 107 or PHYS 116C or EART 111.

AM 112 - Introduction to Partial Differential Equations (5)

Teaches analytical methods for the solution of first- and second-order PDEs of two variables, including: the method of characteristics for first-order PDEs; separation of variables for the heat, wave, and Laplace's equations in a finite or periodic Cartesian domain; homogeneous vs. forced problem; Sturm-Liouville theory; polar and spherical coordinate systems. Each method is illustrated by solving PDEs originating from real-life applications. Students cannot receive credit for this course and AM 212A.

Prerequisite: Prerequisite(s): AM 100 or by permission of the instructor.

AM 114 - Introduction to Dynamical Systems (5)

Introduces continuous and discrete dynamical systems. Topics include: fixed points; stability; bifurcations; limit cycles; introduction to chaos. Examples are drawn from sciences and engineering. Familiarity with Matlab is preferred. Students cannot receive credit for this course and AM 214. (Formerly AMS 214.)

Prerequisite: Prerequisite(s): AM 20; or MATH 21 and MATH 24; or PHYS 116A. Enrollment is restricted to sophomores, juniors and seniors.

AM 115 - Stochastic Modeling in Biology (5)

Application of differential equations, probability, and stochastic processes to problems in cell, organismal, and population biology. Topics include systems biology, cellular processes, gene-regulation, and population biology. Students may not receive credit for this course and AM 215.

Prerequisite: Prerequisite(s): STAT 131 and AM 20; a university-level course in biology, and operational knowledge of a programming language; or consent of instructor.

AM 129 - Foundations of Scientific Computing for Scientists and Engineers (5)

Covers fundamental aspects of scientific computing for research. Students are introduced to algorithmic development, programming (including the use of compilers, libraries, debugging, optimization, code publication), computational infrastructure, and data analysis tools, gaining hands-on experience through practical assignments. Basic programming experience is assumed.

Prerequisite: Prerequisite(s): AM 10 and MATH 11A; or AM 10 and MATH 19A; or AM 10 and MATH 20A; or MATH 21 and MATH 11A; or MATH 21 and MATH 19A; or MATH 21 and MATH 20A.

AM 147 - Computational Methods and Applications (5)

Applications of computational methods to solving mathematical problems using Matlab. Topics include solution of nonlinear equations, linear systems, differential equations, sparse matrix solver, and eigenvalue problems.

AM 148 - GPU Programming for Scientific Computations (5)

This second course in scientific computing focuses on the use of parallel processing on GPUs with CUDA. Basic topics covered include the idea of parallelism and parallel architectures. The course then presents key parallel algorithms on GPUs such as scan, reduce, histogram and stencil, and compound algorithms. Applications to scientific computing are drawn from problems in linear algebra, curve fitting, FFTs, systems of ODEs and PDEs, and image processing. Finally, the course presents optimization strategies specific to GPUs. Basic knowledge of Unix, and C is assumed. (Formerly AMS 148.)

Prerequisite: Prerequisite(s): AM 147 or MATH 148 or PHYS 115. Enrollment is restricted to juniors and seniors.

AM 160 - Introduction to Scientific Machine Learning (5)

Introduction to scientific machine learning covering dimension reduction techniques for scientific data, modern methods in sparse regression and compressed sensing, deep neural networks for modeling real-life systems, and neural ordinary differential equations.

Prerequisite: Prerequisite(s): AM 20 and AM 30, or MATH 24, or PHYS 116A, and AM 129 or CSE 30; or graduate students in applied mathematics. Enrollment is restricted to junior and senior students, and graduate students in applied mathematics.

AM 170A - Mathematical Modeling 1 (5)

Introduction to mathematical modeling emphasizing model construction, tool selection, methods of solution, critical analysis of the results, and professional-level presentation of the results (written and oral). Focuses on problems that can be solved using only analytical tools, and simple Matlab routines. Applications are drawn from a variety of fields such as physics, biology, engineering, and economics.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. AM 30, and AM 114, and STAT 131 or CSE 107, or by instructor permission. Enrollment is restricted to juniors and seniors majoring in applied mathematics and proposed applied mathematics majors.

AM 170B - Mathematical Modeling 2 (5)

Second course in mathematical modeling emphasizing the general process of scientific inquiry: model construction, tool selection, numerical methods of solution, critical analysis of the results, and professional-level presentation of the results (written and oral). Focuses on problems that must be solved using numerical tools. Applications are drawn from a variety of fields.

Prerequisite: Prerequisites: AM 129, AM 112, and AM 147, and AM 170A. Enrollment is restricted to seniors with a declared or proposed major in Applied Mathematics, or by instructor permission.

AM 178A - Learning Assistant Training for AM 10 (3)

Prepares undergraduate learning assistants (tutors) to become successful learning assistants in AM 10. Topics include roles and responsibilities of tutors; AM 10 learning objectives; effective ways to address particular AM 10 topics that students struggle with; introduction to teaching and learning strategies to utilize in AM10 tutoring sessions; and peer and self observation.

Prerequisite: Prerequisite(s): AM 20; and AM 30; and previous or concurrent enrollment in STEV 96. Enrollment by permission of the instructor and restricted to juniors, seniors, and graduate students.

AM 195 - Senior Thesis Research (5)

Research project arranged individually between student and faculty member. Students submit a petition to the sponsoring agency. The project must involve significant mathematical and/or computational analysis of an application problem. The project should address a clear objective and have some novelty in method or in parameter exploration or in application area. A written thesis is required for completion of the capstone requirement. Prerequisite(s): AM 129 or AM 209, and AM 112, and AM 147, and AM 170A. Enrollment is restricted to seniors and is by permission of the instructor.

AM 198 - Independent Study or Research (5)

Students submit petition to sponsoring agency.

AM 198F - Independent Study or Research (2)

Students submit petition to sponsoring agency.

Graduate

AM 200 - Teaching in Applied Mathematics (2)

Basic teaching techniques for teaching assistants, including responsibilities and rights; resource materials; computer skills; leading discussions or lab sessions; presentation techniques; maintaining class records; and grading. (Formerly Research and Teaching in Applied Mathematics.)

Prerequisite: Enrollment is restricted to graduate students.

AM 211 - Foundations of Applied Mathematics (5)

Accelerated class reviewing fundamental applied mathematical methods for all sciences. Topics include: multivariate calculus, linear algebra, Fourier series and integral transform methods, complex analysis, and ordinary differential equations. (Formerly AMS 211.)

Prerequisite: Enrollment is restricted to graduate students.

AM 212 - Advanced Methods of Applied Mathematics (5)

Overview of advanced methods for the analytical solution of ODEs and PDEs, including asymptotic analysis (method of strained coordinates; method of multiple scales; matched asymptotics; WKB theory), dimensional analysis, self-similar solutions and Green’s function solutions of PDEs. Introduces students to variational calculus for the optimization of functionals. Students cannot receive credit for this course and AM 212B.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor. Students taking this course need at least one prior undergraduate or M.S.-level course in partial differential equations, similar to AM 112, MATH 107 or PHYS 116C.

AM 212A - Applied Partial Differential Equations (5)

Focuses on analytical methods for partial differential equations (PDEs), including: the method of characteristics for first-order PDEs; canonical forms of linear second-order PDEs; separation of variables; Sturm-Liouville theory; Green's functions. Illustrates each method using applications taken from examples in physics. AM 211 or equivalent is strongly recommended as preparation. Students cannot receive credit for this course and AM 112. (Formerly AMS 211, Applied Mathematical Methods I.)

AM 212B - Applied Mathematical Methods II (5)

Covers perturbation methods: asymptotic series, stationary phase and expansion of integrals, matched asymptotic expansions, multiple scales and the WKB method, Pad approximants and improvements of series. (Formerly AMS 212B.)

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students. Undergraduates may enroll by permission of the instructor.

AM 213A - Numerical Linear Algebra (5)

Focuses on numerical solutions to classic problems of linear algebra. Topics include: LU, Cholesky, and QR factorizations; iterative methods for linear equations; least square, power methods, and QR algorithms for eigenvalue problems; and conditioning and stability of numerical algorithms. Provides hands-on experience in implementing numerical algorithms for solving engineering and scientific problems. Basic knowledge of mathematical linear algebra is assumed. (Formerly AMS 213A.)

Prerequisite: Enrollment is restricted to graduate students. Undergraduate students may enroll with permission of the instructor.

AM 213B - Numerical Methods for the Solution of Differential Equations (5)

Introduces the numerical solutions of ordinary and partial differential equations (ODEs and PDEs). Focuses on the derivation of discrete solution methods for a variety of differential equations, and their stability and convergence. Also provides hands-on experience in implementing such numerical algorithms for the solution of engineering and scientific problems using MATLAB software. The class consists of lectures and hands-on programming sections. Basic mathematical knowledge of ODEs and PDEs is assumed, and a basic working knowledge of programming in MATLAB is expected. (Formerly AMS 213B.)

Prerequisite: Enrollment is restricted to graduate students.

AM 215 - Stochastic Modeling in Biology (5)

Application of differential equations, probability, and stochastic processes to problems in cell, organismal, and population biology. Topics include systems biology, cellular processes, gene-regulation, and population biology. Students may not receive credit for this course and AM 115. (Formerly AMS 215.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor.

AM 216 - Stochastic Differential Equations (5)

Introduction to stochastic differential equations and diffusion processes with applications to biology, biomolecular engineering, and chemical kinetics. Topics include Brownian motion and white noise, gambler's ruin, backward and forward equations, and the theory of boundary conditions. (Formerly AMS 216.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor.

AM 217 - Introduction to Fluid Dynamics (5)

Covers fundamental topics in fluid dynamics at the graduate level: Euler and Lagrange descriptions of continuum dynamics; conservation laws for inviscid and viscous flows; potential flows; exact solutions of the Navier-Stokes equation; boundary layer theory; gravity waves. Students cannot receive credit for this course and AM 107. (Formerly AMS 217.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor.

AM 224 - Applied Dynamical Systems (5)

Graduate-level course in dynamical systems theory, focusing on n-dimensional continuous dynamical systems. Covers fixed points, stability (linear and Lyapunov), normal forms, center manifold theorem, Liouville theorem, reversible and gradient flows, conservative systems, and quantitative characterization of chaos.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor. An introductory course in dynamical systems theory (e.g. AM 114 or MATH 145 or AM 214), partial differential equations (e.g. AM 112 or MATH 107) as well as experience with programming and scientific computing using Matlab or Python, are strongly recommended.

AM 227 - Waves, Instabilities, and Turbulence in Fluids (5)

Advanced fluid dynamics course introducing various types waves and instabilities that commonly arise in geophysical and astrophysical systems, as well as turbulence. Topics covered include, but are not limited to: pressure waves, gravity waves, convection, shear instabilities, and turbulence. Advanced mathematical methods are used to study each topic. Undergraduates are encouraged to take this course with permission of the instructor. (Formerly Waves and Instabilities in Fluids.)

Prerequisite: Prerequisite(s): AM 212A and AM 217.

AM 229 - Convex Optimization (5)

Focuses on recognizing, formulating, analyzing, and solving convex optimization problems encountered across science and engineering. Topics include: convex sets; convex functions; convex optimization problems; duality; subgradient calculus; algorithms for smooth and non-smooth convex optimization; applications to signal and image processing, machine learning, statistics, control, robotics and economics. Students are required to have knowledge of calculus and linear algebra, and exposure to probability. (Formerly AMS 229.)

Prerequisite: Enrollment is restricted to graduate students.

AM 230 - Numerical Optimization (5)

Introduces numerical optimization tools widely used in engineering, science, and economics. Topics include: line-search and trust-region methods for unconstrained optimization, fundamental theory of constrained optimization, simplex and interior-point methods for linear programming, and computational algorithms for nonlinear programming. (Formerly AMS 230.)

AM 231 - Nonlinear Control Theory (5)

Covers analysis and design of nonlinear control systems using Lyapunov theory and geometric methods. Includes properties of solutions of nonlinear systems, Lyapunov stability analysis, effects of perturbations, controllability, observability, feedback linearization, and nonlinear control design tools for stabilization. (Formerly AMS 231.)

Prerequisite: Prerequisite(s): basic knowledge of mathematical analysis and ordinary differential equations is assumed. Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor.

AM 232 - Applied Optimal Control (5)

Introduces optimal control theory and computational optimal control algorithms. Topics include: calculus of variations, minimum principle, dynamic programming, HJB equation, linear-quadratic regulator, direct and indirect computational methods, and engineering application of optimal control. (Formerly AMS 232.)

Prerequisite: Prerequisite(s): AM 114 or AM 214, or ECE 240 or ECE 241, or MATH 145. Enrollment is restricted to graduate students. Undergraduates may enroll by permission of the instructor.

AM 238 - Fundamentals of Uncertainty Quantification in Computational Science and Engineering (5)

Computing the statistical properties of nonlinear random system is of fundamental importance in many areas of science and engineering. Introduces students to state-of-the-art methods for uncertainty propagation and quantification in model-based computations, focusing on the computational and algorithmic features of these methods most useful in dealing with systems specified in terms of stochastic ordinary and partial differential equations. Topics include: polynomial

chaos methods (gPC and ME-gPC), probabilistic collocation methods (PCM and ME-PCM), Monte-Carlo methods (MC, quasi-MC, multi-level MC), sparse grids (SG), probability density function methods, and techniques for dimensional reduction. Basic knowledge of probability theory and elementary numerical methods for ODEs and PDEs is recommended. (Formerly AMS 238.)

Prerequisite: Prerequisite(s): STAT 203 or equivalent, and AM 213B or equivalent. Enrollment is restricted to graduate students.

AM 250 - An Introduction to High Performance Computing (5)

Designed for STEM students and others. Through hands-on practice, this course introduces high-performance parallel computing, including the concepts of multiprocessor machines and parallel computation, and the hardware and software tools associated with them. Students become familiar with parallel concepts and the use of MPI and OpenMP together with some insight into the use of heterogeneous architectures (CPU, CUDA, OpenCL), and some case-study problems. (Formerly AMS 250.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor.

AM 260 - Computational Fluid Dynamics (5)

Introduces modern computational approaches to solving the differential equations that arise in fluid dynamics, particularly for problems involving discontinuities and shock waves. Examines the fundamentals of the mathematical foundations and computation methods to obtain solutions. Focuses on writing practical numerical codes and analyzing their results for a full understanding of fluid phenomena. (Formerly AMS 260.)

Prerequisite: Prerequisite(s): Basic knowledge of computer programming languages is assumed. Enrollment is restricted to graduate students.

AM 275 - Magnetohydrodynamics (5)

Studies the interaction of fluid motion and magnetic fields in electrically conducting fluids, with applications in many natural and man-made flows ranging from, for example, planetary physics and astrophysics to industrial metallurgic engineering. (Formerly AMS 275.)

Prerequisite: Prerequisite(s): AM 107 or AM 217. AM 227 suggested. Enrollment is restricted to graduate students.

AM 280A - Seminar in Mathematical and Computational Biology (2)

Weekly seminar on mathematical and computational biology. Participants present research findings in organized and critical fashion, framed in context of current literature. Students present own research on a regular basis. (Formerly AMS 280A.)

Prerequisite: Enrollment is restricted to graduate students.

AM 280B - Seminar in Applied Mathematical Modeling (2)

Weekly seminar series covering topics of current research in applied mathematics and statistics. Permission of instructor required. Enrollment is restricted to graduate students. (Formerly AMS 280B.)

AM 280C - Seminar in Geophysical and Astrophysical Fluid Dynamics (2)

Weekly seminar/discussion group on geophysical and astrophysical fluid dynamics covering both analytical and computational approaches. Participants present research progress and findings in semiformal discussions. Students must present their own research on a regular basis. (Formerly AMS 280C.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor.

AM 296 - Masters Project (5)

Independent completion of a masters project under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

AM 297A - Independent Study or Research (5)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

AM 297B - Independent Study or Research (10)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

AM 297C - Independent Study or Research (15)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

AM 297F - Independent Study (2)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

AM 299A - Thesis Research (5)

Thesis research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

AM 299B - Thesis Research (10)

Thesis research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

AM 299C - Thesis Research (15)

Thesis research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

ANCS-ANCIENT STUDIES

Lower-Division

ANCS 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper Division

ANCS 197F - Senior Comprehensive Examination Preparation (2)

Students submit petition to sponsoring agency.

ANCS 199 - Tutorial (5)

Students submit petition to sponsoring agency.

ANCS 199F - Tutorial (2)

Students submit petition to sponsoring agency.

ANTH - ANTHROPOLOGY

To view planned offerings for the current academic year, please visit this page.

Lower-Division

ANTH 1 - Introduction to Biological Anthropology (5)

Study of evolution illustrated by Pleistocene hominid fossils and variation in living human groups. Behavior and evolution of primates examined as they contribute to the understanding of human evolution. Required for all anthropology majors. (Formerly Introduction to Human Evolution.)

ANTH 2 - Introduction to Cultural Anthropology (5)

A number of different peoples are studied and a variety of approaches to the nature of the culture and to the study of specific cultures presented. Required for all anthropology majors.

ANTH 3 - Introduction to Archaeology (5)

Overview of ways of learning about the human past beyond the scope of written history. Reviews development of archaeology, fundamental methods and theories, and archaeology's contribution to understanding human origins, the emergence of farming, and the origins of complex societies.

ANTH 93 - Field Study (5)

Supervised research or organized projects on anthropological topics for lower-division students. Conducted either on or off campus. Students submit petition to sponsoring agency.

ANTH 97 - Laboratory Safety Practicum (2)

Covers laboratory health and safety and standard operating procedures within the anthropology laboratories. Prepares students for future laboratory research activities while providing support of laboratory administration, collections management, and laboratory course demonstration needs. Enrollment by application.

Upper-Division

ANTH 100 - History and Theory of Biological Anthropology (5)

Provides an historical overview from the 18th century to the present of race, ape-human relationships, and human nature. Emergence of an evolutionary framework and of fossil, genetic, and primate information becomes the basis for reformulating ideas about human biology within anthropology.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3 and satisfaction of the Entry Level Writing and Composition requirements.

ANTH 109 - Stable Isotope Ecology in Anthropology and Beyond (5)

Provides students with a comprehensive overview and solid theoretical framework regarding the most common isotope systems used in anthropology and related disciplines, which include carbon, nitrogen, oxygen, strontium, and sulfur.

Prerequisite: Prerequisite(s): ANTH 1, or BIOE 20C, or by instructor permission.

ANTH 101 - Human Evolution (5)

Study of human evolution covering the last five million years. Examines the fossil evidence and emphasizes the reconstruction of behavior from the paleontological and anatomical evidence.

Prerequisite: Prerequisite(s): ANTH 1.

ANTH 102A - Human Skeletal Biology (5)

Presents basic human osteology allowing students to identify skeletal material by element. Emphasizes the dynamic nature of bone by integrating anatomy with a discussion of bone physiology within the context of the human life cycle.

Prerequisite: Prerequisite(s): ANTH 1.

ANTH 103 - Forensic Anthropology (5)

Covers the basic analysis of human skeletal remains for the medicolegal profession. Assessment of age, sex, ancestry, and general physical characteristics, trauma, and disease are discussed. Addresses the legal responsibilities of the anthropologist. Online lectures with in-class discussion sections, quizzes, and exams. Students cannot receive credit for this course and ANTH 103I.

Prerequisite: Prerequisite(s): ANTH 102A. Enrollment is restricted to juniors and seniors.

ANTH 104 - Human Variation and Adaptation (5)

Explores the major environmental factors (temperature, altitude, diet, and disease); how they are perceived by the human body; the physiological, micro- and macroanatomical

responses; and how behavior and culture can modify the impact of these stresses. ANTH 1 is highly recommended as preparation. (Formerly Human Adaptability.)

ANTH 105 - Human Paleopathology (5)

Examines paleopathology beginning with ancient hominid populations and proceeding to modern populations. Uses both the skeletal evidence and historical documentation when available. Considers evolutionary, cultural, and biological factors. Topics include: osteological diagnosis of infectious disease; trauma; nutritional deficiencies; dental disease; and developmental defects.

Prerequisite: Prerequisite(s): ANTH 1; ANTH 102A recommended.

ANTH 106 - Primate Behavior and Ecology (5)

The nature of primate social systems and social bonds is examined in the light of evolutionary and ecological concepts. We explore the evolution of primate social system behavior and culture, as well as the ecologies of primate populations.

Prerequisite: Prerequisite(s): ANTH 1.

ANTH 106A - Chimpanzee Behavior and Culture A (2)

Provides students with an in-depth understanding of the non-invasive study of chimpanzee behavior via video footage. The interactive lab aspect of this class focuses on how to non-invasively monitor the presence and behavioral diversity of wildlife, using camera trap technology. Students are exposed to the primary scientific literature and gain experience handling and maintaining large datasets in excel, and work as a team throughout this class. Prerequisite(s): ANTH 1. Enrollment is by permission of the instructor.

ANTH 106B - Chimpanzee Behavior and Culture (2)

Provides students with an in depth understanding of the non-invasive study of chimpanzee behavior from video footage. The interactive lab aspect of this class focuses on how to non-invasively monitor the presence and behavioral diversity of wildlife using camera trap technology. Students are exposed to the primary scientific literature and gain experience handling and maintaining large datasets in excel, and work as a team throughout this class.

Prerequisite: Prerequisite(s): ANTH 106A.

ANTH 106C - Chimpanzee Behavior and Culture (2)

Provides students with an in depth understanding of the non-invasive study of chimpanzee behavior from video footage. The interactive lab aspect of this class focuses on how to non-invasively monitor the presence and behavioral diversity of wildlife using camera trap technology. Students are exposed to the primary scientific literature and gain experience handling and maintaining large datasets in excel, and work as a team throughout this class.

ANTH 107A - Methods and Research in Biological Anthropology: Genetics (5)

Introduces the molecular analyses of anthropological questions and explores the intersection of genetics and anthropology. Covers the basic principles of molecular and population genetics as they relate to the study of humans. Prerequisite(s): ANTH 1 and ANTH 104. ANTH 102A is recommended. Enrollment by permission of instructor. (Formerly ANTH 107, Methods and Research in Molecular Anthropology.)

ANTH 107B - Methods and Research in Biological Anthropology: Stable Isotopes (5)

This combination of lectures, readings, discussions, and hands-on laboratory experience provides a comprehensive overview of stable isotope research to reconstruct diet and mobility. Discover the wide application of isotopic research in biological anthropology, bioarcheology, primatology and forensics. Prerequisite(s): at least one of ANTH 101, ANTH 104, ANTH 106, ANTH 107, or ANTH 110F and by permission of the instructor. (Formerly Methods and Research in Stable Isotope Ecology.)

Prerequisite: Prerequisite(s): ANTH 101 or ANTH 104 or ANTH 106 or ANTH 107 or ANTH 110F.

ANTH 107C - Methods and Research in Biological Anthropology: Chimpanzee Behavior and Culture (5)

Lab class analyzing trail camera footage from chimpanzees and other wildlife, and installing our own cameras in the UCSC forest. Also includes readings and discussion of papers related to the newest findings on chimpanzee behavioral diversity and culture. Prerequisite(s): ANTH 106. Enrollment is by instructor consent.

ANTH 107D - Methods and Research in Biological Anthropology–Computational Population Genetics (5)

Practical introduction to computational population genetics. Covers the basic principles of population and evolutionary genetics, and explores those with a range of computational methods for the analysis of genetic diversity, population structure, and admixture. Enrollment is by instructor consent.

ANTH 107E - Methods And Research In Biological Anthropology: Lithic Technology (5)

Introduction to lithic and ceramic analysis in archaeology. Includes lab analysis, discussions of classification and typology, and exploration of the concept of style as it relates to ceramics and lithics in archaeology. (Formerly ANTH 182A, Lithic Technology.)

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 108 - Neanderthals (5)

Homo sapiens neanderthalensis (neanderthals), once considered brutish, are increasingly seen as behaviorally modern. This course uses primary academic research to explore the social behaviors, technology, anatomy, and genetics of neanderthals, gaining a holistic understanding of our closest ancestor.

Prerequisite: Prerequisite(s): ANTH 1.

ANTH 110A - Public Life and Contemporary Issues (5)

How can cultural anthropology help us to understand current events unfolding locally, nationally, and globally? Students learn how to read newspapers differently--that is, through the lens of cultural analysis. The world of everyday politics and society, as it unfolds in debates happening right now, forms the topical substance of the course.

ANTH 110B - From Indiana Jones to Stonehenge: Archaeology as Popular Culture (5)

Addresses the meaning of archaeology as generated in television, movies, literature, newspapers, and even National Geographic. Students engage with several case-studies illustrating how archaeology is portrayed in popular culture.

ANTH 110C - California Pasts (5)

This course is structured around four critical moments--missionization, Rancho-Era, Gold Rush, and World War II--through the eyes of the ethnic and racial minorities who experienced them. Special attention is given to oral, archival, and archaeological sources which reveal California's multiethnic pasts.

ANTH 110D - Tourism Imaginaries and Encounters (5)

Explores anthropological approaches to the study of tourism, in particular themes of authenticity, othering, visual economies, development, identity politics, alternative tourisms, and material culture with reference to history, power, and location.

ANTH 110E - Anthropology of Global Environmental Change (5)

Introduces anthropological and historical approaches to environmental change and globalization. Key themes include: capitalism and industrialization, environmental politics, global culture, and relations between humans and other species.

ANTH 110F - Evolution of Human Diet (5)

Presents the evolution of human diet and subsistence from a biological anthropological perspective. Covers the key hypothesis and methodologies related to diet, from our early fossil ancestors up to agriculture and animal husbandry. (Formerly Biocultural Approaches to Food.)

ANTH 110G - Westside Stories: Race, Place and the California Imaginary (5)

From South Central to La Misión, this course explores the role of race and culture in creating the California Dream. Draws on films, music, and activism as lenses into the complex flows of power that shape our communities.

ANTH 110H - Brazilian Amazon Cultures and Environments (5)

General introduction to the astonishing diversity of cultures and environments in the Brazilian Amazon. Designed to provide upfront understanding of what underlies perverse (non)development and forest destruction, but also social defense of the forest and sustainable life within it.

ANTH 110I - Cultures of Sustainability and Social Justice (5)

Brings together diverse forms of cultural knowledge and complexities of everyday life to illuminate longstanding concerns of sustainability and justice. Investigates multiple theories of sustainable development as well as tools, techniques, and contexts for ecological integrity, economic security, empowerment, responsibility and social well-being characteristic of sustainable communities. Case studies are drawn from around the world highlighting the work of Right Livelihood Award Laureates in tandem with UC faculty.

ANTH 110IG - Cultures Of Sustainability And Social Justice Abroad (5)

Brings together diverse forms of cultural knowledge and complexities of everyday life to illuminate longstanding concerns of sustainability and justice. Investigates multiple theories of sustainable development as well as tools, techniques, and contexts for ecological integrity, economic security, empowerment, responsibility and social wellbeing characteristic of sustainable communities. Case studies highlight the work of Right Livelihood Award Laureates in tandem with UC faculty. This course is a hybrid course. The in-person component allows for an in-person study abroad experience whereby students visit sites relevant to the curriculum and have lectures and discussions with Right Livelihood Laureates and the instructor. The asynchronous online component facilitates student engagement with custom pre-recorded video interviews with UC faculty and Right Livelihood Laureates from around the world.

ANTH 110J - Emerging Humanity (5)

Using an anthropological and archaeological perspective to learn about human history before AD 1500, course explores fossil remains of human ancestors and traces the more recent history of humanity from forgers/hunters to the emergence of complex societies/civilizations. Topics include human biological evolution, the development of organized human societies, the origins of food production (domestication of plants and animals), the origins of the world's earliest urban centers, and the development of social inequality.

ANTH 110K - Culture Through Food (5)

Examines anthropology of food and politics of eating. Cultural and social uses of food in rituals of solidarity or fasting, identities and meanings of food for individuals, and consumption in the global context are key components of study.

ANTH 110M - Cultures of Mental Health (5)

Examines diversity of mental health across cultures, psychiatric categories, and institutions. Assessment of human experiences via illness narratives, ethnographic research, and historical contexts.

ANTH 110L - The Human Ocean (5)

From coral reefs to Arctic sea ice, this course examines how humans interact with and transform earth's oceans, and how humans are shaped by the sea. Topics include: marine conservation, migration, shipping and logistics, slavery, fisheries management, and climate change.

ANTH 110N - Anthropology of Food (5)

Focuses on social institutions around the world that shape food and its meanings; how people use food to organize their worlds; and production, sharing, or consumption of food as a political or meaningful act.

ANTH 110O - Postcolonial Britain and France (5)

Transdisciplinary examination of the politics and culture of postcolonial Britain and France. Topics include: immigration from South Asia, Africa, and the Caribbean; racism and antiracism; minority difference and citizenship practices; and the emergence of Islam as a major category of identity and difference.

ANTH 110P - India and Indian Diaspora through Film (5)

Students in this course view the complexity and diversity of the Indian Diaspora through themes such as family, caste, food, gender, politics, religion, sexuality, and immigration policies affecting the diaspora. How do the vastly diverse groups of Indian Americans perceive their own ethnic identity? How do they respond to the dual impulses of assimilation and integration? And how might their self-conception influence the composition of their social networks? Course explores these themes through readings and Bollywood films.

ANTH 110Q - Queer Sexuality in Black Popular Culture (5)

From Janet Mock to Young M.A., queerness has become hypervisible in Black popular culture--but at what cost? Using music, television, and social media as central texts, students investigate the intersections of sexuality, gender, and race in public life.

ANTH 110R - Discourses in American Religions and Their Role in Public Life (5)

Introduces dominant discourses about major American religions and their role in public life, with particular attention to intersecting differences, such as race, sex/gender, and disability, and to shifting religious/political boundaries. Visual and textual media, political commentary, and popular ethnographies are analyzed.

ANTH 110S - Evolution of Democracy (5)

Examines the state and its institutions from a historical, social, and cross-cultural perspective, paying attention to the varied discourses and practices that constitute what we call the state.

ANTH 110T - Motherhood in American Culture (5)

Examines the culture wars around motherhood in the United States with a focus on the political mobilization of normative ideas about the correct way to mother, from the moment of conception on. Special attention is given to the historical construction of deviant motherhood among marginalized groups.

ANTH 110U - Histories and Cultures of Piracy (5)

An interdisciplinary yet anthropologically informed approach to studying pirates and piracy across different historical eras and spaces. Explores the role of pirates in world history from ancient to present times, including piracy both at sea and online.

ANTH 110V - American Capitalism (5)

Capitalism shapes our lives in unequal ways, but what is it? Course explores histories and machinations of capitalism in the Americas, focusing on the United States. Investigates what capitalism is, how it operates, its origins, and what might come next.

ANTH 110W - Land and Waterscapes Entropology (5)

Establishes anthropological interconnections of emergent worlds where environmental matters, social justice, and human survival interrelate. Focuses on anti-essential nature and waterscape ethnographies in which different pluricultures revalidate local understandings as ways of contesting increasing forms of land and water privatization.

ANTH 110Y - Feeding California (5)

Online course introducing students to social practices, political processes, and cultural contexts that shape food production and consumption. Considers identity, heritage, choice, power, agency, body practices, belonging, access, safety, and security. Prioritizes California case studies, with comparative examples from around the world.

ANTH 110Z - Introduction to Disability Studies (5)

Provides an introduction to the interdisciplinary field of disability studies, including the key terms and debates of disability studies; representations of disability in print, televisual, and social media; and the legal, political, and justice-oriented frameworks that impact disability in the U.S., with a focus on intersectional disability justice.

ANTH 111 - Human Ecology (5)

Reviews the environmental, physiological, behavioral, and cultural ways that humans interact with their physical surroundings. The effects of human culture on the environment and of the environment on the shape of human culture is emphasized.

ANTH 112 - Life Cycles (5)

Examines the human life cycle using an evolutionary framework. Examines key aspects of the human life stages using findings and concepts from developmental biology, physiology, nutrition, evolutionary ecology, and life-history theory.

Prerequisite: Prerequisite(s): ANTH 1.

ANTH 113 - Tutoring Writing in Anthropology (2)

Trains students to tutor writing in undergraduate anthropology courses; supports and guides them during the quarter they are tutoring. Enrollment by interview only. Prerequisite(s): satisfaction of the Composition requirement.

ANTH 119 - Indigenous Visual Culture (5)

Examines the relationship between visual cultures and indigenous peoples. First, class discusses what is visual anthropology. Second, class examines the relationship between museums and indigenous peoples. Third, class examines ethnographic photography and indigenous uses of photography. Fourth, class examines the uses of ethnographic film, and then its relationship to indigenous peoples. Finally, class examines indigenous uses of film.

ANTH 121 - Socialism (5)

Ethnography-based course that examines the social worlds of socialism, with particular focus on state socialism. Topics include: social problems that inspired socialist movements; implementation and experience of socialism in daily life; and significance of class, race, nation, science, technology, rationality.

ANTH 122 - Postsocialism (5)

Examines the demise of socialist systems. Addresses the political, social, cultural, and economic experiences of everyday life that led to that demise, what new social inequalities have arisen since, and how citizens use the socialist past to critique the present.

ANTH 123 - Psychological Anthropology (5)

An introduction to some of the central theoretical issues in psychological anthropology. Psychoanalytic, cognitive, and relativist perspectives on the link between person and society are discussed and compared.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 124 - Anthropology of Religion (5)

Study of the phenomenon of religion as manifested in ethnographic literature, with special attention to traditional and recent modes of analysis of religious behavior. Special topics include myth, religious healing, witchcraft and sorcery, ritual, and millenarian movements.

ANTH 125 - Magic, Science, and Religion (5)

With a theoretical understanding of the concepts of magic, science, and religion, students draw on ethnographies of these practices to critique distinctions between them and critically analyze the understanding of these categories and their relation in the modern world

ANTH 126 - Contraband: Shadow Economies and the Law (5)

Course takes an interdisciplinary approach to studying contraband and smuggling. Focusing on concepts used to describe illegality we examine how "shadow economies" are central to the making of states and sovereignty, the legal and illegal being blurred.

ANTH 127 - Ethnographies of Capitalism (5)

Challenges approaches to capitalism that treat it as socioeconomic relations separable from culture. Readings include ethnographies demonstrating the inextricability of cultural meanings from capitalist practices. Topics include capitalism's relationship to colonialism, nationalism, socialism, gender, and the commodification of aesthetics.

ANTH 128 - Contemporary American Evangelical Cultures (5)

Study of contemporary, American, born-again Protestant discourse using ethnographic materials and interpretive theories. Topics include biblical literalism, Christian conversion and self-fabulation, charismatic gifts, preaching, sacrificial giving, prosperity theology, apocalypticism, creationism, pro-family and pro-life rhetoric, and televangelism. (Formerly *Born-Again Religion and Culture*.)

ANTH 129 - Beyond Borders: Other Globalizations and Histories of Interconnection (5)

The history of social and cultural interconnections at a global scale. Anthropological approaches to the study of cultural encounter are used to investigate topics such as trade, religion, and citizenship and to evaluate shifting concepts of civilization and barbarism. (Formerly Other Globalizations: Cultures and Histories of Interconnection.)

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 130A - Anthropology of Africa. (5)

Survey of sub-Saharan societies. Analysis of principles of social organization and factors of cultural unity of selected western, eastern, central, and southern African peoples. (Formerly Peoples and Cultures of Africa)

ANTH 130B - Brazil (5)

Examines Brazilian culture and its link to interpersonal relationships, religion, politics, and psychological experience.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 130C - Politics and Culture in China (5)

Joins substantive information about Chinese society and culture with debates in social theory and rethinks conventional wisdom about colonialism and modernity. Topics include representations of Chineseness, class revolution, Chinese diaspora, popular culture, family and kinship, nationalism, history/memory, race and gender.

ANTH 130D - The Cultural Aspects of the Israeli-Palestinian Conflict (5)

Course examines the everyday life of the Palestinian citizens of Israel. Palestinians who remained within what became the State of Israel after the 1948 war became a national and ethnic minority overnight. Although granted citizenship, they were excluded from the Jewish majority society and were discriminated against by the state. Course deepens the

understanding of the conflict while focusing on the complex relations between the Palestinian and Jewish citizens in Israel, highlights the Palestinians' social and cultural aspects, and sheds light on how they experience everyday life as a minority. Students learn how to apply sociological and anthropological approaches to understand better the Israeli-Palestinian conflict and minority-majority relations in general.

ANTH 130E - Culture and Politics of Island Southeast Asia (5)

Southeast Asia includes a variety of societies exhibiting many ecological adaptations, religions, marriage systems, and experiences with colonial powers. Case studies of particular societies, chosen to reveal variety, are examined comparatively. Emphasis on religion and social organization.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 130F - Blackness In Motion: Anthropology of the African Diasporas (5)

What connects Black communities in the Caribbean, the U.S., Latin America, and Canada, and what sets them apart? Examines theories of diaspora, gender and sexuality, slavery, colorism, music, U.S. hegemonies, social movements, and comparative racialization and global anti-blackness (Formerly Blackness In Motion: Anthology of the African Diasporas.)

ANTH 130G - Asian Americans in Ethnography and Film (5)

Critically examines category of Asian Americans. Addresses historic representations of Asians and Asian Americans in ethnographic research and film. Explores contemporary issues of race, culture, and politics through ethnographic practice and cultural production.

ANTH 130H - Ethnography of Russia and Eastern Europe (5)

Introduces students to the ethnography of Eurasia, with special attention to the lived experience and legacy of state socialism in this region. Topics include new ideas of personhood, changing economic practices, public health, and international development.

ANTH 130I - Cultures of India (5)

An examination of anthropological studies of tribal, rural, and urban cultures of India and a look at changes taking place in India.

ANTH 130IG - Cultures of India Abroad (5)

An examination of anthropological studies of tribal, rural, and urban cultures of India and a look at changes taking place in India.

ANTH 130J - Politics and Statemaking in Latin America (5)

Introduction to ethnohistory and political anthropology of one or more Latin American countries: Typically Mexico and one other country. Students explore how contested concepts such as indigeneity, nation or state come to gain credibility and are deployed in contemporary politics.

ANTH 130K - Food Cultures in South Asia (5)

Designed to prepare students to adopt food as an analytical lens to explore the relationship between environmental sustainability and social justice in the South Asia. It draws from ethnographic texts, films, and recipe books to provide an overview of contemporary debates, insights, and politics. Examines how everyday food practices shape gender, religion, caste, and class. Students interested in emerging food trends and consumption will connect with diverse grassroots food initiatives, including food justice initiatives from indigenous communities.

ANTH 130L - Ethnographies of Latin America (5)

A broad introduction to issues and areas of cultural production and transformation in the Caribbean, Mexico, and Central and South America. Colonial, neocolonial, class, ethnic, gender, religious, ecological, and political relations intersect as represented in ethnographies and film.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 130M - Inside Mexico (5)

Examines various communities within the Republic of Mexico as represented in ethnographic texts and other forms of cultural production, particularly music and dance. Emphasis on the interplay between the concept of regionalism and national identity. Previous course work in Mexican culture and/or history strongly recommended. Some reading in Spanish is required.

ANTH 130N - Native Peoples of North America (5)

A survey of Native American cultures and experience during the past century, with emphasis on Pueblo cultures of the American Southwest.

ANTH 130O - Native Feminisms, Gender, and Settler Colonialism (5)

Covers Native feminisms, gender, settler colonialism, and ethnography. Students read ethnographies that intervene in Native feminisms and its possibilities. Focuses on ethnographies in the U.S., including Native men and masculinities in Hawaii.

ANTH 130P - Ethnography of Southern Cone Chile and Argentina (5)

Chile and Argentina, although both established within Spanish colonization and physically close, have dissimilar histories and culture. We explore areas of friction and overlap that shaped different peoples, institutions, cultural identities, and histories in countries that share a particular history.

ANTH 130S - Ethnography of Russia and Eastern Europe, Abroad (5)

This study abroad introduces the ethnography of Russia and Eastern Europe, with special attention to lived experience and legacy of state socialism. Topics: effects of socialism, changing economic practices; constructions of new identities;

modernization/development; belief systems; and memory and history.

ANTH 130T - Religion and Politics in the Muslim World (5)

Analyzes post-colonial forms of Islam, with particular attention to Muslim societies and cultures in the Middle East, North Africa, and Europe. Emphasizes the relationship between power, knowledge, and representation in anthropological approaches to Islam and Muslims. (Formerly Anthropological Approaches to Islam.)

ANTH 130U - Central America (5)

Draws on political, economic, and anthropological perspectives to analyze the key role of transnationalism and neoliberalism in contemporary Central America. Key topics include: the aftermath of revolutions; labor and gender; indigenous movements and multiculturalism; and transnational migration and governance.

ANTH 130V - Ethnography of Russia (5)

Examines daily life in Russia and affiliated formerly Soviet Republics through historical and cultural comparison. Topics include: socialist and postsocialist daily life; 20th- and 21st-century Russian empire building; cultural politics; economic systems; state-citizen relations; citizenship regimes; labor and leisure; and religion.

ANTH 130W - Ethnography of Eastern Europe (5)

Examines daily life in Eastern Europe, especially how residents in this region have navigated the transition from state socialism to accession to the European Union. Topics include: the legacies of state socialism; cultural politics; new economies; consumption; the European Union; new forms of governance; and political activism.

ANTH 130X - Special Topics in Ethnography (5)

This course on special topics in ethnography will be taught on a rotating basis by various faculty members. Precise focus of each year's courses will vary according to the instructor and will be announced by the department.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 130Y - Health, Illness, & Medicines in Muslim Worlds (5)

How can one bear witness to pandemics, plagues, crises, and destruction in the Middle East without reproducing tropes and myths of chronic instability and regional under-development? This lecture course is an ethnographic, historical, and textual exploration of the past and present of Muslim Worlds and the Islamic tradition and sciences. Students critically engage the region we now evoke as the Middle East and its accompanying traditions as well as the tools that arise to diagnose and guide prescriptions for securing well-being of individuals, communities, and traditions.

Prerequisite: Prerequisite(s): ANTH 2 or GCH 1; ANTH 2 strongly recommended.

ANTH 131 - Gender in Cross-Cultural Context (5)

Examines the diversity of women's as well as men's roles, experiences, and self-conceptions in a number of societies to explore how women and men shape, and are shaped by, particular forms of social life.

ANTH 131H - Russian-Language Readings Course: Readings in Anthropology of Russia (2)

Contemporary topics and readings in anthropology of Russia and the former Soviet Union. All readings, films, and other materials are in Russian. Discussions are in English. Accompanies ANTH 130H, Ethnography of Russia and Eastern Europe. Prerequisite(s): ANTH 130H and proof of Russian proficiency in reading and writing. Enrollment by permission of instructor.

ANTH 132 - Food, Culture, and Justice in Israel/Palestine (5)

Examines the tensions within Israeli society and its relationships with other countries through food and eating habits, focusing on the relations with the Palestinian people sharing the same land. Given that food is a medium through which one can analyze social and cultural relations (and fights…), this course focuses on how food and eating patterns reflect, shape, and influence modern Israel. By doing so, the course provides a unique angle to major social and cultural issues in Israel, such as the relationship between Jews and Palestinians in Israel, cultural and social tensions between different ethnic groups, the effect of global food trends on Israeli society. (Formerly Food Fights: Food, Culture, and Society in Israel.)

ANTH 133 - Narratives of the Popular (5)

Addresses the increasing importance of popular culture as the terrain upon which to address issues of culture and power. Emphasizes an ethnographic approach to popular culture as sociocultural phenomena. Students learn about a variety of activities including television and film viewing, music, fashion, photography, postcards, comic books, and urban spatial relations and architecture.

ANTH 134 - Medical Anthropology: An Introduction (5)

Cross-cultural study of health, disease, and illness behavior from ecological and ethnomedical perspectives. Implications for biomedical health care policy. Students cannot receive credit for this course and ANTH 254.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 135A - Cities (5)

Examines cities from an anthropological perspective. Reviews pertinent social scientific literature of the 19th and early 20th centuries. Surveys the concepts and methods used by contemporary anthropologists to investigate urban phenomena.

ANTH 136 - The Biology of Everyday Life (5)

Addresses cross-cultural attitudes to the human body and its everyday biological concerns: sleeping, eating, breathing, sex, and defecation.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 137 - Consuming Culture (5)

Explores consumption as a cultural form. Beginning with theories of capitalism and exchange, it then focuses on sites and modes of consumption and display such as department stores, museums and zoos, advertisements and photography, cultural tourism.

ANTH 138 - Political Anthropology (5)

The ideas, in selected non-Western societies, about the nature of power, order, social cohesion, and the political organization of these societies.

ANTH 139 - Language and Culture (5)

Examination of language system and language use in relationship to cultural contexts of communication in Western and non-Western societies. Topics include the Sapir-Whorf linguistic relativity hypothesis; linguistic constructions of gender; speech variation in relation to class, ethnicity, and national identity; and the emergence of self in communicative acts.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 140 - The Body in Rain: Environmental and Medical Intersections (5)

Explores medical and environmental anthropologies, including how bodies-human and other-are implicated in processes often figured as environmental. Explores how the body and the environment combine and interact to form nexus of political, cultural, and material forces.

ANTH 142 - Anthropology of Law (5)

An ethnographically informed consideration of law, dispute management, and social control in a range of societies including the contemporary U.S. Topics include conflict management processes, theories of justice, legal discourse, and relations among local, national, and transnational legal systems.

Prerequisite: Enrollment is restricted to anthropology and legal studies majors.

ANTH 143 - Performance and Power (5)

Explores relationships between power and performance forms and media, both traditional and emergent. Links aesthetics with politics, and recent transcultural exchanges with local circumstances and consequences.

Prerequisite: Prerequisite(s): ANTH 2 or any other Anthropology course.

ANTH 144 - Anthropology of Poverty and Welfare (5)

Examines phenomena of poverty and welfare in cross-cultural perspective with an emphasis on critical ethnographies and social analyses of social pathologies, economic systems, and community. Topics include informal economies, labor, household systems, social-support networks, and public policies.

ANTH 145X - Special Topics in Socio-Cultural Anthropology (5)

Taught annually on a rotating basis by faculty members. Each year's topic varies by instructor and is announced by the department.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 146 - Anthropology and the Environment (5)

Examines recent approaches to study of nature and the environment. Considers historical relationship between nature, science, and colonial expansion as well as key issues of contemporary environmental concern: conservation, environmental justice, and social movements. Students cannot receive credit for this course and ANTH 246.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 147 - Anthropology and the Anthropocene (5)

Looks at how humans have lived with their environments in other times and places; the long-distance transfers of humans and other animals, as well as plants and microorganisms; and how we can best live in the Anthropocene.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 148 - Gender and Global Development (5)

Uses the critical tools of feminist theory and cultural anthropology to look at how global development discourses and institutions mobilize, reinforce, and challenge systems of gender-based inequality. Topics include non-governmental organizations (NGOs), development practice, microcredit, and technocrat cultures. (Formerly Gender and Development.)

ANTH 149 - Anthropology of Activism (5)

Examining activism from an anthropological perspective, students look at beliefs, ideals, and practices of social movements and those involved in them. Taking a procedural approach, course focuses on how things happen in unexpected ways, and examines activism as a collective matter.

ANTH 150 - Communicating Anthropology (5)

Encourages anthropology majors to explore different means of communicating anthropology with much attention to individual writing and presentation skills. Intensive work on library research; recognizing, comparing, and making arguments; and analyzing ethnographies, articles, reviews, and films.

Prerequisite: Prerequisite(s): two of the following courses: ANTH 1, ANTH 2, or ANTH 3; satisfaction of the Entry

Level Writing and Composition requirements. Enrollment is restricted to sophomore and junior anthropology majors.

ANTH 151 - Workshop in Ethnography (5)

Through demonstration, practice, and participation, acquire skills in collecting and analyzing cultural data. Work with members of other cultures and with each other to learn to identify significant cultural patterns. Lectures and readings provide added perspective and a theoretical base.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 151S - Workshop in Ethnography Abroad (6)

Prepares students to conduct ethnographic research. Through workshops and fieldwork exercises, students learn how to use immersive, sensory observation and regular writing practice to develop a research question and design a research project, practice ethnographic methods (which may include archival research), write up their findings in a synthetic essay, and present their research findings to an audience. The course covers topics such as ethics, reflexivity, accountability, bias, and positionality. Students create a portfolio of their work across the five weeks.

Prerequisite: Prerequisite(s): Must be taken concurrently with ANTH 161S. Requirements for the FSFS London program include concurrent enrollment in both ANTH 151s and ANTH 161s. Students are only admitted to the program and the two courses through formal application to and acceptance into the FSFS program by Global Engagement.

ANTH 152 - Survey of Cultural Anthropological Theory (5)

Major figures, ideas, and writings in 19th- and 20th-century cultural anthropology surveyed. Students cannot receive credit for this course and ANTH 252.

Prerequisite: Prerequisite(s): ANTH 2 and satisfaction of the Entry Level Writing and Composition requirements; enrollment is restricted to anthropology majors.

ANTH 153 - Medicine and Colonialism (5)

Addresses the overlapping relationship between medicine and colonialism in the 19th century, with attention to post-colonial theory and contemporary studies of post-colonial medical pluralism in the 20th century.

Prerequisite: Prerequisite(s): ANTH 2 and ANTH 134.

ANTH 157 - Modernity and Its Others (5)

Beginning with the conquest of the Americas, considers how Western thinkers have explained seemingly irrational beliefs and practices (e.g. human sacrifice, witchcraft, prophetic dreams, shamanism, spirit worlds), and asks how we might better understand notions of reality very different from our own.

ANTH 158 - Feminist Ethnographies (5)

Considers the relationship between anthropology and feminism. Provides historical perspective on gender inequalities in the discipline as well as the emergence of feminist anthropology. Students read and engage with examples of feminist ethnography form a variety of regions and subfields.

ANTH 159 - Race and Anthropology (5)

Examines concept of race in anthropology. Begins with histories of race in anthropology; turns to contemporary analysis of racism, identity formation, and diaspora; and concludes with current debates on the validity of race as an object of analysis.

ANTH 160 - Reproductive and Population Politics (5)

Examines reproductive and population politics across the globe, with a focus on feminist and ethnographic analyses of the stakes of various actors, from states to religious bodies to non-governmental organizations, in questions of who reproduces and in what circumstances.

ANTH 161 - The Anthropology of Food (5)

Critically examines food as a fundamental aspect of social and cultural life and key concept in the development of anthropological theory and methods. Topics include: power relationships; community building; exchange and reciprocity; symbolism; cultural rules and rituals; globalization; and memory.

ANTH 161S - Anthropology of Food, Abroad (6)

Food as a fundamental aspect of social/cultural life and key concept in development of anthropological theory and methods. Studying abroad, investigations are grounded in local ethnographic context to learn how anthropologists study food, practice methods, and understand food's local importance.

Prerequisite: Prerequisite(s): Concurrent enrollment in ANTH 151S is required. Requirements for the FSFS London program include enrollment in both ANTH 161s and ANTH 151s. Students are only admitted to the program and the two courses through formal application to and acceptance into the FSFS program by Global Engagement.

ANTH 162 - Anthropology of Displaced Persons (5)

Examines the causes, consequences, forms, and experiences of human movement, displacement, and abandonment. Topics include: migration, refugees, forced displacement, environmental displacement, tourism, transnational communities, and other displaced populations.

ANTH 163 - Kinship (5)

Provides a critical survey of debates, old and new, in the study of kinship. Readings range from classical treatments to recent reformulations that use kinship as a lens for exploring intimacy, memory, futurity, embodiment, commodification, and power. Students cannot receive credit for this course and ANTH 263.

ANTH 164 - The Anthropology of Dance (5)

An intense reading seminar which critically reviews anthropological works in dance ethnography and dance theory. Recommended for anthropology majors.

Prerequisite: Prerequisite(s): ANTH 2.

ANTH 166 - States, Bureaucracies , and Other Cosmological Propositions (5)

Investigates the cosmologies of states and bureaucracies and the practices through which officials or rulers seek to produce order, knowledge, or stability. Looks at paperwork, nationalist and court rituals, practices of mapping and classification, forms of citizenship.

ANTH 170 - History of Archaeological Theory (5)

Historical review of prehistoric archaeology from antiquarianism to the present. Emphasis on development of archaeological theory and its relation to evolutionary and anthropological theory. Students cannot receive credit for this course and ANTH 270.

Prerequisite: Prerequisite(s): ANTH 3; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to anthropology and Earth sciences/anthropology combined majors. Recommended for juniors.

ANTH 171 - Materials and Methods in Historical Archaeology (5)

In this intensive, hands-on course, students learn the step-by-step processes involved in conducting laboratory research on historic artifacts. Students study the ins and outs of analyzing, cataloging, and dating historic artifacts.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 172 - Archaeological Research Design (5)

Develops practical skills for connecting archaeological theory and methods to grant writing, final reports and presentations. Examines elements of good research design, including the logic of scientific inquiry, ethics, project conceptualization, measurement, sampling, data analysis, and effective writing.

Prerequisite: Prerequisite(s): ANTH 3. Enrollment is restricted to anthropology majors.

ANTH 173 - Origins of Farming (5)

Survey of the ecological and archaeological evidence for the origins of plant and animal domestication in Africa, Eurasia, and the Americas. Discussion will center on the preconditions of this drastic alteration in human ecology and its consequences in transforming human societies. Open to nonmajors. Students cannot receive credit for this course and ANTH 273.

Prerequisite: Enrollment is restricted to juniors and seniors.

ANTH 174 - Origins of Complex Societies (5)

Deals with evidence and theories concerning the origins of complex society; the transition from egalitarian, foraging societies to the hierarchical, economically specialized societies often referred to as civilizations. Focuses on both Old World and New World cultures. Students cannot receive credit for this course and ANTH 174.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 175 - African Archaeology (5)

Introduces the evolution of African kingdoms and states from the emergence of farming communities to initial contact with Europe. Particular attention paid to the origins of social inequality and the evolution of centralized polities. Students cannot receive credit for this course and ANTH 275. (Formerly African Complex Societies.)

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 176A - North American Archaeology (5)

Development of Native cultures in North America. Topics include peopling of the New World, early foragers, spread of agriculture and complex societies in the Southwest and Eastern Woodlands, and review of cultural developments in the West and Far North.

Prerequisite: Prerequisite(s): ANTH 3 or consent of instructor.

ANTH 176B - Meso-American Archaeology (5)

Review of the archaeological and ethnohistorical evidence for the origins and development of pre-Columbian civilizations in Meso-America including the Olmec, Maya, Zapotec, Mixtec Teotihuacan, Toltec, Tarascan, and Aztec. Students cannot receive credit for this course and ANTH 276B.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 176C - Archaeology of the American Southwest (5)

Outlines the development of native cultures in the American Southwest from Paleo-Indian times (Ca. 11,5000 B.C.) through early European contact (ca. A.D. 1600). Topics include the greater environment; early foraging culture; the development of agriculture and village life; the emergence and decline of regional alliances; abandonment and reorganization; and changes in social organization, external relations, and trade.

Prerequisite: Prerequisite(s): ANTH 3 and ANTH 176A.

ANTH 176D - Colonial Encounters in the Americas (5)

Uses archaeological case studies to explore processes of cultural confrontation, resistance, and transformation among Native American groups in the wake of European colonial expansion in the Western Hemisphere during the late 15th through mid-19th centuries.

Prerequisite: Prerequisite(s): ANTH 2 and ANTH 3.

ANTH 176E - Archaeology of the Pacific Northwest (5)

Explores some of the important issues surrounding the anthropological and archaeological study of the Pacific Northwest Coast--a roughly 1,800-kilometer-long shoreline that stretches from Yakutat Bay in Alaska to Cape Mendocino in California.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 176F - California Archaeology (5)

Introduces the Native peoples of California from an archaeological perspective. Covering the past 13,000 years, a variety of geographic and temporal settings are examined as well as current research in California archaeology.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 176G - Andean Archaeology (5)

Review of the archaeology and ethnohistory of the Central Andes, with a particular emphasis on the values and practices of Andean communities. Explores the whole Andean sequence, from the peopling of South America, early Andean societies, the development of states and empires, and the Spanish invasion.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 177 - Environmental Archaeology (5)

Introduces students to methods and theories in the study of past human-environment interactions. Examines the use of archaeological environmental data (geological, botanical, faunal, chemical) and explores topics, such as megafaunal extinctions, domestication, and human impacts on environments.

ANTH 178 - Historical Archaeology: A Global Perspective (5)

Introduces the archaeology of European colonialism and the early-modern world. Topics include historical archaeological methods; the nature of European colonial expansion in New and Old Worlds; culture contact and change; and power and resistance in colonial societies. Students cannot receive credit for this course and ANTH 278.

ANTH 180 - Ceramic Analysis in Archaeology (5)

Focuses on theories and techniques used by archaeologists to bridge the gap between the recovery of ceramic materials and their interpretation within cultural contexts. Topics include the origins of pottery, production methods, classification and typology, seriation, functional analysis, materials analysis and description, organization of production, trade, and the analysis of style. Students cannot receive credit for this course and ANTH 280.

Prerequisite: Prerequisite(s): ANTH 3. Enrollment is restricted to anthropology majors.

ANTH 181X - Special Topics in Archaeology (5)

Taught annually on a rotating basis by various faculty members. Precise focus of each year's course varies according to the instructor and is announced by the department.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 183 - Introduction to Geographic Information Systems for Anthropology (5)

Practical laboratory in geographic information systems with a specific focus on anthropological questions and development. Students learn basic spatial analyses and carry them out on research datasets. This course also emphasizes the incorporation of spatial modeling in research design. To participate, students are required to sign up for an account in ESRI (freely available to all UCSC students).

Prerequisite: Enrollment is restricted to anthropology majors. Enrollment is limited to 20 students.

ANTH 184 - Zooarchaeology (5)

Animals play many different roles in our lives, including as food, pets, tools, and symbols. This class introduces the study of animal remains retrieved from archaeological sites. Students learn about zooarchaeology through readings, lectures, and in-class laboratory sessions. Course explores a wide range of topics, including functional morphology, vertebrate taphonomy, reconstruction of human diet and behavior from faunal remains, data collection and management, and methods of quantitative analysis.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 185 - Osteology of Mammals, Birds, and Fish (5)

Practicum in archaeological faunal analysis. Students learn to identify bones of all larger mammal species of central California plus selected bird and fish species. Students cannot receive credit for this course and ANTH 285. Prerequisite(s): ANTH 184 or ANTH 102 or BIOL 138 BIOL 138L or EART 100 or ENVS 105 ENVS 105L, and permission of instructor.

ANTH 187 - Cultural Heritage in Colonial Contexts (5)

Critical examination of the definitions of cultural heritage, its development as a concept, and the various laws, charters, and conventions that shape our management of the past in the present. The focus is on heritage in comparative colonial contexts.

ANTH 187B - Cultural Resource Management (5)

Explores how the past is managed or cared for in the present, especially in the context of the United States.

Prerequisite: Prerequisite(s): ANTH 3.

ANTH 188A - Practicum in Archaeology A (2)

Introduces practical skills in archaeological materials identification of stone, shell, bone, and other materials, curation, and database management. Students receive entry-level training with once-weekly class meetings and five hours

per week of hands-on work. Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and instructor consent. All three courses in sequence (ANTH 188A, ANTH 188B, ANTH 188C) required to count for the anthropology major or minor.

ANTH 188B - Practicum in Archaeology B (2)

Introduces practical skills in archaeological materials identification of stone, shell, bone, and other materials, curation, and database management. Students receive entry-level training with once-weekly class meetings and five hours per week of hands-on work. Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and instructor consent. All three courses in sequence (ANTH 188A, ANTH 188B, ANTH 188C) required to count for the anthropology major or minor.

ANTH 188C - Practicum in Archaeology C (2)

Two-credit course introducing practical skills in archaeological materials identification of stone, shell, bone, and other materials; curation; and database management. Students receive entry-level training with once-weekly class meetings and five hours per week of hands-on work. Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3. All three courses in sequence (ANTH 188A, ANTH 188B, ANTH 188C) required to count for the anthropology major or minor.

ANTH 189 - Archaeology Field Methods (5)

Lecture, laboratory, and fieldwork sessions on archaeological field methods including survey, mapping, excavation, record and database maintenance, artifact accessioning, curation, and analysis on the UCSC campus. Students attend lectures/laboratories two evenings each week and do fieldwork all day on Saturdays. Enrollment by instructor consent. Prerequisite(s): course 3 and application letter. Students who have done no previous fieldwork in archaeology have priority.

ANTH 189A - Archaeological Field Techniques (5)

Focuses on fundamental site identification, recording, and reporting efforts in archaeology—the daily grind in archaeological research and cultural resource management (CRM)—that take place before any ground disturbance happens (usually as part of excavation). Class discussions of relevant readings, independent and group work, and hands-on exercises in the field (on campus) provide students with a working knowledge of everyday archaeological techniques, as well as familiarity with some of the important tools archaeologists use to identify and produce a record of cultural sites. Prerequisite(s): ANTH 3. Enrollment is by permission of the instructor. Enrollment is restricted to anthropology majors.

Prerequisite: Prerequisite(s): ANTH 3. Enrollment is by permission of the instructor. Enrollment is restricted to anthropology majors.

ANTH 190X - Special topics in Biological Anthropology (5)

Taught annually on a rotating basis by various faculty members. Precise focus of each year's course varies according to the instructor and is announced by the department.

(Formerly Special topics in Archaeology-Physical Anthropology.)

Prerequisite: Prerequisite(s): ANTH 1.

ANTH 194A - Anthropology of Dead Persons (5)

Explores the cultural meanings of dead bodies and dead persons, including memorialization; the body in the United States legal system; cadavers in education and research; dead persons in mass disasters and human-rights cases; and repatriation of the dead. Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, and ANTH 1, ANTH 2, and ANTH 3. Enrollment restricted to senior anthropology and Earth sciences/Anthropology combined majors. Enrollment by permission of instructor.

ANTH 194B - Chimpanzees: Biology, Behavior, and Evolution (5)

Explores studies on wild and captive chimpanzees with reference to other apes and humans. Topics include sociality, tool using, locomotion, traditions, and life history; social and physical dimensions of growth and development; language studies, genetics, and applications to human evolution.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; satisfaction of the Entry Level Writing and Composition requirement. Enrollment is restricted to senior anthropology majors.

ANTH 194C - Feminist Anthropology (5)

Considers feminist perspectives on the human past, archaeologists' perspectives on feminist theory, and the impact of gender, feminist, and critical social theory on archaeology as a profession. Students cannot receive credit for this course and ANTH 279.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirement. Enrollment restricted to senior anthropology and Earth sciences/Anthropology combined majors.

ANTH 194D - Tribes/Castes/Women (5)

Examines historical constructions and contemporary deployments of the categories that have structured popular and anthropological understandings of social life in South Asia, particularly those of tribe, caste, and women. Students gain familiarity with the mobilization of these categories in contemporary political movements across India.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3. Satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194E - Belief (5)

Focuses on problems and opportunities raised by the concept of belief. Students work to develop an anthropological understanding of belief as practiced, then put it to use in analyzing episodes from the NPR series This I Believe.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194F - Memory (5)

Intensive and fast-paced seminar focusing on theoretical and ethnographic studies of memory as a means for dealing with the past. Examines how ordinary people and societies have coped with the past through acts of selective remembering and forgetting.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; satisfaction of the Entry Level Writing and Composition requirement. Enrollment is restricted to senior anthropology majors.

ANTH 194G - Politics and Secularism (5)

Examines secularism as political doctrine and practice of government. Topics include: transformation of religion by secularization; forms of inclusion/exclusion enacted by secularism; relationship between secularism and colonial rule. Case studies drawn from Europe, South Asia, United States, and the Middle East.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements; enrollment is restricted to senior anthropology majors.

ANTH 194H - Paleoanthropology (5)

Detailed overview of the evidence for the origin and evolution of humans with emphasis on reconstructing the paleobiology of extinct hominids. Discussion of individual groups of ancient hominids from the Miocene apes to anatomically modern humans.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology and Earth sciences/Anthropology combined majors.

ANTH 194I - Consumption and Consumerism (5)

Investigates cultural analysis of consumer society, commodities, and consumer practices. Students develop their own research projects. Themes include: critiques of consumer society; symbolic analysis of goods, consumption as resistance, anthropologies of marketing, culture jamming; consumption and (post) colonialism.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; satisfaction of the Entry Level Writing and Composition requirement. Enrollment is restricted to senior anthropology majors.

ANTH 194J - Histories of Forests and Other Wild Places (5)

Wild Nature has a history. This class offers tools for understanding the social and natural construction of wild nature. We will learn to read rural landscapes--ethnographically, biologically, historically, creatively, and politically.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194K - Reading Ethnographies (5)

Explores issues in the representation of culture through reading and discussing ethnographies. Recent experimental ethnographies open topics including the relation between fieldwork and writing, textual strategies, and the politics of ethnographic writing and research.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194L - Archaeology of the African Diaspora (5)

Senior seminar on African diaspora archaeology. Draws on archaeological, historical, and anthropological perspectives to examine the cultural, social, economic, and political lives of Africans and their descendants in the New World and West Africa from the 15th through 19th centuries.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, ANTH 3 and an upper-division course in archaeology; satisfaction of the Entry Level Writing and Composition requirement. Enrollment is restricted to senior anthropology majors.

ANTH 194M - Medical Anthropology (5)

Focuses on critical issues in the social sciences of health and healing. Designed for students pursuing graduate work in medical anthropology and/or public health.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, ANTH 3, and ANTH 134; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194N - Comparison of Cultures (5)

Seminar for upper-division students interested in theories and methodology of social and cultural anthropology. Devoted to critical discussion of different methods of comparison practiced in anthropology.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194O - Masculinities (5)

Considers the social construction of men and masculinities in a variety of ethnohistorical contexts as well as the unique contribution enabled by anthropological methods, particularly ethnographic fieldwork, to the study of gender and power.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3 and satisfaction of the Entry Level Writing and Composition

requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194P - Space, Place, and Culture (5)

Examines ways anthropologists have studied relationship between space, place, and culture. Covers early formulations acknowledging people in different cultural contexts ascribe particular meanings to places and to the concept of space and then traces the ways these questions have come to the fore in more recent scholarship.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194Q - Race, Ethnicity, Nation (5)

Provides students with theoretical and methodological approaches to studying the relationships between race, ethnicity, and nation, with a comparative focus on the United States, Latin America, and Europe. Students use ethnographic methods and/or discourse analysis to develop individual research projects.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 194R - Religion, Gender, Sexuality (5)

Examines religion in relation to gender and sexuality. Examines how gender, sexuality, and religion intersect in notions of civilization, progress, and modernity in the contemporary and colonial periods. Particular attention paid to Islam, Christianity, and Hinduism.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 194S - Hearing Culture: The Anthropology of Sound (5)

Explores relationships between culture and acoustic worlds--environmental, verbal, and musical--within which we live. How sound is shaped by human belief and practice and the role sound plays in cultural and social life, both past and present.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194T - Poverty and Inequality (5)

Through ethnographies about homelessness, food deprivation, and unemployment, examines the institutions through which poverty is recognized, the systems of morality shaping debates about need and appropriate behavior, and the effects of community responses to poverty.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 194U - Environmental Anthropology: Nature, Culture, Politics (5)

Presents key readings in environmental anthropology focusing on environmental conflicts. Students guided in developing research paper on a society environment topic of their choice. Class is writing intensive with in-class discussion and final presentations.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194V - Who Owns the Past? Ethical and Political Dimensions of Contemporary Archaeology (5)

Considers the various stakeholders in archaeological practice. Students identify and evaluate the ethical and political issues involved in the study, interpretation, presentation, and conservation of the archaeological past through weekly readings, discussions, and case studies.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors and Earth sciences and anthropology combined majors.

ANTH 194W - The Anthropology of Social Movements (5)

Focuses on the anthropology of social movements, especially the impact that global capital provokes on peripheral Latin American societies and the ways these respond through the organizing of social movements validating alternative worldviews that coalesce around issues pertaining to indigeneity, the environment, gender, and concepts of human dignity.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194X - Women in Politics: A Third World Perspective (5)

Focuses cross-culturally on the status of women in the Third World and their formal and informal participation in politics. Also discussed are organized efforts, through participation in both national and autonomous movements, for women's rights.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 194Y - Archaeologies of Space and Landscape (5)

Examines contemporary archaeological perspectives on space and landscape. Focuses on how archaeology can contribute to an appreciation of the economic, cultural, and political factors

that shape human perception, use, and construction of the physical world.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; an upper-division archaeology course; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology and earth sciences/anthropology combined majors.

ANTH 194Z - Emerging Worlds (5)

Addresses encounters and contact zones between cultures that give rise to emerging worlds. Emerging worlds refers to the cultural heterogeneity and diversity created within world-making networks, geographies, innovations, and meanings, moving us beyond ideas about vanishing, autonomous cultures.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements; enrollment is restricted to senior anthropology majors.

ANTH 195A - Biological Anthropology Senior Thesis Series: Research Design (5)

Introduces students to the principles and methods by which research projects in biological anthropology and data-based archaeology are devised and executed. Students design their senior thesis research projects, write research proposals, recapitulate laboratory methods, and engage in the discussion of quantitative and mixed-methods research in anthropology. Students must have already discussed research opportunities for their thesis with principle investigators who have agreed to sponsor a potential research project. Enrollment is restricted to senior anthropology majors and by permission of the instructor. Students cannot receive credit for this course and ANTH 295A. (Formerly Senior Thesis Seminar.)

ANTH 195B - Biological Anthropology Senior Thesis Series: Guided Laboratory Research (2)

Guides students as they conduct the research projects proposed in ANTH 195A and is intended to promote a collaborative laboratory environment where students can share their progress and discuss problems and results with the group of other participating students and the instructor. This course reinforces the continuous exchange of ideas between students, ensuring that students do not work on individual projects in complete isolation. (Formerly Senior Thesis Research.)

Prerequisite: Prerequisite(s): ANTH 195A. Enrollment is restricted to senior anthropology majors.

ANTH 195C - Biological Anthropology Senior Thesis Series: Thesis Writing (5)

Emphasizes structured writing lead by manuscript guidelines with scheduled chapter drafts to be presented at specific times in the quarter. Students meet twice a week for seminars in which they present and discuss their results and writing progress with their peers and the instructor. Students are also introduced to the publishing landscape in the sciences, and trained in other forms of scientific research presentation (e.g. research posters, community meetings). (Formerly Senior Thesis Capstone.)

Prerequisite: Prerequisite(s): ANTH 195B. Enrollment is restricted to senior anthropology majors.

ANTH 195S - Senior Thesis (5)

Produce a quality research paper focusing on an anthropological topic of interest to you and that builds upon your experience in the major. Develop effective writing strategies and research skills to assist in professional development.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to anthropology majors. Enrollment is by permission of the instructor.

ANTH 196C - Traveling Cultures (5)

Considers why traveling cultures have posed a threat, often met with violence, to regimes of rule, particularly modern nation-states. Also explores the unique problems that conducting research with mobile communities poses for the ethnographer.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 196D - Food and Medicine (5)

Examines the intersections of food, medicine, and culture with special focus on nutrition, cultural knowledge, industrial foodways, genetically modified organisms (GMOs), ethnopharmacology, food safety, and biosecurity.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and ANTH 1, ANTH 2, and ANTH 3.

ANTH 196E - Pastoralists Past and Present (5)

Senior seminar treating the history and modern situation of the world's herding peoples. Readings draw on ethnographic, historical, archaeological, and ecological literatures. Students are coached in writing a 25-page research paper on a topic related to this theme.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 196F - The Anthropology of Things: Gift, Sign, Commodity, Tool (5)

Examines some approaches used by anthropologists and other thinkers to bring things into focus: as gifts, signs, commodities, and tools. Explores whether, by taking things seriously, anthropologists might learn to be empirical in new ways. Students cannot receive credit for this course and ANTH 225.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 196G - Queer Worlds: Sexuality, Intimacy and Power in Contemporary Ethnography (5)

How do we read, write, and recognize the queer body? How is it marked in politics, in intimate spaces, and in the ethnographic text? Drawing on ethnic studies and black queer studies, this seminar engages contemporary anthropological approaches to sexuality.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements; and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 196H - Global History and the Longue Duree (5)

Emerging anthropological approaches to global history, with an eye to historical frameworks of 500 years or more. Course requires engagement with advanced theoretical concepts and challenging historical texts. Intensive seminar format. Students cannot receive credit for this course and ANTH 269.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors.

ANTH 196I - Hard Problems (5)

Explores interrelated, long-standing, difficult problems in human theory. Considers why these problems are so forbidding; what makes them significant; why they are hard; and whether hard problems come in different varieties or strengths.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196J - Imagining America (5)

Explores sites of heritage and the politics of cultural memory in the American context. Focuses on public representation and interpretation at places where multiple views of history come into conflict.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196K - Settler Colonialism (5)

Provides seniors in anthropology a capstone experience. Settler colonialism is an all-encompassing, land-centered project that revolves around the elimination of the Native. This course revolves around a series of ethnographies and histories about settler colonialism.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196L - Archaeology of the American Southwest (5)

Outlines the development of native cultures in the American Southwest from Paleo-Indian times (ca. 11,500 B.C.) through early European Contact (ca. A.D. 1600).

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3 and satisfaction of the Entry Level Writing and Composition requirements. ANTH 178 is strongly recommended. Enrollment is restricted to senior anthropology and Earth sciences/Anthropology combined majors.

ANTH 196M - Modernity and its Others (5)

Examines how Western modernity has interpreted various forms of radical difference, beginning with the 15th-century conquest of the New World. Considers historical and contemporary examples of how Western thinkers have explained irrational beliefs and practices (e.g., witchcraft, human sacrifice, devil-worship).

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196N - The Body, Narrative, and Creative Practice (5)

Seminar proposing that arts, such as dance, weaving, and creative writing, and the cultivation of more traditional scholarly works can and should be pursued together. The pursuit of such research-creation is a social justice practice that values many ways of knowing and can lead to emotionally compelling and politically effective communication. Students are introduced to concepts and debates from crip theory, feminist, queer, and critical race studies, performance studies, and narrative theory. They also participate in workshops using body-centered writing, moment work, visual arts, and embodied listening to produce creation-scholarship in a medium of their choice. Taught in conjunction with ANTH 296N; students cannot receive credit for this course and ANTH 296N. Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements; and ANTH 1, ANTH 2, and ANTH 3. Enrollment is restricted to senior anthropology majors and by permission of instructor.

ANTH 196O - Gender and Politics (5)

Analyzes how gender defines those who participate in the public sphere and circumscribes their actions, with particular attention to individuals who identify as female and are engaged in political activities.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196P - Disability and Difference (5)

Challenges limiting conceptions of what it means to be human in a range of arenas, from our understandings of culture to our conceptions of built space to our assumptions about citizenship, asking why disability makes people nervous.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior Anthropology majors.

ANTH 196Q - Property (5)

Analyzes and denaturalizes property as a key aspect of social life and power relations. Students develop their own research projects. Themes include: concepts of property; politics of private property, home and rent; racialized dispossession; and cultural appropriation.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196R - Design Anthropology (5)

Senior seminar introduces students to principles, approaches, methods, and professional dimensions of design anthropology. Emphasizes collaborative methods and development of new methods for ethnographic research, analysis, and communication. Through a quarter-long research project, students develop professional skills and portfolio materials. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment restricted to senior anthropology majors and is by permission. Students cannot receive credit for this course and ANTH 208C.

ANTH 196S - Food for Thought (5)

Adopts food as an analytical lens to explore the relationship between environmental sustainability and social justice. Course draws from ethnographic texts, films, and recipe books across the world to provide an overview of contemporary cultures, debates, insights, and politics. Students examine how everyday food practices shape meanings of community, gender, taste, beliefs, taboos, hierarchies, and class. Students taking this course learn how food, consumption, and dietary practices allow us to understand significant economic, social, and political developments. (Formerly Food Cultures in South Asia.)

Prerequisite: Prerequisite(s): ANTH 1, and ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196T - Archaeology of Technology (5)

Examines approaches mobilized by archaeologists to reconstruct ancient technologies and to explore how technological practices are implicated in processes of social formation and change. Approaches that engage technology as embodied technique and situated cultural practice are emphasized.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirement. Enrollment is restricted to senior anthropology and Earth sciences/Anthropology combined majors.

ANTH 196U - Historical Anthropology (5)

Provides seniors in anthropology a capstone experience. Involves critical engagement with archaeological, ethnohistorical, ethnographic, and oral line of evidence to evaluate the outcomes of indigenous people's interactions with different forms of missionary, settler, and mercantile colonialism.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology and Earth sciences/Anthropology combined majors.

ANTH 196V - Radical Craft (5)

Examines how making and artisanship can be harnessed to solve challenging social, political, and environmental issues. Examines anthropology's historical role in creating a dichotomy between "art" and "craft," as well as contemporary ethnographic work that examines craft practices from weaving to pottery to the creation of mask trees for mutual aid during a time of global pandemic. Weekly topics include research-creation, "craftivism," speculative design, Indigenous art worlds, and responses to the environmental and social ravages of fast fashion. Students select a pressing social problem and then complete a hands-on, craft-based project of their choice; no prior skills or talents are required.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 196W - Anthropology of Weather and Exposure (5)

Students discuss how differing approaches to weather and exposure generate different approaches to culture, science, and politics; identify key moments in cultural anthropology's engagement with environmental and climactic questions; and delineate new areas of research.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3. Satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior Anthropology majors.

ANTH 196X - Medicines for the Soul (5)

Examines the soul as an act of being, as motion, and as a figure that comes to stand between immaterial and material, psyche and body, memory and imagination, life and death, madness and prophecy—all in order to consider larger anthropological questions of cultural and historical transmission. Course explores descriptions of the soul as

found in early 20th century anthropological and ethnographic texts and its reappearance in psychology and psychological anthropology and, too, its haunting absence in contemporary anthropological texts.

Prerequisite: Prerequisite(s): ANTH 1, ANTH 2, and ANTH 3, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior anthropology majors.

ANTH 197 - Laboratory Tutorial (5)

Independent laboratory research on selected topics in archeology and physical anthropology. Interview with appropriate instructor required.

ANTH 198 - Independent Field Study (5)

Off-campus field study. Students submit petition to sponsoring agency.

ANTH 198F - Ind Field Study (2)

Ind Field Study

ANTH 198G - Independent Field Study (3)

Off-campus field study. Students submit petition to sponsoring agency.

ANTH 199 - Tutorial (5)

Students submit petition to sponsoring agency.

ANTH 199F - Tutorial (2)

Tutorial

Graduate

ANTH 200 - Theoretical Foundations of Physical Anthropological Research (5)

Provides historical and theoretical foundation of physical anthropology. Grounds students in the changing frameworks and perspectives during the last 150 years regarding questions in human biology, evolution, nature, and culture, by examining texts and scientific journals.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 200A - Cultural Graduate Core Course (5)

Introduces history, ethnography, and theory of cultural anthropology with emphasis on awareness of construction of anthropological canon and areas of conflict within it, leading up to contemporary debates on a variety of issues. Two-term course: students must enroll in both quarters.

Prerequisite: Enrollment is restricted to anthropology graduate students.

ANTH 200B - Cultural Graduate Core Course (5)

Introduces history, ethnography, and theory of cultural anthropology with emphasis on awareness of construction of anthropological canon and areas of conflict within it, leading up to contemporary debates on a variety of issues. Multiple-term course; students must enroll in both quarters to receive academic credit.

Prerequisite: Enrollment is restricted to anthropology graduate students.

ANTH 201 - Human Evolution (5)

Provides an overview of the first five million years of human evolution and a framework for studying evolution and reconstructing the human past. Emphasizes that all lines of evidence must be included: hominid fossils, archaeology, paleoecology, and molecular data.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 202A - Skeletal Biology (5)

Focuses on human skeletal biology, the identification of elements, physiology of hard tissue formation, growth, and maintenance. Students are required to show competence in skeletal identification to pass this class.

Prerequisite: Prerequisite(s): ANTH 102A or permission of instructor. Enrollment is restricted to graduate students.

ANTH 208A - Ethnographic Practice (5)

Introduces graduate students to the practice of fieldwork. Students design and carry out a quarter-long research project exploring a range of methods and producing an analytical case study. Readings and discussion emphasize both methodological critique and successful implementation.

Prerequisite: Enrollment is restricted to anthropology graduate students.

ANTH 208C - Design Anthropology (5)

Introduces the principles, approaches, methods, and professional dimensions of design anthropology. Emphasis is on collaborative methods and development of new methods for ethnographic research, analysis, and communication. Through a quarter-long research project, students develop non-academic professional skills, including portfolio materials. Students cannot receive credit for this course and ANTH 196R.

Prerequisite: Open to second-year graduate students and higher (first-year students are required to take ANTH 208A).

ANTH 210R - Religion in American Politics and Culture (5)

Introduces dominant discourses about major American religions and their role in public life with particular attention to intersecting differences, such as race, sex/gender, and disability and to shifting religious/political boundaries. Visual and textual media, political commentary, and popular ethnographies are analyzed.

Prerequisite: Enrollment restricted to graduate students.

ANTH 211 - Human Ecology (5)

Reviews environmental, physiological, behavioral, and cultural ways that humans interact with their physical

surroundings. Effects of human culture on the environment, and of the environment on the shape of human culture will be emphasized.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 212 - The Human Life Cycle (5)

Examines the human life cycle using an evolutionary framework. Examines key aspects of the human life stages using findings and concepts from developmental biology, physiology, nutrition, evolutionary ecology, and life history theory. These stages include: gestation, infancy, childhood, juvenile and adolescent periods, and senescence. Each stage of the life cycle is compared and contrasted with the developmental life of nonhuman primates and mammals. Other related topics include developmental plasticity and epigenetics.

Prerequisite: Enrollment restricted to graduate students.

ANTH 214 - Culture and Power (5)

Takes the many strands of scholarship on power relations between individuals within the context of institutions and conceptualizes how individuals come to exist through power relations, and how power is fundamental to social being.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 216 - Methods in Biological Anthropology (5)

Deepens students' understanding of methods applied in biological anthropology research. (Formerly Methods in Physical Anthropology.)

Prerequisite: Enrollment is restricted to graduate students.

ANTH 219 - Religions, States, Secularities (5)

Examines theories and case studies at the intersection of religion, states, and secularity. Topics include: secularism as a political doctrine; state and social regulation of religion and religious normativity; secular cultural practices; and lines of secular/religious entanglement and conflict.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 220 - Cartographies of Culture (5)

Examines, theoretically and ethnographically, how societies and their cultures are created and reified through spatializing practices, including border-making, mapping, landscape aesthetics, globalization, time/history/memory, movement, and other locating activities.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 224 - Anthropology of Secularism (5)

Examines secularism as a practice of government with a concomitant set of ethics. Topics include: the notion of religion necessary for secularism; forms of moral and political inclusion/exclusion enacted by secular governance; and the kind of ethical subject secularism engenders. (Formerly course 255.)

Prerequisite: Enrollment is restricted to graduate students.

ANTH 225 - The Anthropology of Things: Sign, Gift, Commodity, Tool (5)

Examines some approaches used by anthropologists and other thinkers to bring things into focus: as gifts, signs, commodities, and tools. Explores whether, by taking things seriously, anthropologists might learn to be empirical in new ways. Students cannot receive credit for this course and ANTH 196F.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 228 - Grant Writing (5)

Devoted entirely to writing grant proposals. Students either work on their graduate education fellowships or their doctoral dissertation grants or both. Reading materials consist of granting agency documents plus examples of successful applications.

Prerequisite: Enrollment is restricted to anthropology graduate students.

ANTH 229 - Constructing Regions (5)

Discusses centrality of the idea of regions in studies of culture, the history of locating social theory, and debates about area studies. Students develop area of transregional bibliographies. Primarily for second- or third-year anthropology graduate students reading area literatures.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 230 - Bodies, Images, Screens (5)

Visuality as epistemology, image-consumption, and the political and representational possibilities stemming from digitization and the World Wide Web are increasingly important issues in the humane sciences. Offers historical and critical background and the possibility of hands-on practice using visual material in current research.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 231 - Intimacy and Affective Labor (5)

Examines recent work on the role of intimacy and affective labor in value production, political mobilization, and transnational capital linkages. Special attention given to how these terms are invoked to answer methodological and narrative concerns in ethnographic writing.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 232 - Bodies, Knowledge, Practice (5)

Contemporary social theory and science both focus on bodies as critical sites of inquiry and the production of knowledge. Explores these theoretical intersections and constructions of the body with new ethnographic works. Questions how race, gender, and culture are inscribed through bodily practice, imagery, and phenomenology.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 233 - Politics of Nature (5)

Advanced graduate seminar in environmental anthropology and science and technology studies, focusing on how nature is produced in the modern world and what political and practical significance this has in different contexts.

Prerequisite: Enrollment restricted to graduate students.

ANTH 234 - Feminist Anthropology (5)

Examines how feminist anthropology creates its objects of knowledge by focusing on questions of method and representation. The class reads across these traditional objects--women and gender, for example--to highlight the epistemological and political stakes of feminist work in anthropology.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 235 - Language and Culture (5)

An examination of language system and language use in relationship to cultural contexts of communication in Western and non-Western societies. Also examines the complex role which linguistic inquiry and models have played in broader theories of culture.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 238 - Advanced Topics in Cultural Anthropology (5)

Advanced topics in cultural anthropology. Current topics in anthropological theory and ethnography taught on a rotating basis by various faculty members. Precise focus of each seminar varies and will be announced by the department.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 241 - Social Justice (5)

Explores theoretical and methodological issues in the field of social justice with an emphasis on ethnographic analysis. Topics include: rights, obligations, justice, equality, compensation, and ethics.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 243 - Cultures of Capitalism (5)

Introduction to selected themes in political economy, stressing the work of Marx. Topics include the development of capitalism, colonialism, dependency, world systems, state formation, class consciousness, commodity fetishism, the nature of late capitalism, post-modernism, and the aesthetics of mass culture. Through political economy's interlocutors, raises questions about gender, race and ethnicity, and post-structuralist critiques.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 246 - Advanced Readings in Environmental Anthropology (5)

Survey of history and topics of contemporary interest in environmental anthropology, including political ecology, environmental history, ethnoecology, and multi-species anthropology. Additional advanced readings on contemporary environmental anthropology research. Students cannot receive credit for this course and ANTH 146.

Prerequisite: Enrollment is restricted to Anthropology graduate students or by permission of the instructor.

ANTH 247 - Critical Perspectives on Nutrition (5)

Examines emerging critiques on the science, communication, and practice of nutrition using multidisciplinary approaches. Special attention is given to the effects of modern nutrition.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 248 - Shadowy Dealings: Anthropology of Finance, Money, and Law (5)

Moves from a brief introduction to classic economic anthropology to recent work on histories of money and capitalism and cultures of financial markets, of accounting, and of legal and illegal trading practices

Prerequisite: Enrollment is restricted to graduate students.

ANTH 249 - Ecological Discourses (5)

Explores narratives of nature and their practical consequences in contests over wild places and their resources. Readings focus on the histories of forests and on analytic frameworks—ecology, social history, interpretation, cultural studies—with which to investigate competing constructions of the environment.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 252 - Survey of Cultural Anthropological Theory (5)

Major figures, ideas, and writing in 19th- and 20th-century cultural anthropology surveyed. Students cannot receive credit for this course and ANTH 152.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 253 - Advanced Cultural Theory (5)

Examines cultural anthropology's interdisciplinary practices of knowledge formation at an advanced level. Drawing on various types of theoretical texts, the course elaborates on the relationship between culture and power, taking up different themes each time it is taught.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 254 - Medicine and Culture (5)

Surveys medicine cross-culturally, with particular focus on power, tradition, and theories of embodiment. Students cannot receive credit for this course and ANTH 134.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 255 - Regulating Religion/Sex (5)

First examines the regulation of religion and the normalization of sex/sexuality as parallel modalities of secular rule in the production of modern citizens and subjects. Ultimately inquires into the relationship between proper

religion and proper sexuality in secular state formations. (Formerly course 259.)

Prerequisite: Enrollment is restricted to graduate students.

ANTH 258 - Experimental Cultures (5)

Addresses the use of experiments in anthropological research, theory, and writing.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 259 - Race in Theory and Ethnography (5)

Explores theoretical and methodological approaches to the cross-cultural study of race, with an emphasis on historical and ethnographic analysis. Main approaches considered include Foucauldian, Gramscian, diaspora theory, and the everyday poetics and politics of race. (Formerly course 246.)

Prerequisite: Enrollment is restricted to graduate students.

ANTH 260 - Anthropology of Freedom (5)

Examines conceptualizations and practices of freedom across geographical space and historical time. Readings drawn from Greek philosophy, Islamic, Christian, and Buddhist religious traditions. Enlightenment philosophy, liberal and neo-thought, and contemporary ethnographies.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 261 - Replication, Mimesis, and Fakery (5)

Replicas, copies, and fakes anchored conceptually by the authentic/original enable the marketing of cultural commodities like arts and crafts, especially since the advent of photography. Course explores these commercial and signifying processes in the global art and culture market.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 262 - Documenting Cultures (5)

Follows the history of film and ethnography, media and methodology into the birth of cinema and anthropology in the early 20th century. Students learn theories of representation and media, conduct ethnographic research, and prepare a short film.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 263 - Kinship (5)

Provides a critical survey of debates, old and new, in the study of kinship. Readings range from classical treatments to recent reformulations that use kinship as a lens for exploring intimacy, memory, futurity, embodiment, commodification, and power. Students cannot receive credit for this course and ANTH 163.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 269 - Global History and the Longue Duree (5)

Emerging anthropological approaches to global history. Considers both 500-year and much longer historical frameworks. For the former, the evidence of documents, both European and non-European, is particularly important. For the latter, archaeological and evolutionary approaches are essential. Students cannot receive credit for this course and ANTH 196H.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 270 - History of Archaeology (5)

Historical review of prehistoric archaeology from antiquarianism to the present. Emphasis on the development of archaeological theory, its relation to evolutionary and anthropological theory, and themes ongoing over time. Students cannot receive credit for this course and ANTH 170.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 270A - Archaeology Graduate Core Course: History of Archaeological Theory (5)

Historical overview of archaeology, concentrating on archaeological practice in the English-speaking world from the late 19th through the 21st Centuries. Emphasis is on development of archaeological theory in its social context; its relation to evolutionary and anthropological theory; and themes ongoing over time. Students cannot receive credit for this course and ANTH 270.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 270B - Current Directions in Archaeological Theory (5)

Provides an in-depth understanding of current trends in archaeological thought, and enables students to place issues of archaeological interpretation into broader historical and theoretical frameworks. This course is a follow-up to ANTH 270, but not a substitute.

Prerequisite: Prerequisite(s): ANTH 270A. Enrollment is restricted to graduate students.

ANTH 272 - Advanced Archaeological Research (5)

Introduces graduate students to archaeological research design. Topics include: middle range theory; multistage research strategies; sampling strategies and appropriate field methodology; and issues specific to particular scales of archaeological analysis (artifact, household, site, region).

Prerequisite: Enrollment is restricted to graduate students.

ANTH 273 - Origins of Farming (5)

Survey of the ecological and archaeological evidence for the origins of plant and animal domestication in Africa, Eurasia, and the Americas. Discussion will center on the preconditions of this drastic alteration in human ecology and its consequences in transforming human societies. Students cannot receive credit for this course and ANTH 173.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 274 - Origins of Complex Societies (5)

The origins of complex society: the transition from egalitarian foraging societies to the hierarchical, economically specialized societies often referred to as states or civilizations.

Focuses on both Old World and New World cultures. Students may not receive credit for this course and ANTH 174.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 275 - Tutorial in African Archaeology (5)

Graduate tutorial on the archaeology of precolonial African kingdoms and states. Particular attention paid toward the origins of social inequality and the evolution of centralized politics. Students cannot receive credit for this course and ANTH 175.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 276A - Advanced Topics in North American Archaeology (5)

In-depth examination of development of Native cultures in North America from end of last ice age to time of European contact. Focuses on specific regional trajectories and problems of social change.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 276B - Mesoamerican Archaeology (5)

Examines the pre-Columbian cultures of Mesoamerica and reviews the archaeological and ethnohistorical evidence related to the origins and development of cultures including the Olmec, Maya, Zapotec, Mixtec, and Aztec. Students cannot receive credit for this course and ANTH 176B.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 276G - Archaeology of Colonial Borderlands (5)

This seminar draws from readings in archaeology, history, and Native American/Indigenous studies to assess borderlands throughout colonial-era North America as important arenas of change and continuity for indigenous societies, including indigenous technologies, foodways, gender roles, governance, and much more.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 278 - Tutorial on Historical Archaeology (5)

Tutorial on archaeology of European colonialism and the early-modern world. Focuses on the nature of European colonial expanison in New and Old Worlds; culture contact and change; and power and resistance in colonial societies. Students cannot receive credit for this course and ANTH 178.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 279 - Feminism and Gender in Archaeology (5)

Considers feminist perspectives on the human past; archaeologists' perspectives on feminist theory; and the impact of gender, feminist, and critical social theory on the archaeological profession. Students cannot receive credit for this course and ANTH 194C.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 280 - Advanced Ceramic Analysis (5)

Advanced graduate seminar that focuses on techniques and theories used to bridge the gap between the recovery of ceramic remains from archaeological contexts and their interpretation with respect to various anthropological issues and problems. Students cannot receive credit for this course and ANTH 180.

Prerequisite: Enrollment is restricted to graduate students. Concurrent enrollment in ANTh 280L is required.

ANTH 280L - Advanced Ceramic Analysis Laboratory (2)

Emphasizes advanced techniques of ceramic analysis, including materials selection and processing, hand-building, and open-pit firings. Standard techniques for describing and measuring formal and technological attributes of pottery also presented. Students cannot receive credit for this course and ANTH 180L.

Prerequisite: Enrollment is restricted to graduate students. Concurrent enrollment in ANTH 280 is required.

ANTH 281 - Landscape Archaeology (5)

"Landscape" has emerged as a unifying concept for the interpretation of such archaeological features at multiple scales of analysis. This course answers these and other questions by examining how "landscapes" have been tackled archaeologically from multiple perspectives (settlement archaeology, "off-site" archaeology, and approaches building on ideas about culture, ideology and power).

Prerequisite: Enrollment is restricted to graduate students.

ANTH 282 - Household Archaeology (5)

Explores the theoretical and methodological challenges faced by archaeologists excavating ancient households. Students examine the social, economic, and political characteristics of households and investigate how they intersect and support the social and physical aspects of communities.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 283 - Introduction to Geographic Information Systems for Anthropology (5)

Practical laboratory in geographic information systems with a specific focus on anthropological questions and development. Students learn basic spatial analyses and carry them out on research datasets. This course also emphasizes the incorporation of spatial modeling in research design. To participate, students are required to sign up for an account in ESRI (freely available to all UCSC students). Enrollment is restricted to anthropology majors. Enrollment is limited to 20 students.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 284 - Tutorial in Zooarchaeology (5)

Lectures and seminar on archaeological faunal analysis. Topics include: mammalian evolution and osteology; vertebrate taphonomy; reconstruction of human diet from

faunal remains; foraging strategy theory; data collection and management; and methods of quantitative analysis. Students cannot receive credit for this course and ANTH 184.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 285 - Osteology of Mammals, Birds, and Fish (5)

Practicum in vertebrate osteology, covering all larger mammal species of central California, plus selected bird and fish species, and topics in evolution and ecology of selected taxa. Students cannot receive credit for this course and ANTH 185.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 287 - Advanced Topics in Archaeology (5)

A graduate seminar on advanced theoretical or methodological topics pertinent to advanced graduate student and faculty interests.

Prerequisite: Enrollment is restricted to graduate students or by consent of instructor.

ANTH 287A - Advanced Topics: Indigenous Archaeology (5)

Traces the development of indigenous archaeology primarily in North America. Topics include: the Native American Graves Protection and Repatriation Act (NAGPRA) and issues of cultural patrimony; postcolonialism; decolonizing methodologies; community-based research; oral sources and other ways of knowing the past; and future directions.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 287B - Advanced Topics: Archaeology in the Age of Big Data (5)

Explores the impact that the ever-growing digital archaeological toolkit has on the research process. Covers specific and keystone developments such as access to big data, spatial modeling, aerial photography, satellite remote sensing, and the recent developments in virtual reality and artificial intelligence.

Prerequisite: Enrollment is restricted to Graduate Students.

ANTH 290T - Pedagogy of Anthropology (2)

Provides training in scientifically backed educational practices for new Anthropology TAs. Through reading, class discussion and activities, we explore different methods of teaching and ways to conceptualize pedagogy. Includes teaching theories; survey of educational tools and techniques; and lesson planning.

Prerequisite: Enrollment restricted to anthropology graduate students.

ANTH 292 - Graduate Colloquium (2)

Designed to offer an institutionalized mechanism for the presentation of research papers and teaching efforts by faculty and advanced graduate students.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 294N - Comparison of Cultures (5)

Seminar for students interested in theories and methodology of social and cultural anthropology devoted to critical discussion of different methods of comparison practiced in anthropology.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 294R - Advanced Readings in Biological Anthropology (5)

Introduces literature relevant to students' research emphases and allows for discussion of new scientific publications.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 295A - Scientific Method: Biological Anthropology (5)

The first core course of the Biological Anthropology Graduate Program. Students learn the principles and methods by which research projects in biological anthropology are devised and executed. Students cannot receive credit for this course and ANTH 195A.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 296N - The Body, Narrative, and Creative Practice (5)

Seminar proposing that arts, such as dance, weaving, and creative writing, and the cultivation of more traditional scholarly works can and should be pursued together. The pursuit of such research-creation is a social justice practice that values many ways of knowing and can lead to emotionally compelling and politically effective communication. Students are introduced to concepts and debates from crip theory, feminist, queer, and critical race studies, performance studies, and narrative theory. They also participate in workshops using body-centered writing, moment work, visual arts, and embodied listening to produce creation-scholarship in a medium of their choice. Taught in conjunction with ANTH 196N; students cannot receive credit for this course and ANTH 196N.

Prerequisite: Enrollment is restricted to graduate students.

ANTH 297A - Independent Study (5)

Students submit petition to sponsoring agency.

ANTH 297B - Independent Study (10)

Students submit petition to sponsoring agency.

ANTH 297C - Independent Study (15)

Students submit petition to sponsoring agency.

ANTH 297F - Independent Study (2)

Students submit petition to sponsoring agency.

ANTH 298 - Advanced Laboratory Apprenticeship (5)

Supervised tutorial in specialized analytic methods in archaeology or physical anthropology. Students collaborate on laboratory research with a departmental mentor or, with advisor's consent, with researchers on or off campus,

preparing a manuscript for publication or an extensive literature review. Permission of instructor required. Enrollment restricted to graduate students.

ANTH 299A - Thesis Research (5)

Students submit petition to sponsoring agency.

ANTH 299B - Thesis Research (10)

Students submit petition to sponsoring agency.

ANTH 299C - Thesis Research (15)

Students submit petition to sponsoring agency.

ANTH 299W - Anthropology Dissertation Workshop (2)

Designed to help anthropology Ph.D. students make progress on their dissertation writing. It is a three-hour seminar in workshop format. Each week students share their work-in-progress and the class provides constructive feedback. Discussions with the instructor and students on topics relevant to dissertation writing are also held. Course is offered for satisfactory/unsatisfactory grading only.

Prerequisite: Enrollment is restricted to graduate anthropology Ph.D. students.

APLX - APPLIED LINGUISTICS

Lower-Division

APLX 55 - Pardon My French: Politeness, Impoliteness, Swearing, Slang, and Humor (5)

Explores the history and use of "bad;" language, including issues of politeness, impoliteness, swearing, slang, and humor. In readings, lectures and discussions, we examine contexts of language use: who can say what, when, how and under what communicative conditions.

APLX 80 - Introduction to Applied Linguistics (5)

Introduces the field of applied linguistics, learning about language acquisition, use, and teaching in multilingual contexts from multiple disciplinary perspectives. Also, introduces research models that examine psycholinguistic, sociolinguistic, and/or educational aspects of multilingualism..

APLX 99 - Tutorial (5)

Students submit petition to sponsoring agency.

APLX 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

APLX 101 - Second-Language Acquisition (5)

Introduces the field of second-language acquisition. Topics include contexts of acquisition, the impact of individual differences, and basic methods of data collection and analysis.

Prerequisite: Prerequisite(s): APLX 80 or LING 50.

APLX 102 - Bilingualism (5)

An overview of bilingualism. Focuses on bilingualism as an individual phenomenon (i.e., how two languages develop and are represented in the minds of individual speakers), and as a social one (i.e., how do bilinguals interact in a community and how does this context of language contact shape their linguistic identity).

Prerequisite: Prerequisite(s): APLX 80 or LING 50.

APLX 103 - Second Language Speech (5)

Examines themes related to the acquisition of L2 phonetics and phonology, including theories and models of L2 speech learning; phonetics and phonology in L2 acquisition; as well as the training effects on L2 pronunciation.

Prerequisite: Prerequisite(s): APLX 80 or LING 50.

APLX 105 - Language Loss (5)

The phenomenon of losing your native language is well attested anecdotally by many speakers who are separated from their first language environment. Course provides a broad overview of first language attrition (loss) in different populations including adult native speakers, children, international adoptees, heritage speakers, and bilingual returnees. Examines the linguistic aspects of attrition in order to determine which areas of language are typically impacted by attrition, then focuses on individual differences (e.g., identity) and contextual factors (e.g., input) that may speed up or prevent attrition. Emphasizes considering first language attrition and second language (L2) acquisition as two inseparable sides of bilingualism, both in individual speakers and in bilingual communities.

Prerequisite: Prerequisite(s): APLX 80 or LING 50 or by permission of instructor.

APLX 112 - Language and Gender (5)

Examines the relationship between language and gender. Topics include: gender differences in speech; linguistic gender norms and stereotypes; gender and the construction of identity in discourse; sexuality and language; sexism in language; social, educational, and political implications. (Formerly Languages 112.)

APLX 113 - Inter-Cultural Communication (5)

Examines intercultural communication and miscommunication between individuals and speech communities, both within North American and global contexts. Through discourse and analytic approaches, students explore cultural stereotypes and interactional expectations, among other issues, that influence the outcome of intercultural communication. (Formerly Languages 113, Cross-Cultural Communication and Miscommunication.)

Prerequisite: Enrollment is restricted to juniors and seniors.

APLX 113I - Intercultural Communication—Global Internship

(5)

Examines intercultural (mis)communication among individuals and speech communities, both within U.S. and global contexts. Using discourse and other analytic approaches, students explore cultural values, stereotypes, and interactional expectations, among other issues, that influence the outcome of intercultural communication. Enrollment is restricted to students enrolled in the Global Internship summer program.

APLX 115 - Language and Power (5)

Examines the relationship between language and power. Explores the ways in which national languages, regional and social dialects, and specific phonological morpho-syntactic, or lexical features come to be associated with particular social meanings and contribute to creating social inequality.

Prerequisite: Prerequisite(s): APLX 80. Enrollment is restricted to sophomores, juniors, and seniors.

APLX 116 - Discourse Analysis: Language Use and Context (5)

Familiarizes students with the methods and theoretical assumptions behind discourse analytic approaches to the study of language. Examines language used in specific contexts. Topics include: genres, registers; discourse organization; discourse grammar; interaction; conversation; pragmatics; and social practice.

Prerequisite: Prerequisite(s): LING 50 or by consent of the instructor. Enrollment is restricted to juniors and seniors.

APLX 122 - Linguistic Diversity & Social Justice (5)

Explores the relationship between linguistic diversity and social justice: the celebration of multilingualism on the one hand and the negative experiences of people who speak "minority" languages in "dominant" cultural contexts on the other.

Prerequisite: Prerequisite(s): APLX 80; enrollment restricted to applied linguistics and multiculturalism, language studies, and linguistics majors.

APLX 124 - Second Language Variation and Sociolinguistics (5)

Addresses issues related to the second-language acquisition and use of variable structures and the development of sociolinguistic competence. Topics include: overview of linguistic variation and sociolinguistics; immersion contexts; individual differences and predictors of success; and ultimate attainment.

Prerequisite: Prerequisite(s): APLX 101.

APLX 135 - Second Language Teaching (5)

Introduces the theories of second-language acquisition and their connection to second-language teaching. Students develop cutting-edge teaching and testing materials, and engage with current scholarship on language instruction. Recommend at least one year of college-level study of a foreign language, or its equivalent. Enrollment is restricted to applied linguistics and multiculturalism, linguistics, and language studies majors, or by permission of instructor. Students cannot receive credit for this course and APLX 235.

Prerequisite: Enrollment is restricted to applied linguistics and multiculturalism, linguistics, and language studies majors, or by permission of instructor. Students cannot receive credit for this course and APLX 235.

APLX 136 - Second Language Assessment (5)

Introduces the fundamentals of second-language testing by presenting theories, key concepts, and practical applications in language assessment. Throughout the course, students develop their own assessment portfolios, creating materials they can use in their post-B.A. career.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in APLX 135.

APLX 138 - English Grammar for TESOL (5)

What is it that teachers of English as a second/foreign language should know about the English grammar system—and about pedagogical options for teaching grammar—in order to best facilitate students' language development? Course is designed to be an accessible overview of English grammatical structures and grammar-teaching methods for practical classroom application.

APLX 190 - Research Seminar in Applied Linguistics (5)

Prepares students to conduct research in applied linguistics. Students evaluate published studies that represent both quantitative and qualitative methods.

Prerequisite: Prerequisite(s): APLX 80 and APLX 101; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to seniors.

APLX 199 - Tutorial (5)

Students submit petition to sponsoring agency.

APLX 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

APLX 235 - Second Language Teaching (5)

Helps novice instructors learn about the theory and practice of language teaching and learning. Focuses on current methods used in communicatively oriented classrooms. Topics include: listening comprehension, grammar, vocabulary, reading, writing, and testing/assessment. Students cannot receive credit for this course and course 135. (Formerly Language Studies 201.)

Prerequisite: Enrollment is restricted to graduate students.

ARBC - ARABIC

Lower-Division

ARBC 1 - First-Year Arabic (5)

Introduction to Arabic language and Arabic-speaking culture with practice in all four language skills: listening, speaking, reading, and writing. Intended for students with no previous study of Arabic as well as heritage speakers.

ARBC 2 - First-Year Arabic (5)

Introduction to Arabic and Arabic-speaking culture with practice in all four language skills: listening, speaking, reading, and writing. Intended for students with no previous study of Arabic as well as heritage speakers.

Prerequisite: ARBC 1 or equivalent proficiency.

ARBC 3 - First-Year Arabic (5)

Introduction to Arabic and Arabic-speaking culture with practice in all four language skills: listening, speaking, reading, and writing. Intended for students with no previous study of Arabic as well as heritage speakers.

Prerequisite: Arabic 2 or equivalent proficiency.

ARBC 4 - Second-Year Arabic (5)

Continuation of Arabic language and Arabic-speaking culture courses with practice in all four language skills: listening, speaking, reading, and writing. Intended for students who have successfully completed Arabic 3 or possess equivalent proficiency.

Prerequisite: Prerequisite(s): ARBC 3 or equivalent proficiency.

ART - ART

To view planned offerings for the current academic year, please visit the Art Department Courses page.

Lower-Division

ART 10D - 2D Foundation (5)

Introduces students to the fundamental principles of two-dimensional art and design. This is a large lecture-based course with smaller art studio-based sections (60% lecture/40% studio). Lectures, discussions and studio sections explore fundamental 2D drawing concepts of line, color shape, value, space, form, unity, balance, scale, proportion and texture. Through lectures, discussion and studio projects students learn to create and understand complex concepts in two dimensions.

Prerequisite: Enrollment is restricted to art majors and proposed art majors during first-pass enrollment; restrictions lifted after first pass.

ART 10E - 3D Foundation (5)

Introduces students to the fundamental principles of three-dimensional art and design. This is a large lecture-based course with smaller art studio-based sections (60% lecture/40% studio). Lecture, discussion, and studio sections explore fundamental 3D concepts, techniques, and technical practices in sculpture, public art, architecture, process, and design. Through lectures, discussion, and studio projects students learn to create and understand complex concepts in 3D.

Prerequisite: Enrollment is restricted to art majors during first-pass enrollment; restrictions lifted after first pass.

ART 10F - 4D Foundation (5)

Introduces students to the fundamental principles of four-dimensional art and design. This is a large lecture-based course with smaller art studio-based sections (60% lecture/40% studio). Lecture, discussion, and studio sections explore fundamental principles of 4D/time-based art and design concepts, techniques, and technical practices. Computers and video, photo, sound, and lighting equipment are used to create short-form, time-based work. Through lectures, discussion, and studio projects students learn complex concepts in 4D.

Prerequisite: Enrollment is restricted to proposed and declared ART majors during first-pass enrollment; restrictions lifted after first pass.

ART 15 - Introduction to Drawing for the Major (5)

Introduction to the methods, materials, and purposes of drawing to develop perceptual and conceptual skills through a series of assignments, providing various approaches to drawing as a tool for creative exploration. Discussions and critiques facilitate the development of critical skills. Designed for students considering the art major.

ART 20G - Introduction to Print Media and Drawing (5)

Introduces the methods, materials, and history of printmaking and drawing as a tool for creative exploration. Understanding and development of concepts and skills are achieved through a series of lectures, studio demonstrations and practice, assignments, and critiques.

Prerequisite: Prerequisite(s): two courses from ART 10D, ART 10E, ART 10F. Enrollment is restricted to proposed art and art majors.

ART 20H - Introduction to Sculpture and Public Art (5)

Introduces sculpture and art in public space. The course is composed of lectures, readings, discussions, studio assignments, and demonstrations.

Prerequisite: Prerequisite(s): two courses from ART 10D, ART 10E, ART 10F. Enrollment is restricted to proposed art and art majors.

ART 20I - Introduction to Photography (5)

Introduces basic skills and conceptual development in photography and related digital media through image-making in the field, on the web, and in laboratories, through readings, discussions, and critiques.

Prerequisite: Prerequisite(s): two courses from ART 10D, ART 10E, ART 10F. Enrollment is restricted to proposed art and art majors.

ART 20J - Introduction to Drawing and Painting (5)

Introduces the practices of drawing and painting in combination with the formal vocabulary of the visual arts. A discussion of values, form, color, and figure/ground relationships enters into each class.

Prerequisite: Prerequisite(s): two courses from ART 10D, ART 10E, ART 10F. Enrollment is restricted to proposed art and art majors.

ART 20K - Introduction to New Media and Digital Artmaking (5)

Introduces digital and new media art practice. Explores the use of the computer as tool and medium. Provides a hands-on introduction to the fundamentals of graphics; digital-image acquisition and manipulation; video; web design; and computer programming. Lectures, readings, and discussions examine the history of technology artwork and technology's relationship to contemporary culture.

Prerequisite: Prerequisite(s): two courses from ART 10D, ART 10E, ART 10F. Enrollment is restricted to proposed art and art majors.

ART 20L - Introduction to Drawing (5)

Drawing course using traditional media taught online through demonstration videos, digital submissions, and small-group critiques. Introduces the basics of observational drawing in a progression designed to develop and build skills in sighting, measuring, value, and rendering. Familiarity with Canvas, access to a digital camera, and purchase of art supplies are required. Assumes 30 hours per week of coursework.

ART 80D - Fundamentals of Photography (5)

Introductory course for beginners. Various techniques examined and assigned in specific exercises. Work on projects using color film; this is a non-darkroom course. Examples given of photography from 1826 to the present. Balances historical study and practice through assigned homework exercises. Students must provide their own camera, preferably one with a manual setting. No phone cameras allowed.

ART 80E - Environmental Art in the Expanded Field (5)

Examines the ways artists engage, interact, and comment upon ecology and nature in their artworks by examining environmental art from the 1960s through the present. Offers students a foundational introduction to art and artists working in the field of environmental and ecological art/activism.

ART 80F - Introduction to Issues in Digital Media (5)

Digital media was positioned as a radical new social and creative medium in the 1980s and 1990s. The ensuing decades have seen this area become ubiquitous mass media with structural inequalities, centralized ownership, environmental damage, and precarious labor conditions. At the same time, it has become the language of our time and remains a site of creativity and intervention and offers opportunities for social changes. This course provides an introduction to key issues in this area through the lens of race and ethnicity.

ART 80Q - Queer Art (5)

Explores the state’s vital queer art communities as a cultural phenomena, primarily through one-on-one interviews with contemporary queer artists in California. In the face of rising homophobia and transphobia in many parts of the country, this course centers and makes visible the work of BIPOC LGBTQIE+ artists, including those with disabilities, and many others. Develops literacy and comprehension of queer artists and their artworks, utilizes critical thinking while encouraging engagement in and understanding of the art itself. Through a combination of lectures, visual presentations, films, readings, short quizzes and discussion boards, students gain the skills and knowledge to become conversant in queer art.

ART 80T - Digital Tools for Contemporary Art Practice (5)

Introduction to the digital tools and mediums available to contemporary art practices. Tools are explored from a historical and theoretical context and from a technical perspective through hands-on tutorials. A variety of artworks that utilize digital mediums are also examined. Weekly projects centered around these tools are completed and are the focus of peer discussions and reviews. The course covers photo and vector editors, sound and video editing, and basic 3D modeling and animation.

ART 80X - Ars Erotica: Sexual Imagery in Culture and Art (5)

What is sexually explicit imagery all about? Is it art, porn, trash, political hot potato, or hot commodity? This course enables students to critically explore these questions and more in an academic setting.

ART 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

ART 101 - Introduction to Computer Programming for the Arts (5)

Combines an introduction to computer programming for beginners with special topics that are essential for the digital arts. Basic concepts of programming are developed in the JavaScript language and applied to digital arts media, such as algorithmically generated still images and animations in two and three dimensions, sound art, and music composition.

Presentation of digital artwork in the theater and via the web are covered in detail.

ART 104 - Digital Video (5)

An exploration of the video medium including production using the digital video format. Digital video cameras will be used to produce digital source material to be manipulated in a non-linear digital editing system. Image manipulation, effects, and editing will be explored. A variety of video structures, theories, concepts, and forms will be examined through production, discussions, and viewing students' and artists' work.

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26 or by permission of instructor. Enrollment is restricted to art majors.

ART 106A - 2D Animation (5)

Introduces animation techniques, practices, history, and theories. Students learn techniques and process in 2D, stop-motion, and digital animation. Projects teach students the workflow of animating including script development, storyboarding, frame-by-frame animation, animatic, digital, and post-production. Students are required to research artists, both historical and contemporary, working in the field of animation and to be able to discuss the work. The course teaches theoretical and historical perspectives on animation and requires students to develop a critical analysis and vocabulary. (Formerly Introduction to 2D Animation).

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 106C - Stop Motion Animation (5)

Introduction to imagining, producing, and creating stop motion animations. Includes hands-on work in storyboarding, drawing and paper-based animation, pixalization, animation of everyday objects, and Claymation with basic characters and sets. Historical and contemporary animations will be viewed in class to inspire animation ideas, aesthetics, and practices. (Formerly Introduction to Stop Motion Animation.)

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26; or by permission of instructor. Enrollment is restricted to art majors.

ART 106E - 3D Modeling and Animation (5)

Independent and collaborative creative projects using advanced computer methods. May include networking projects, virtual representations, interactive multimedia, installation, performance, 3D modeling and animation, or robotics. Emphasis on advanced critical and experimental approaches to computers as a unique art medium, and contemporary research issues. Students are required to enroll in scheduled lab section.

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26; or by permission of instructor. Enrollment is restricted to art majors.

ART 106G - Immersive Nonfiction (5)

Focuses on nonfiction creative storytelling using animation and new immersive media technology: augmented reality (AR), mixed reality (MR), locative media, and other technologies. Studio class teaches artmaking tools, skills, production and practices using immersive technologies. Students learn the process of developing nonfiction creative stories and documentaries through collaboration, personal narrative, community experiences, historical narrative and location-based storytelling.

ART 106O - 2D Animation (5)

This project-centered studio course introduces 2D animation concepts, history, techniques and contemporary practices, production strategies, processes, and tools from a practical approach rooted in a historical/theoretical context. During each project's development, students research artists working within relevant categories and/or topics of animation, presenting findings to assist in their creative process.

ART 108 - Art, Design, and Social Practice (5)

Studio-based course teaching strategies for social change, activism, and organizing using social design tools. Students gain experience developing design pieces and artworks to communicate their position on issues affecting their lived experiences and community struggles. Students develop artworks and content using social design practices, tools, systems, and strategies. The final design piece/artwork can utilize graphic design, digital platforms and publications, maps and spatial representation, exhibition design, 3D models for physical spaces, public interventions, video, and digital media, among other possibilities, including analogical forms of gathering people and manifesting social positions. (Formerly Activate Media! New Media Art Activism and Organizing.)

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26; or by permission of instructor. Enrollment is restricted to art majors.

ART 109 - Special Topics in Media Art (5)

Focuses on a wide range of media and time-based artmaking, which can include video art, interactive media, animation, VR/XR/AR, video installation, design and other 4D production and research. Special topics as announced.

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, or ART 20L. Enrollment is restricted to art majors.

ART 110 - Intermediate/Advanced Drawing (5)

Work moves toward individual directions in drawing. A variety of media are explored. Each student is expected to do 150 hours of drawing over the quarter.

Prerequisite: Prerequisite(s): One course from ART 15, ART 20G, ART 20J, ART 20L, ART 111, ART 112, ART 119; and two from ART 20H, ART 20I, ART 20K, ART 26; or by permission of instructor. Enrollment is restricted to art majors.

ART 111 - Figure Drawing (5)

Focuses on drawing from the human figure and exploring the figure for the purpose of personal expression and social communication. Intended for the intermediate/advanced drawing student.

Prerequisite: Prerequisite(s): One course from ART 15, ART 20G, ART 20J, ART 20L, ART 110, ART 112, ART 119; and two from ART 20H, ART 20I, ART 20K, ART 26; or by permission of instructor. Enrollment is restricted to art majors.

ART 112 - Mixed Media Works on Paper (5)

This course stresses alternative drawing processes, techniques, and materials. Intended for the intermediate or advanced student.

Prerequisite: Prerequisite(s): One course from ART 15, ART 20G, ART 20J, ART 20L, ART 110, ART 111, 119; and two from ART 20H, ART 20I, ART 20K, ART 26; or by permission of instructor. Enrollment is restricted to art majors.

ART 113 - Illustrating Stories: Fantasy and Documentary Narratives (5)

This drawing/painting class is taught using New Yorker magazine covers as examples of illustration at a level of excellence that is accessible and which are examined for content and formal qualities. Work is done in drawing and painting media; some digital and mixed media may be incorporated. Painting will be water-based. Wit, humor, restraint, and sophistication are discussed, as well as inclusivity, exclusivity, and explicit and implicit social issues.

Prerequisite: Prerequisite(s): ART 15 or ART 20L or ART 20J; and two from ART 20G, ART 20H, ART 20I, ART 20K; or by permission of instructor. Enrollment is restricted to art majors.

ART 114 - Landscape Drawing (5)

Explores the complexities of contemporary drawing, using UC Santa Cruz's diverse landscapes as a point of departure. Beginning with an observational drawing approach, students gain confidence in perceptual drawing practices that lead to more personal, thematic, and conceptual directions. Topics such as linear perspective, notan, and decolonizationare scrutinized while exploring a range of drawing materials from charcoal to ink wash. A lightweight field easel is required to facilitate working at full scale.

Prerequisite: Prerequisite(s): ART 20L or ART 15 or ART 20J and two courses from ART 20G, 20H, 20I, 20K. Enrollment is restricted to proposed and declared art majors.

ART 119 - Special Topics in Drawing (5)

Special topics in drawing as announced.

Prerequisite: Prerequisite(s): One course from ART 15, ART 20G, ART 20J, ART 20L, ART 110, ART ART 111, ART 112; and two from ART 20H, ART 20I, ART 20K, ART 26; or by permission of instructor. Enrollment is restricted to art majors.

ART 125 - Environmental Art Studio (5)

Introduces students to environmental art and design through basic concepts, techniques, and studio practice.

Prerequisite: Enrollment is restricted to juniors and seniors.

ART 130 - Intermediate/Advanced Painting (5)

Continuation of the development of a basic foundation in painting with emphasis on the development of individual, experimental procedures. A foundation in drawing is recommended.

Prerequisite: Prerequisite(s): One from ART 20J, ART 133, ART 137, ART 138, ART 139; and two non-painting lower-division studios from ART 15, ART 20G, ART 20H, ART 20I, ART 20K, ART 20L, ART 26. A foundation in drawing is recommended. Enrollment is restricted to art majors.

ART 132 - Figure Painting (5)

Students learn the classical practice of painting the nude figure from life using traditional oil painting techniques. Students study short poses, limited color, and graduate to long pose, full color.

ART 133 - Abstract Painting (5)

Exploration of abstract painting through studio work, lectures, and critiques with emphasis on progressive abstraction, minimalism, op art, and abstract expressionism as well as other 20th-century and 21st-century forms. A foundation in drawing is recommended.

Prerequisite: Prerequisite(s): One from ART 20J, ART 20L, ART 130, ART 137, ART 138, ART 139; and two non-painting lower-division studios from ART 15, ART 20G, ART 20H, ART 20I, ART 20K, ART 26. Enrollment is restricted to art majors.

ART 135 - Digital Painting (5)

Gives students a comprehensive understanding of the digital painting, from basic techniques, to new media art and industry application, to how these programs operate. Studies and assignments develop and expand skills of digital paint application. Students build a cumulative digital portfolio of all of the studies and assignments completed throughout the course.

ART 137 - Outdoor Painter's Project (5)

Explores contemporary landscape through the practice of plein air painting. Observational plein air painting will provides the foundation for the class. Instruction includes technical instruction in materials and technique as well as conceptual material. Student may work with oils, alkyds, or acrylic on panels, paper, or canvas.

Prerequisite: Prerequisite(s): One from ART 20J, ART 130, ART 133, ART 138, ART 139; and two non-painting lower-division studios from ART 15, ART 20G, ART 20H, ART 20I, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 138 - Facture and Meaning (5)

ART 139 - Special Topics in Painting (5)

Special studies in painting as announced. A foundation in drawing is recommended.

Prerequisite: Prerequisite(s): One from ART 20J, ART 130, ART 133, ART 137, ART 138; and two non-painting lower-division studios from ART 15, ART 20G, ART 20H, ART 20I, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 145 - Vector Art and Illustration (5)

Introduces students to the fundamentals and creation techniques for vector art and illustration using industry standard software. Explores the fundamentals and application of vector art and illustration with the projects, demos, and text-based lectures that walk you step by step though the processes. With feedback through weekly discussions, students build upon their existing knowledge and produce a skilled portfolio of digital work by the end of the quarter. Prerequisites for the summer course are waived. The summer offering is also open to non-art majors. The asynchronous online format allows students to watch video lectures and tutorials at their own pace as they complete the projects for the course and engage in critique with peers in written discussion forums.

ART 150 - Darkroom Practices (5)

Students concentrate on darkroom practices and explore visual ideas, directing their work toward individualized goals. Required work includes making photographic prints, reading historical and theoretical works, and examination of photographs.

Prerequisite: Prerequisite(s): ART 20I and two non-photography lower-division art studios from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 152A - Photographic Book (5)

This studio-based course engages with the traditions and practices of the photographic book to examine and explore both narrative and non-narrative strategies. Students create a coherent photographic photo-book. Course examines the contemporary status of the photobook as well as the rich history of the medium. Editing, sequencing, and the production of photobooks is the centerpiece of this class.

Prerequisite: Prerequisite(s): ART 20I, and two courses from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 152C - View Camera Photography (5)

Explores the processes, materials, and techniques of large-format photography. Students learn the concepts and theories related to the view camera. Emphasizes advanced understanding of negative exposure, sheet-film processing, tonal-range manipulation, digital scanning, and large-format output. Contemporary issues and concepts explored.

ART 153 - Still to Moving: Topics in Cinematography for Artists (5)

The natural evolution from still image making to moving image making is at the heart of this course as students look at this evolution from a historical, social, conceptual, and technical perspective. Artists who have been primarily working in still photography will learn to transition to creating with moving images by addressing time, structure, sound, and installation. Advanced discussions on film and digital formats, quality of image, camera support systems, and post-production will be explored through a combination of screenings, assignments, and readings.

Prerequisite: Prerequisite(s): ART 20I, and two courses from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 154A - Being Social: Photography and Engagement (5)

Explores historical and contemporary ways in which photography has been used to examine social issues and invites students to produce work that responds to issues that are important to them. Students learn about photograph's historical significance in raising social awareness, analyzing the aesthetic and methodological strategies of modern and contemporary photographers seeking to catalyze economic, political and cultural change through the production of images.

Prerequisite: Prerequisite(s): ART 20I; and two courses from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 154B - Photography, Place, Environment (5)

The impact of our industrialized culture on nature is one of the most crucial and urgent issues of our times. Discussions on environmental photography, place, and landscape, set out to investigate environmental change and to explore our relation to nature. Throughout the quarter students develop an environmental photography art project that follows in the photographic tradition of raising awareness and supporting policymakers, politicians, researchers, environmentalists, and activists.

Prerequisite: Prerequisite(s): ART 20I, and two courses from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 154C - After Archives: Photographers & Research (5)

The role of archives, photographers, and research in contemporary photographic practice is addressed by examining the special archives at the UCSC library and the Prelinger Library in San Francisco and by curating a group

exhibition. Students make a project in multiple media, such as photography, video, text, installation, and drawing prompted by UCSC Special Collections' vast archives and collections. Through studio projects, readings, discussions, and case studies, students engage the immediate context of the university as source material for their artworks as a means to explore the effect that research and knowledge production might have on contemporary artistic practice.

Prerequisite: Prerequisite(s): ART 20I; and two courses from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 155 - Photo Field Research Quarter (PFRQ): California Road Trip (10)

Offers students the unique opportunity to live and learn and photograph outside the classroom, actively engaging locations across the state of California. Students will cover 2400 miles from Northern Mendocino County to the Salton Sea, Eastern Sierra, Death Valley, and Big Sur. Class exposes students to cultural, historical, and environmental issues facing California. Due to the rigor of the course, students must submit an application demonstrating the commitment and photo preparation necessary for successful completion of the class. Students are billed a materials fee of $550.

ART 156 - Project Development in Photography (5)

Concentrates on photographic project development, developing analytical skills designed to help direct students' own photographic ideas. Helps students create a conceptual theoretical framework through image-making in the field and studio, through critique and discussion, through readings, and by studying the work of artists.

Prerequisite: Prerequisite(s): One course from ART 20I; and two non-photography lower-division art studios from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 157 - Immersive Arts Field Research (5)

Students are immersed in site specific field research over the span of a four-day in-the-field trip utilizing the public land of California, via the UC Natural Reserve System. Students are educated about research related to a specific place while exploring concepts of site-specificity and develop their own new inquiries about a place by experiencing it physically and by engaging with contemporary art concepts and art project development. Prerequisite(s): two lower-division studio art courses. Enrollment is restricted to junior and senior art majors. Enrollment is by permission of instructor. Due to the rigor of the course, students must submit an application demonstrating the commitment and photo preparation necessary for successful completion of the class.

ART 158 - Advanced Photography (5)

Students produce a portfolio of photographs, read historical and theoretical works, and study photographs and other art works.

Prerequisite: Prerequisite(s):ART 20I, and two courses from ART 15, ART 20L, ART 20K, ART 20J, 20G, 20H. Enrollment is restricted to art majors.

ART 159 - Special Topics in Photography (5)

Special studies in photography, concentrating on specific subject matter or media. Topics may include documentary photography, landscape, alternative processes, or mixed media.

Prerequisite: Prerequisite(s): ART 20I, and two courses from ART 15, ART 20G, ART 20H, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 161B - Relief/Mixed Media Printmaking (5)

Explores traditional, contemporary, and experimental processes, issues, and concepts of relief and mono/mixed media printmaking. Students gain in-depth information and working knowledge to specialize individual ideas and build artistic development through varieties of class activities.

Prerequisite: Prerequisites: ART 20G or ART 26 and two non-print lower-division media studios from ART 15, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L. Enrollment is restricted to art majors.

ART 161C - Tradition and Innovation: Relief Printmaking in Korea (6)

Explores the history of printing from the world's oldest printed text developed in Korea to the latest cutting-edge technology, including laser cutting. Students study many aspects of both traditional and contemporary relief (woodblock) printmaking, both materials, tools, and techniques and the issues, concepts and history of the field. Through various class activities, field trips and cultural visits (to UNESCO World Heritage Sites) in Korea, students will be exposed to diverse and multi-regional art practices that will broaden their perspectives and increase their understanding not only in the fields of print media but in the larger contemporary visual culture.

Prerequisite: Prerequisite: ART 20G.

ART 161J - Mokuhanga: UCSC Printmaking in Japan (6)

Course taught both at UCSC and at the host university in Tokyo. At UCSC, oil-based woodblock printmaking covers techniques, application of tools, materials, history, issues and concepts. In Japan, the class studies Mokuhanga, resulting in a great understanding and appreciation of this traditional process. Via class activities, field trips, excursions, and cultural visits, students encounter diverse multi-regional art practices, thus broadening perspectives and increasing understanding not only of print media but of contemporary visual culture.

Prerequisite: Prerequisite(s): ART 20G.

ART 162A - Intaglio I (5)

Introduces students to various methods used in making intaglio prints. Encourages individual artistic growth of

imagery and technique through assignments designed to explore the medium. Includes discussion and critique of work with equal emphasis on technique and concept.

Prerequisite: Prerequisites: ART 20G or ART 26 and two non-print lower-division media studios from ART 15, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L. Enrollment is restricted to art majors.

ART 163A - Lithography I (5)

Introduction to drawing, processing, and printing of lithographs from stone. Emphasis on discovery of tonal, textural, and expressive potential from the surface of the stone, while establishing individual directions in imagery. Condensed history of the medium, technical theory, and critique in lecture and demonstrations.

Prerequisite: Prerequisites: ART 20G or ART 26 and two non-print lower-division media studios from ART 15, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L. Enrollment is restricted to art majors.

ART 163C - Magnified Imagination: A Printmaking Approach (5)

Examines the wonders of visual magnification of the natural world by using enlargement lenses, scanner, and microscopes to create photo-based and autographic prints that enhance strange and unperceived realities. Visits to the UCSC Norris Center for Natural History, Thimann's Roof Garden and Greenhouse will provide opportunities to explore natural world specimens for projects.

Prerequisite: Prerequisite(s): ART 20G and two courses from ART 15, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment restricted to art majors.

ART 164A - Screenprinting (5)

Introduces water-based screen printing. Students are introduced to processes including basic equipment, printing techniques, printing papers, stenciling processes, and photographic and digital techniques. Emphasis is on continued development of content and aesthetic awareness through the possibilities of screen printing.

Prerequisite: Prerequisites: ART 20G or ART 26 and two non-print lower-division media studios from ART 15, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L. Enrollment is restricted to art majors.

ART 165 - Print Media in Visual Communication (5)

Explores a unique approach reviewing the printed images in visual communications. A wide blend of traditional and cutting-edge print media processes with an interdisciplinary focus will be taught for conceptualizing, producing, and presenting the printed image.

Prerequisite: Prerequisite(s): ART 20G, and one course from ART 160B, ART 161B, ART 161C, ART 162A, ART 162B, ART 163A, ART 163B, ART 163C, ART 164A, ART 164S, ART 168, ART 169. Enrollment is restricted to art majors.

ART 166 - Art of Bookmaking (5)

Introduction to production of small edition books and multiples utilizing sequential visual imaging, narrative content, and mixed media in bookmaking. Provides instruction in conceptualizing, producing, and distributing printed artists' multiples. Ideas encouraged within a broad range of possibilities via the format of artists' books.

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26 or by permission of instructor. Enrollment is restricted to art majors.

ART 168 - Photo-Based Printmaking (5)

Intermediate/advanced studio course exploring the processes, history, and the recent developments in contemporary photomechanical printmaking. Through experimentation and research students learn how to utilize photographic imagery, blending them in multiple layers and colors, thereby facilitating articulation of their conceptual foundations.

Prerequisite: Prerequisites: ART 20G or ART 26 and two non-print lower-division media studios from ART 15, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L. Enrollment is restricted to art majors.

ART 169 - Special Topics in Printmaking (5)

Special studies in printmaking, as announced.

Prerequisite: Prerequisites: ART 20G or ART 26 and two non-print lower-division media studios from ART 15, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L. Enrollment is restricted to art majors.

ART 170 - Playgrounds: Forms of Gathering and Playing (5)

Confronted with significant global challenges, artists and a diverse array of world-makers have embraced forms of playing to reimagine and confront brutal realities, and engage in struggles for liberation. In this course, art and pedagogy are grounded in the concept and practice of playgrounds. This course invites students to design or assemble objects to transform spatial and sensory perceptions, exploring sociability, forms of gathering, playing and reconnection with the environment. Sculptures, objects, drawings and furniture require human interaction to reach their full potential.

ART 172 - Public Art: Memory, Landscape, and Artist as Activist (5)

In-depth exploration of art in the public sphere. Students build an understanding of public art sparked by practical experience designing and developing projects. Theoretical aspects of contemporary public art, and an introduction to the range of current public art practices will be introduced through readings, lectures, and artist's talks. The combination of practical hands-on technique and theoretical ideology will enable students to fully develop their own project within the class.

Prerequisite: Enrollment is restricted to juniors and seniors.

ART 175 - Taking Art to the Streets (5)

Expands traditional definitions of art making taking art beyond the museum. Students take art making to the streets. We explore art making in the public sphere from murals to graffiti, street art to shop dropping, protests to public commissioned projects and community engaged interventions.

Prerequisite: Prerequisite(s): Three courses from ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26, or by consent of instructor. Enrollment restricted to art majors.

ART 177 - Careers in the Creative Economy (2)

Provides students with information, tools, and strategies to embark on arts career exploration and preparation, including strategies for addressing challenges and opportunities related to diversity, equity, and inclusion. Students explore their career values; network with guest speakers in creative fields (alumni, faculty, graduate students, professional artists); and prepare and create career-related documents (update resumes, cover letters, project proposals) as well as learn about a variety of arts careers through guest speakers, readings, and podcasts. Enrollment is by permission of the instructor and is restricted to juniors, seniors, and graduate students. Please contact the art advisor at artadvisor@ucsc.edu for the application.

ART 180B - Intermediate/Advanced Sculpture (5)

More advanced fabrication techniques in sculpture using wood, metal, industrial, and other materials. Techniques include carpentry and woodshop skills, and an introduction to sculptural forms, processes, and ideas. Demonstrations, slide lectures, and critical discussion of work help develop technical and conceptual skills. (Formerly ART 180B, Sculpture II.)

Prerequisite: Prerequisite(s): One course from ART 20H, ART 120, ART 121, ART 122, ART 124, ART 125, ART 129, ART 172, ART 183, ART 188, or ART 189; and two non-sculpture/intermedia/public art lower-division studios from ART 15, ART 20G, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 181 - Art, Power & Politics (5)

Explores strategies artists use to engage political subject matter in the 21st century. Students create their own projects, research and test approaches, techniques and strategies learning from the ways national and international artists encode and convey information in creating political work. Methods range from community collaboration; to tactical culture jamming, participatory collaborative projects, activism and intervention, symbolic and gestural work, artist-led projects, performances and community projects.

Prerequisite: Prerequisite(s): three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 182 - Materiality of Color (5)

A research-based, studio art class in which students experiment with ideas and processes, and pursue projects exploring the materiality of color, including social and cultural effects and environmental implications. Following a sequence of short assignments paired with class critiques, students design and complete their own research-based art projects (in any media) that investigate color as a material phenomenon. Class discussions address physical, perceptual, psychological, geological, biological, cultural, social, political, philosophical and aesthetic aspects of color in concert with readings, guest lectures, field trips, technical demonstrations and visual presentations. Students harvest, make, and use dyes from plant materials grown at the UCSC Farm, and contribute to the ongoing development of a dye garden on campus.

Prerequisite: Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 183 - Metal Fabrication (5)

Focus on teaching intermediate to advanced students the processes and techniques of direct metal fabrication for contemporary sculpture and design. Explores a range of welding, cutting, and forming techniques and processes through demonstrations, slide lectures, field trips, and studio time. Demonstrations, slide lectures, and critical discussion of work help develop technical and conceptual skills.

Prerequisite: Prerequisite(s): One course from ART 20H, ART 120, ART 121, ART 122, ART 124, ART 125, ART 129, ART 172, ART 180B, ART 188, ART 189; and two non-sculpture/intermedia/public art lower-division studios from ART 15, ART 20G, ART 20I,ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 184 - 3D Art and Design I (5)

Emphasizes the conceptual aspects of 3D art and design using the laser cutter to prototype and experiment with construction methods and materials to create, represent, respond to, and reflect on 3D forms in space. Students learn about mixed-media fabrication techniques, materials, and processes that include using a woodshop and metal-fabrication shop. The course is structured around assignments that develop individual expressiveness, research skills, creative industry, and class participation. Students are billed a materials fee of $120. (Formerly 3D Art and Design: Laser Cutting and CNC Routing.)

Prerequisite: One course from ART 20H, ART 20K, ART 101, ART 102, ART 103, ART 106E, ART 108, ART120, ART 121, ART 122, ART 124, ART 125, ART 129, ART 146T / THEA 106, ART 172, ART 180B, ART 183,ART 188, ART 189 and two courses from ART 15, ART 20G, ART 20I, ART 20J, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 185 - 3D Art and Design II (5)

Expands 3D art and design principles, methodologies, process, and skills via structured projects using 3D printers and modeling. The metal-fabrication shop and the woodshop allow students to prototype and experiment with construction methods and materials used to develop assignments. The course is structured around assignments that develop critical thinking, individual industry, research skills, creative expressiveness, and class participation. Students are billed a materials fee of $120. (Formerly 3D Art and Design: Printing and Prototyping.)

Prerequisite: One course from ART 20H, ART 20K, ART 101, ART 102, ART 103, ART 106E, ART 108, ART 180B, ART 183, ART 184, ART 188; and two courses from ART 15, ART 20G, ART 20I, ART 20J, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 186 - Art and Globalization (6)

In this immersive studio art class students create site-responsive artworks that explore art in a global context. We visit contemporary art museums, galleries and cultural spaces in London and Brighton England, enriching and deepening our understanding of art in a global context. Students create drawings, zines, graphic works, animation, photographs, installations and performances in response to visits to museums, galleries and exhibitions. Students create studio work in the new media studios at the University of Sussex in Brighton’s School of Media, Arts and Humanities and live on campus during the trip. This class includes artist lectures, docent tours, studio, museum, and gallery visits. Prerequisite(s): Three courses from: ART 15, ART 20G, ART 20H, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors. Enrollment is by permission of the instructor.

ART 188 - Bronze Casting: Foundry (5)

Intermediate/advanced course in bronze casting sculpture. This is the only foundry-specific class in the UC system. Create sculptural objects using the lost wax method--the oldest and still most used sculpture technique in monumental and small scale casting. Lectures and demonstrations are combined with work time in class. Students generate sculptural forms in wax then gate, invest, weld, chase, patina, and present at least one finished piece. Students are billed a materials fee of $175. May be repeated for credit. (Formerly Foundry: Metal Casting.)

Prerequisite: Prerequisite(s): One course from ART 20H, ART 120,ART 121, ART 122, ART 124, ART ART 125, ART 129, ART 172, ART 180B, ART 183, ART 189; and two non-sculpture/intermedia/public art lower-division studios from ART 15, ART 20G, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 189 - Special Topics in Sculpture (5)

Special topics in sculpture as announced, concentrating on specific aspects of subject matter and media.

Prerequisite: Prerequisite(s): One course from ART 20H, ART 120, ART 121, ART 122, ART 124, ART 125, ART 129, ART 172, ART 175, ART 180B, ART 183, ART 188; and two non-sculpture/intermedia/public art lower-division studios from ART 15, ART 20G, ART 20I, ART 20J, ART 20K, ART 20L, ART 26. Enrollment is restricted to art majors.

ART 190A - Writing for Artists (5)

Provides practice in using writing as a tool to support creative work--to generate ideas, to critically analyze and interpret artworks, and to communicate clearly with others about one's own work. Lectures, discussions, and visiting artist talks introduce and explore contemporary art contexts, ideas, discourses, artworks, artists, and practices to build students' capacities to place their work in the world. Readings introduce and unfold ideas for discussion, and provide examples of writing formats and purposes as they relate to art practice.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to junior and senior art majors.

ART 190B - Senior Project (5)

Advanced senior art majors create and complete a senior project to fulfill their comprehensive graduation requirement. Focuses on a weekly lecture, studio work, peer critique, and professional practices such as the documentation and exhibition of work.

Prerequisite: Enrollment is restricted to senior art majors.

ART 191 - Teaching Apprenticeship (5)

Designed for art majors at the upper-division level. Each student assists in a lower-division art course under the direct supervision of a faculty member. Students assist in technical instruction, critiques, and class discussions. May not be repeated for credit. Does not count toward upper-division major requirements. Enrollment restricted to art majors.

ART 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision. (See course 42.) Students should have upper-division standing with a proposal supported by a faculty member willing to supervise. Students submit petition to sponsoring agency.

ART 193 - Field Study (5)

Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. To be used primarily by upper-division students doing part-time off-campus study. Students submit petition to sponsoring agency. Petitions may be obtained in the Art Department Office.

ART 194 - Forms and Ideas (5)

A non-media specific class introducing a range of contemporary visual practices, contexts, issues, forms, and UCSC resources of use to artists, emphasizing relationships

between material, form, meaning and between private expression, public communication, and systems of exchange.

Prerequisite: Enrollment is restricted to junior and senior art majors. Strongly recommended for junior transfer art majors.

ART 196 - Independent Senior Project (5)

Student will concentrate on completing work for comprehensive exhibition under the direction of his or her art adviser, with help from other faculty as needed. Students submit petition to sponsoring agency.

ART 197 - Individual Study (5)

Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency.

ART 198 - Independent Field Study (5)

Provides for department-sponsored independent study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students submit petition to sponsoring agency.

ART 199 - Tutorial (5)

Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency.

ART 199F - Tutorial (2)

Tutorial

Graduate

ART 210A - Practice-Based Research Group: Sites (5)

The first in the required core course sequence taken by students in the first year of the environmental art and social practice M.F.A. The sequence offers students a graduated learning opportunity to engage in practice-based research in the field. The concept of practice-based research involves "an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice." (Sydney) In this site-specific course, students apply research to site work and art practice.

Prerequisite: Enrollment is restricted to graduate students.

ART 210B - Practice-Based Research Group: Systems (5)

The second in the required core course sequence taken by students in the first year of the environmental art and social practice M.F.A. The sequence offers students a graduated learning opportunity to engage in practice-based research in the field. The concept of practice-based research involves "an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice." (Sydney) Students develop their research through the lens of systems and relationships.

Prerequisite: Prerequisite(s): ART 210A. Enrollment is restricted to graduate students.

ART 210C - Practice-Based Research Group: Contexts (5)

Third in the required core course sequence taken by students in the first year of the environmental art and social practice M.F.A. The sequence offers students a graduated learning opportunity to engage in practice-based research in the field. The concept of practice-based research involves "an original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice." (Sydney) Students engage with questions of context and community.

Prerequisite: Prerequisite(s): ART 210A and ART 210B. Enrollment is restricted to graduate students.

ART 220 - Methods and Histories (5)

First-year seminar on methods of the field. Topics include: strategies for artists working in the field, social and environmental art research methods, histories and case studies (artists, projects, and issues).

Prerequisite: Enrollment is restricted to graduate students.

ART 230 - Theory and Practice (5)

First- or second-year graduate seminar focusing on contemporary theory as it relates to social and environmental art practice.

Prerequisite: Prerequisite(s): ART 220. Enrollment is restricted to graduate students.

ART 240 - Art Pedagogies (2)

First-year seminar course introducing and exploring pedagogical methods and approaches in art education and in art practice. The teachings of Paolo Freire and others serve as working models to construct open and respectful learning environments both in and outside the classroom.

Prerequisite: Enrollment is restricted to graduate students.

ART 250 - Writing Matters (5)

First-year seminar course focusing on research and writing skills as a dimension of project-based art practice and as support for planning a thesis. This course can be taken for Satisfactory/Unsatisfactory grading only.

Prerequisite: Enrollment is restricted to graduate students.

ART 257 - Immersive Arts Field Research (5)

Immersive site-specific field research over the span of a four-day (24 hours/overnight) field trip utilizing public lands of California, via the UC Natural Reserve System. Students engage and relate to a specific place while exploring concepts of site-specificity and develop their own new inquiries about a place by experiencing it physically and by learning about contemporary art concepts through topics of land use. Students also reflect upon the multiple factors that constitute a "site" and how they present possibilities for creative engagement, learn research method skills and approaches that are unique to each site historically, politically, culturally, and environmentally. Due to the rigor of the course, students must

submit an application demonstrating the commitment and preparation necessary for successful completion of the class. Enrollment is restricted to graduate students.

ART 260 - Curatorial Collective (2)

Second-year seminar course focusing on exhibition, curatorial questions, and practices as they relate to presenting final thesis work for public reception. Covers practical, theoretical, and historical considerations for artists and researchers in the process of preparing for presenting the outcome of MFA research. Students examine multiple modalities for presentation and exhibition and address issues of diversity and access in exhibition and curatorial practices. This course can be taken for Satisfactory/Unsatisfactory grading only.

Prerequisite: Enrollment is restricted to graduate students.

ART 270A - Project Development and Critique I (5)

First in a sequence of two second-year courses, continuing the focus on students' production and critique. Through peer discussions students continue to deepen their ability to engage in conceptual, scholarly, and interdisciplinary dialogue about their projects and the work of fellow students.

Prerequisite: Prerequisite(s): ART 210A, ART 210B, ART 210C, and ART 220.

ART 270B - Project Development and Critique II (5)

Second in a sequence of two second-year courses, continuing the focus on students' production and critique. Through peer discussions students continue to deepen their ability to engage in conceptual, scholarly and interdisciplinary dialogue about their projects and the work of fellow students.

Prerequisite: Prerequisite(s): ART 270A.

ART 280 - MFA Project Production (5)

Students produce their final project in conjunction with refining and completing their written thesis. Critique, tutorials, and directed study in writing and studio production leads to the presentation of their project.

Prerequisite: Prerequisite(s): ART 270A and ART 270B. Enrollment is restricted to graduate students.

ART 297 - Independent Study (5)

Independent study or research for graduate students. Students submit petition to sponsoring agency.

ART 299F - Thesis Research (2)

Students complete work toward their final thesis project production with the guidance and supervision of a faculty member. Students obtain permission from the faculty member and submit petition to the sponsoring agency. Enrollment is restricted to graduate students in environmental art and social practice.

Prerequisite: Enrollment is restricted to graduate students in environmental art and social practice.

ARTG - ART & DESIGN: GAMES + PLAYABLE MEDIA

Lower-Division

ARTG 10 - Aesthetic Designs (5)

Explores the ways in which aesthetic designs in art and media influence, make, and convey meaning, and presents methods for designing, authoring and implementing aesthetic components into games and interactive artworks. Students investigate these topics from a conceptual starting point that branches into cultural, technological and/or interventionist inquiries, culminating in a series of creative design projects.

ARTG 20 - Games as Art (5)

Games are an ancient art form that many people experience everyday. They can be used to bring audiences into imaginary worlds of play, and invite them to engage with the most critical problems facing the world. This course is a core course in the art and design: games and playable media major, and teaches students about the way we conceive of games, as more than products, as a genre of art, and a form of social engagement. Students are introduced to game studies scholars and game design texts, which allow them to start making analog games and interactive artworks.

ARTG 25 - Games as Art & Activism (5)

Games are art forms that are widely accessed across a multitude of modern social, cultural, political, and media landscapes. Many games—from ancient to contemporary—express compelling sociopolitical perspectives and critiques. This course explores games as art with a focus on works that intentionally invite social action and change through performance, play, or participation. Games are discussed from critical, artistic, and aesthetic frameworks. Creative assignments and projects are used to explore methods and approaches for creating expressive games and other forms of radical play.

ARTG 30 - Games as Activism (5)

How can art make change? How can changing culture contribute to broader movements for social change? How can artists make games that move culture and society? Course approaches games as a site for political expression and social change. Looks at game makers who identify as feminist, queer, disabled, Black, Indigenous, people of color, workers, radicals, artists, scholars, and/or activists who are using games to drive social commentary, critical play, and political action. By the end of this course, students have a strong understanding of games as a political medium as demonstrated by the design of their own cultural intervention using games and play.

ARTG 40 - Designing Experiences (5)

Builds skills in setting experiential goals and in defining and building mechanical and dynamic elements to support those goals. Through an iterative and reflective process, explores how we evaluate success as designers and artists, and the

responsibilities we have to ourselves and to our audience. In this class, students will rapidly prototype interactive experiences in a number of forms and practice the presentation/positioning of their work to an audience.

ARTG 50 - Play as a Radical Endeavor (5)

Foundational course in game design. Re-introduces students to play as an expressive form that extends across many mediums of cultural expression and communication. Students study, experience, and design playful performance and interactive experiments, culminating in a final Playfaire, where, as a collective, they practice community organizing and reciprocity with the needs of individuals to create space for cross-disciplinary play. Course continues the long tradition of play using figures such as the jester and the clown to call into question social norms and power structures. Students also engage in critiques which may involve difficult conversations, but result in more powerful artworks. (Formerly offered as ARTG 80I, Foundations of Play.)

Prerequisite: Enrollment is restricted to art and design: games and playable media majors.

ARTG 80G - Visual Communication and Interaction Design (5)

Survey of the basics of visual communication and interaction design, focusing on communicating designs of interactive systems. Covers techniques from a breadth of visual communication traditions; how to choose, use, and innovate; and how to structure dialogue around them.

ARTG 80H - Critical History of Digital Games (5)

Surveys the history of digital games from open university games through the home console, PC, and contemporary platforms, and on to indie and art games. Throughout, the course locates connections between technology, marketing, and play culture. (Formerly History of Digital Games.)

ARTG 90 - Open Source Contributor Studio (5)

Introduces students to open-source development. Students explore the aesthetic, cultural, and technical goals of a project, identifying areas for improvement and proposing contributions aligned with their skills and interests. Through research, case studies, and hands-on projects, students develop critical thinking, communication, and design skills while learning to navigate collaborative, open-source ecosystems. The course culminates in a professional presentation emphasizing both process and impact. No programming experience required; students from all disciplines welcome.

Prerequisite: Enrollment is restricted to proposed and declared AGPM majors during first-pass enrollment; restrictions lifted after first pass.

ARTG 91 - Introduction to Game Art Production (5)

Project-centered studio-lecture hybrid course that introduces the process of world-building and interaction design from the standpoint of the art director. Each project addresses a milestone in the art direction development pipeline, and demonstrates corresponding entry-level technical and conceptual skills and strategies. Utilizing this split methodology, the big-picture game development process is presented in tandem with related fundamental digital art and design skills at an achievable scale for an introductory course.

ARTG 92 - Digital Presentation and Portfolio Design Across Disciplines (2)

Explores a range of digital methods and approaches for communicating ideas, presenting research, and documenting academic work across a variety of fields and disciplines. Case studies are examined and discussed in relation to design fundamentals critical for effective communication. Focus is on a quarter-long digital portfolio, presentation, or documentation project. This course-long project is supported by shorter design assignments that introduce digital tools, platforms, technical concepts, and other communication design processes.

Upper-Division

ARTG 118 - Character Creation for Video Games (5)

This is a hands-on studio course, intended to give students an understanding of the techniques used to create characters for use in video games. Through this course, students will understand and develop the skills necessary to take a video game character design through all of the stages necessary to have a finished character for use in 2D or 3D video games. You will learn industry tools and techniques to be an effective game artist. (Formerly, Digital Drawing/Painting for Game Design.)

Prerequisite: Enrollment is restricted to junior and senior art and design: games and playable media majors and proposed majors.

ARTG 120 - Game Design Experience (5)

Teaches the concrete skills associated with making a digital game, from start to finish. Activities include establishing a team, concepting, storyboarding, prototyping, producing, and testing a game for release. Students are organized into groups and work together to create and produce a playable game.

Prerequisite: Enrollment is restricted to art and design: games and playable media declared majors.

ARTG 129 - Special Topics in Game Design (5)

Allows students to explore game designs related to their ongoing work within their major in either digital or non-digital formats. Students choose a topic and develop game projects that engage players.

Prerequisite: Enrollment is restricted to art and design: games and playable media declared majors.

ARTG 129A - Special Topics in Game Design (5)

Gives students an opportunity to explore game designs related to their ongoing work within the AGPM major, in either digital or analog formats. Students develop projects that engage players on a topic of their choosing.

Prerequisite: Prerequisite(s): ARTG 80G, ARTG 80H, and ARTG 80I. Enrollment is restricted to art and design: games and playable media and computer science: games and playable media majors.

ARTG 131 - 3D Game Art Production (5)

Studio course in which students learn the highly technical and fundamental skills in the production of 3D art assets for video games. Covers the essential steps in the 3D art pipeline, starting with basic 3D modeling, UV unwrapping, the creation of texture maps, and finally, game engine implementation. Focuses on developing an understanding of the processes and creative thinking necessary to produce industry-level artwork rather than specific software. Students provided with video lectures and demos, and students can expect to produce weekly assignments to practice basic skills and concepts covered.

Prerequisite: Prerequisite(s): ARTG 10 and one of the following courses ARTG 20 or ARTG 25 or ARTG 30.

ARTG 132 - 3D Character Rigging and Animation for Video Games (5)

Gives students an in-depth understanding of the techniques of 3D character rigging and animation for video games. Students understand and develop the skills necessary to be an effective technical artist and animator with a focus on industry standard methods for animating characters to be implemented into a game engine. Course provides students with video and written lectures, video demonstrations, assignments and discussion boards aimed at giving them historical understanding of game animation, the evolution of these techniques, hands-on work to become proficient, as well as the ability to communicate online with other students and the instructor to answer questions and further their knowledge.

Prerequisite: Prerequisite(s): ARTG 10 and one of the following courses ARTG 20 or ARTG 25 or ARTG 30.

ARTG 134 - Spectacular Play: Performance, Ritual, and Making a Scene IRL (5)

What do immersion and interactivity look like outside of virtual worlds? How can we activate social dynamics and public space for the purpose of play? How might we evoke feelings of purpose, or even magic, for players and spectators alike? Students will study and create immersive experiences designed to play out in real life. Drawing inspiration from performance studies, activism, art history, and more, we will transform the everyday into the extraordinary.

Prerequisite: Prerequisite(s): ARTG 80G and ARTG 80I.

ARTG 136 - Digital Sculpting for Video Games (5)

In this studio course, students learn the basics of digital sculpting in ZBrush with a focus on 3D character art. Through a mix of in-class demos and periodic assignments, students learn how to produce high-fidelity digital sculpts and their practical application in the 3D game art pipeline.

ARTG 137 - Experimental Tabletop RPG Design (5)

Explores experimental mechanics, dynamics, themes, and aesthetics within the tabletop RPG form. In groups and individually, students will play, run, design, write, workshop, and print/produce experimental tabletop RPGs, as well as conduct usability tests focused on layout, design cohesion, and accessibility.

Prerequisite: Enrollment is restricted to art and design: games and playable media declared majors.

ARTG 138 - Feminist Games (5)

Feminist games including intersectional feminist games, transfeminist games and queer feminist games, will be created by students in this course. Students will study the existing history and present of these genres of games, including game mods, personal experience games, narrative games, alternate reality, augmented reality and electronic literature. Students will work individually to create games as art and activism building on critical theories of race, gender, sexuality and algorithms.

Prerequisite: Prerequisite(s): Two courses from the following: ARTG 80G, ARTG 80H, or ARTG 80I; or ARTG 20 and ARTG 30.

ARTG 139 - Queer and Trans Art and Games (5)

Students study, and make, queer and trans art and games. Course considers how gender and sexuality are systems of rules often assumed in game design, and how those rules can be subverted to create novel and experimental games. By identifying and resisting cisnormativity and heteronormativity, students create original game concepts, using a critical, intersectional approach that understands that race as a constitutive element of both gender and sexuality. Course also studies with queer and trans ecologies understanding gender and race as inseparable from our idea of nature.

Prerequisite: Enrollment is restricted to art and design: games and playable media, and critical race and ethnic studies majors and proposed majors. Crosslisted as: Enrollment is restricted to art and design: games and playable media, and critical race and ethnic studies majors and proposed majors.

ARTG 140 - Writing for Interactive Narrative (5)

Discusses a variety of aspects of writing found in videogames and other interactive forms of media. Using a mix of creative writing projects and in class discussions, students will practice and critique existing work as well as their own.

Prerequisite: Enrollment is restricted to art and design: games and playable media declared majors.

ARTG 141 - Introduction to Virtual Reality (5)

Introduction to Virtual Reality is an introductory course with a combination of theory and practice. Students are exposed to the history of Virtual Reality and hands-on experience in making VR and developing their own VR project. By introducing broad topics around VR, such as immersive

spectacle, virtual embodiment, sonic immersiveness, students will gain knowledge about cultural, historical, and practical perspectives of VR. Students will also learn technical skills in developing VR in Unity 3D. 3D modeling experience is not required in this class. This class is an integration of the production of 3D and 360 degree VR experience. Photogrammetry, 360 degree video production and editing, and other expressive media will also be introduced for advancing the development of VR.

ARTG 142 - Black Aesthetics: Interventions in Digital Media (5)

How do we conceptualize a Black Aesthetic in the realm of digital art and media? How do we re/define Black virtuality when, historically, computer graphics has failed to accurately render Blackness? This course looks at the field of digital media from a technological and cultural perspective, understanding the ways in which anti-Blackness has been embedded in our technology, from photography to video games. Concurrently, course examines the history of the Black Aesthetic as an interventionist art movement, and find ways to intervene in the contemporary digital media landscape.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior art and design: games and playable media, and critical race and ethnic studies majors, and Black studies minors. Crosslisted as: Enrollment is restricted to sophomore, junior, and senior art and design: games and playable media, and critical race and ethnic studies majors, and Black studies minors.

ARTG 143 - Ecofutures (5)

Students study the fields of ecofeminist art, climate fiction, virtual environmental art, Afrofuturism, Latinx futurism and Indigenous futurism, and create digital art relevant to these fields. The dual global crises of climate change and COVID-19 have forced a reevaluation of the idea of the human through a confrontation with the realities and histories of global colonialism and white supremacy. In response, social movements and artists have created artistic strategies which can envision futures beyond the horizon of the imagination of capitalism.

Prerequisite: Enrollment is restricted to senior Art and Design: Games and Playable Media majors.

ARTG 145 - Non-Digital Game Design (5)

Looks specifically at the design of non-digital games. Surveys a variety of game types and designs. Students prototype card or board game, culminating in a final project that engages players on a socially relevant topic.

ARTG 170B - Design Studio I: Individual Track (5)

Course focuses on individual projects, supported by collaboration within a general working-group. Students create novel, interesting game concepts, and outline and refine game proposals for longer-term projects. Studio projects cover a range of creative practices, including concept ideation and storyboarding, prototyping, and presenting and/or exhibiting the game idea in a more finalized form. Can be taken as a single course or as part one of the art and design: games and playable media capstone requirement. Continuing with the capstone series via ARTG 171 will require team collaboration.

Prerequisite: Prerequisites: Satisfaction of the Entry Level Writing and Composition requirements. Enrollment restricted to senior art and design: games and playable media majors.

ARTG 171 - Game Design Studio II (7)

Students craft the core loop of their yearlong game project. Students build the game, examine player feedback, and repeat the process to make the game better. This course places particular emphasis on advanced production techniques for working in teams, as well as software engineering practices for software design, software testing, and build management. This course is part two of the art and design, games and playable media capstone requirement.

Prerequisite: Prerequisite(s): ARTG 170. Enrollment is restricted to senior art and design: games and playable media majors.

ARTG 172 - Game Design Studio III (7)

Students scope and polish their final game designs. Students work towards releasing one specific game platform while coordinating across disciplinary boundaries to create and integrate all the necessary code, art, animation, and sound assets for their game. This course is part III of the art and design: games and playable media capstone requirement.

Prerequisite: Prerequisite(s): ARTG 171 or by instructor permission. Enrollment is restricted to senior art and design: games and playable media majors.

ARTG 176 - Game Design Collaborative (2)

Supports students who are collaborating with the ARTG/CMPM 170-series teams on the creation of their capstone game projects. Enrollment is restricted to students who are working with senior game-design project groups, and by permission of the instructor,

ARTG 180 - Personal Narrative in Play (5)

Explores how storytelling techniques can align with game mechanics to examine and provoke questions of identity and personal narrative. Drawing from games that express personal experience through autobiography, to games that question the relationship and separation between player and character, students develop exploratory prototypes in digital and/or nondigital formats around potential mechanics for personal narrative and expression. Course culminates in a final piece of interactive art as well as designing the exhibit and public documentation for this work.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to seniors majoring in art and design: games and playable media.

ARTG 181 - Portfolio (5)

Explores and presents multiple approaches and methods for documenting, describing and demonstrating a creative practice and a collection of creative work. Students will develop artist-centered narratives, curate and design portfolio materials, and investigate tools, media formats, and platforms useful for communicating an individual creative perspective and body of work. Portfolios and other descriptive materials will also be discussed from an interactive and playable framework, with an emphasis on both individual expression as well as viewer/audience experience.

Prerequisite: Prerequisite(s): Satisfaction of Entry Level Writing and Composition requirements, and completion of ARTG 10, ARTG 20, and one upper-division ARTG course. Seniors majoring in Art & Design: Games + Playable Media may enroll without course prerequisites.

ARTG 199 - Tutorial (5)

Individual study in areas approved by sponsoring instructors. Tutorial may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available on the program website.

ARTG 199F - Tutorial (2)

Individual study in areas approved by sponsoring instructors. Tutorial may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available on the program website.

ASTR - ASTRONOMY AND ASTROPHYSICS

Lower-Division

ASTR 1 - Introduction to the Cosmos (5)

Overview of the main ideas in our current view of the universe and how these ideas originated. Galaxies, quasars, stars, black holes, and planets. Students cannot receive credit for this course after receiving credit for ASTR 2.

ASTR 2 - Overview of the Universe (5)

An overview of the main ideas in our current view of the universe, and how they originated. Galaxies, quasars, stars, pulsars, and planets. Intended primarily for nonscience majors interested in a one-quarter survey of classical and modern astronomy. Students cannot receive credit for for ASTR 1 after receiving credit for ASTR 2.

ASTR 3 - Introductory Astronomy: Planetary Systems (5)

Properties of the solar system and other planetary systems. Topics include the Sun, solar system exploration, the physical nature of the Earth and the other planets, comets and asteroids, the origin of the solar system, the possibility of life on other worlds, planet formation, and the discovery and characterization of planets beyond the solar system. Intended for nonscience majors. ASTR 3, ASTR 4, and ASTR 5 are independent and may be taken separately or sequentially.

ASTR 4 - Introductory Astronomy: The Stars (5)

Stellar evolution: observed properties of stars, internal structure of stars, stages of a star's life including stellar births, white dwarfs, supernovae, pulsars, neutron stars, and black holes. Planet and constellation identification. Intended for nonscience majors. ASTR 3, ASTR 4, and ASTR 5 are independent and may be taken separately or sequentially.

ASTR 5 - Introductory Astronomy: The Formation and Evolution of the Universe (5)

The universe explained. Fundamental concepts of modern cosmology (Big Bang, dark matter, curved space, black holes, star and galaxy formation), the basic physics underlying them, and their scientific development. Intended for non-science majors. ASTR 3, ASTR 4, and ASTR 5 are independent and may be taken separately.

ASTR 6 - The Space-Age Solar System (5)

Scientific study of the Moon, Earth, Mercury, Venus, and Mars by the space program; history of rocket development; the Apollo program and exploration of the Moon; unmanned spacecraft studies of the terrestrial planets; scientific theories of planetary surfaces and atmospheres. Intended for nonscience majors.

ASTR 7 - Black Holes (5)

Examines the nature of black holes, including their creation and evolution; evidence for their existence from astronomical observations; and the role of black holes in the evolution of the universe. Also examines current ideas about the nature of space, time, and gravity.

ASTR 8 - Exploring the Universe with Astronomical Data (5)

Introduces how we use observational data to learn about stars, galaxies, planets, and cosmology. Covers astronomical data and experimental design and basic physics and statistical techniques, such as model fitting, regression, significance tests, and error estimation.

ASTR 9A - Introduction to Research in Physics and Astrophysics (2)

Introduction to research for first-year students interested in physics and astrophysics. Students complete projects in small groups with scientists. Introduces techniques for collaboration; science writing; physics careers. Continuing course spanning two quarters. Enrollment is restricted to first-year proposed astrophysics and physics majors and by permission of the instructor.

ASTR 9B - Introduction to Research in Physics and Astrophysics (3)

Introduction to research for first-year students interested in physics and astrophysics. Students complete projects in small groups with scientists. Introduces techniques for collaboration; science writing; physics careers. Continuing course spanning two quarters. Prerequisite(s): ASTR 9A. Enrollment is restricted to first-year proposed applied physics,

physics, and physics (astrophysics) majors and by permission of the instructor.

ASTR 10 - From the Big Bang to Planet Earth (5)

Broad scientific overview of the universe, from the Big Bang to planet Earth. Origin and content: Big Bang, dark matter, dark energy, galaxies, black holes, star systems, exoplanets. Solar system and properties of Earth in relation to other planets. Physics of planetary atmospheres and impact of human activity on Earth's climate. Possibility of terraforming and of life beyond the solar system. Fate of Earth, the solar system, and the universe. Active learning class with continuous assessment. Intended for non-science majors. No previous college-level math, physics, or astronomy required.

ASTR 12 - Stars and Stellar Evolution (5)

An introduction to the observational facts and physical theory pertaining to stars. Topics include the observed properties of stars and the physics underlying those properties; stellar atmospheres; stellar structure and evolution. Intended for science majors and qualified non-science majors. Knowledge of high school physics and an understanding of mathematics at the MATH 2 level required.

ASTR 13 - Galaxies, Cosmology, and High Energy Astrophysics (5)

Introduction to modern cosmology and extragalactic astronomy. Topics include the origin of the universe, Big Bang cosmology, expansion of the universe, dark matter and dark energy, properties of galaxies and active galactic nuclei, and very energetic phenomena in our own and other galaxies. Intended for science majors and qualified non-science majors. Knowledge of high school physics and an understanding of mathematics at the MATH 2 level required.

ASTR 15 - Dead Stars and Black Holes (5)

Course is primarily concerned with the structure, formation, and astrophysical manifestations of compact objects, such as white dwarfs, neutron stars, and black holes, and the astronomical evidence for their existence. Intended for science majors and qualified non-science majors. Knowledge of high school physics and an understanding of mathematics at the MATH 2 level required.

ASTR 16 - Astrobiology: Life in the Universe (5)

Topics include the detection of extrasolar planets, planet formation, stellar evolution and properties of Mars, the exploration of our solar system and the search for life within it, and the evolution of life on Earth. Intended for science majors and qualified non-science majors. Knowledge of high school physics and an understanding of mathematics at the MATH 2 level required.

ASTR 18 - Planets and Planetary Systems (5)

Our solar system and newly discovered planetary systems. Formation and structure of planets, moons, rings, asteroids, comets. Intended for science majors and qualified non-science majors. Knowledge of high school physics and an understanding of mathematics at the MATH 2 level required.

ASTR 19 - Practical Programming for the Sciences (5)

Introduces how we use computer programming to solve scientific problems. Covers basic Python programming, code repositories, and scientific plotting and graphing. Introduces more advanced techniques through small projects featuring real data from throughout the sciences, with a focus on using programming to evaluate the statistical significance of scientific claims.

ASTR 21 - The Diverse Universe: Stars, Planets, and Galaxies (5)

Introductory course for students pursuing the astrophysics major (or who have a similar physics/math background). Course introduces students to current topics and research in a astronomy and astrophysics, and gives students the background necessary for success in the 100-level Astrophysics laboratory classes (PHYS 135 or ASTR 136). Class focuses on three central types of objects in modern astronomy: stars, planets, and galaxies, building off of our nearest examples, the Sun, solar system planets, and the Milky Way. The class differs from GE classes like ASTR 2 in that a higher level of math and physics experience is assumed.

Prerequisite: Prerequisite(s): PHYS 5A.

Upper-Division

ASTR 111 - Order-of-Magnitude Astrophysics (5)

Examines the most basic and direct connection between physics and astrophysics in order to derive a better understanding of astrophysical phenomena from first principles to the extent possible.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A; PHYS 5B or PHYS 6B; and previous or concurrent enrollment in PHYS 102.

ASTR 112 - Physics of Stars (5)

The leading observational facts about stars as interpreted by current theories of stellar structure and evolution. Spectroscopy, abundances of the elements, nucleosynthesis, stellar atmospheres, stellar populations. Final stages of evolution, including white dwarfs, neutron stars, supernovae.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A, PHYS 5B or PHYS 6B, and PHYS 102.

ASTR 113 - Introduction to Cosmology (5)

Physical examination of our evolving universe: the Big Bang model; simple aspects of general relativity; particle physics in the early universe; production of various background radiations; production of elements; tests of geometry of the universe; dark energy and dark matter; and formation and evolution of galaxies and large-scale structure.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A, PHYS 5B or PHYS 6B, and PHYS 102.

ASTR 117 - High Energy Astrophysics (5)

Theory and practice of space and ground-based x-ray and gamma-ray astronomical detectors. High-energy emission processes, neutron stars, black holes. Observations of x-ray binaries, pulsars, magnetars, clusters, gamma-ray bursts, the x-ray background. High-energy cosmic rays. Neutrino and gravitational-wave astronomy.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A, PHYS 5B or PHYS 6B, and PHYS 102.

ASTR 118 - Physics of Planetary Systems (5)

Determination of the physical properties of the solar system, its individual planets, and extrasolar planetary systems through ground-based and space-based observations, laboratory measurements, and theory. Theories of the origin and evolution of planets and planetary systems.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A; and PHYS 5B or PHYS 6B.

ASTR 119 - Introduction to Scientific Computing (5)

Introduction to solving scientific problems using computers. A series of simple problems from Earth sciences, physics, and astronomy are solved using a user-friendly scientific programming language (Python/SciPy).

Prerequisite: Prerequisite(s): MATH 11A or MATH 19A or MATH 20A or AM 15A.

ASTR 136 - Advanced Astronomy Laboratory (5)

Introduces the techniques of modern observational astrophysics at optical wavelengths through hands-on experiments and use of remote observatories. Students develop the skills and experience to pursue original research. Course is time-intensive and research-oriented.

Prerequisite: Prerequisite(s): ASTR 119 and PHYS 133. Enrollment is restricted to junior and senior astrophysics majors.

ASTR 136A - Advanced Astronomy Lab: Astrometry (2)

Students use the Nickel telescope at Lick Observatory to measure the astrometry, or position, of a solar system body across multiple nights. By measuring the body's motion, students determine its distance from the Earth using parallax. This course is part of the ASTR 136 collection of 2-credit advanced labs. Class meets in person over a three-week period and includes an overnight field trip to Lick Observatory.

Prerequisite: Prerequisite(s): PHYS 133, and one of the following: ASTR 119, ASTR 19, or CSE 20. Enrollment is restricted to senior physics-astrophysics majors, and juniors by permission.

ASTR 136B - Advanced Astronomy Lab: Galaxy Rotation Curves and Dark Matter (2)

Students use the Shane telescope at Lick Observatory to measure the rotation curve of a galaxy. Observations like this provide some of the best evidence for the existence of dark matter, and students evaluate that evidence in their observations. Course is part of the ASTR 136 collection of 2-credit advanced labs. Class meets in person over a three-week period and includes an overnight field trip to Lick Observatory.

Prerequisite: Prerequisite(s): PHYS 133, and one of the following: ASTR 119, ASTR 19, or CSE 20. Enrollment is restricted to senior physics-astrophysics majors, and juniors by permission.

ASTR 136C - Advanced Astronomy Lab: Stellar Photometry (2)

Uses archival data from the Hubble Space Telescope to create a color-magnitude diagram for a star cluster. Examines techniques for measuring and calibrating photometry and estimating the uncertainties on the measurements. Students identify the major features of the color-magnitude diagram, the corresponding stages of stellar evolution and what information can be learned about the age and distance of the cluster. Course is part of the ASTR 136 collection of 2-credit advanced labs and meets over a three-week period. The lab involves all archival data, there is no nighttime observing component.

Prerequisite: Prerequisite(s): PHYS 133, and either ASTR 119 or ASTR 19 or CSE 20. Enrollment is restricted to junior and senior physics (astrophysics) majors or by permission.

ASTR 136D - Advanced Astronomy Lab: Wavefront Measurement (2)

Students use a laboratory optics kit to create an optical system that models a telescope observing an astronomical object, and use a Shack-Hartmann wavefront sensor to measure the difference between aberrated and unaberrated wavefronts. Course is part of the ASTR 136 collection of 2-credit advanced labs. Class meets in person over a three-week period. All data acquisition will be in the laboratory, there is no nighttime observing component to this lab.

Prerequisite: Prerequisite(s): PHYS 133, and one of the following: ASTR 119, ASTR 19, or CSE 20. Enrollment is restricted to senior physics-astrophysics majors, and juniors by permission.

ASTR 136E - Advanced Astronomy Lab: Adaptive Optics (2)

Students use a laboratory optics kit to identify the major components of an adaptive optics system and explain the role of each one. Using a Shack-Hartmann wavefront sensor to examine aberrated and unaberrated wavefronts, students analyze the effect of closing the AO correction loop. Course is part of the ASTR 136 collection of 2-credit advanced labs. Class meets in person over a three-week period. All data acquisition will be in the laboratory, there is no nighttime observing component to this lab.

Prerequisite: Prerequisite(s): PHYS 133, and one of the following: ASTR 119, ASTR 19, or CSE 20. Enrollment is restricted to senior physics-astrophysics majors, and juniors by permission.

ASTR 136G - Advanced Astronomy Lab: Detectors (2)

Students use laboratory data to measure and calibrate data from a charged coupled device (CCD) detector in an imaging camera, characterize the detector dark current, the camera system flatfield response, and the readnoise. Students evaluate the impact of these detector parameters on the signal to noise of the measurement of flux from a point source and use them to make predictions for data quality. Course is part of the ASTR 136 collection of 2-credit advanced labs. Class meets in person over a three-week period. All data acquisition will be in the laboratory, there is no nighttime observing component to this lab.

Prerequisite: Prerequisite(s): PHYS 133, and one of the following: ASTR 119, ASTR 19, or CSE 20. Enrollment is restricted to senior physics-astrophysics majors, and juniors by permission.

ASTR 136H - Advanced Astronomy Lab: Fourier Optics (2)

Students use a laboratory optics kit investigate concepts of Fourier optics, investigate several Fourier filters, propose Fourier filters to implement specific output effects, and verify the results. Course is part of the ASTR 136 collection of 2-credit advanced labs. Class meets in person over a three-week period. All data acquisition will be in the laboratory, there is no nighttime observing component to this lab.

Prerequisite: Prerequisite(s): PHYS 133, and one of the following: ASTR 119, ASTR 19, or CSE 20. Enrollment is restricted to senior physics-astrophysics majors, and juniors by permission.

ASTR 192 - Dir Stu Teach (5)

Dir Stu Teach

ASTR 199 - Tutorial (5)

Graduate

ASTR 202 - Astrophysics I (5)

Survey of radiative processes of astrophysical importance from radio waves to gamma rays. The interaction of radiation with matter: radiative transfer, emission, and absorption. Thermal and non-thermal processes, including bremsstrahlung, synchrotron radiation, and Compton scattering. Radiation in plasmas. Enrollment is by permission of the instructor.

Prerequisite: Enrollment is restricted to graduate students.

ASTR 204 - Astrophysics II (5)

Explores how physical conditions in astrophysical objects can be diagnosed from their spectra. Discussion topics include how energy flows determine the thermal state of radiating objects and how the physics of radiative transfer can explain the emergent spectral characteristics of stars, accretion disks, Lyman-alpha clouds, and microwave background. (Formerly Astrophysical Flows.)

Prerequisite: Enrollment is restricted to graduate students.

ASTR 205 - Introduction to Astronomical Research and Teaching (5)

Lectures and seminar-style course intended to integrate new graduate students into the department; to introduce students to the research and interests of department faculty; and to expose graduate students to teaching skills and classroom techniques. (Formerly Introduction to Astronomical Research.)

Prerequisite: Enrollment is restricted to graduate students.

ASTR 206 - Introduction to Research Mentoring (5)

For graduate students interested in mentoring undergraduate students through research. Graduate students design an original research project and lead a small group of undergraduates through it while learning how to adapt the project to the dynamic needs and skills of their students. This course creates a structured but realistic framework for graduate students to develop their mentoring skills, which is critical to their professional development. By needing to communicate the important aspects of conducting research, communicating results, and maintaining research integrity, students cultivate and strengthen their own values as a researcher. This is a continuing class that spans both winter and spring quarters, for a total of 10 credits. Because research projects will span both quarters, students must enroll in both quarters. Enrollment is restricted to graduate students and is by permission of the instructor.

ASTR 214 - Special Topics in Galactic and Extragalactic Astronomy (5)

Survey of some principal areas of research on the origin and growth of cosmic structures and galaxies: the dark ages; 21cm tomography; first galaxies; first stars and seed black holes; reionization and chemical enrichment of the intergalactic medium; the assembly of massive galaxies; quasi-stellar sources; interactions of massive black holes with their environment; extragalactic background radiation; numerical simulations and the nature of the dark matter; the dark halo of the Milky Way.

Prerequisite: Enrollment is restricted to graduate students.

ASTR 215 - Research Practicum for Astrophysics (5)

Introduces graduate students to practical and efficient research methodology. Covers best practices in coding and code development, documentation of research, project management, preprint and journal article writing and submission, professional presentation preparation, and grant writing. Introduces more advanced techniques through experiential learning research projects developed in collaboration with the instructor. Prerequisite(s): ASTR 202, ASTR 204, ASTR 205, and ASTR 257. Students must take ASTR 215 from an instructor outside their Ph.D. specialty, and requires permission of the instructor to enroll.

ASTR 220A - Stars and Planets I (5)

Survey of stellar structure and evolution.Physical properties of stellar material. Convective and radiative energy transport. Stellar models and evolutionary tracks through all phases.

Brown dwarfs and giant planets. Comparison with observations. (Formerly Stellar Structure and Evolution.)

Prerequisite: Enrollment is restricted to graduate students.

ASTR 222 - Stars and Planets II (5)

Theory and observations of protoplanetary disks. Origin and evolution of the solar nebula. Formation and evolution of the terrestrial planets and the giant planets. (Formerly Planetary Formation and Evolution.)

Prerequisite: Enrollment is restricted to graduate students.

ASTR 225 - High-Energy Astrophysics (5)

High-energy astrophysics and the final stages of stellar evolution: supernovae, binary stars, accretion disks, pulsars; extragalactic radio sources; active galactic nuclei; black holes. (Formerly *Physics of Compact Objects*)

ASTR 230 - Diffuse Matter in Space (5)

Fundamental physical theory of gaseous nebulae and the interstellar medium. Ionization, thermal balance, theory and observation of emission spectra. Interstellar absorption lines, extinction by interstellar dust. Ultraviolet, optical, infrared, and radio spectra of gaseous nebulae.

ASTR 233 - Galaxies and Cosmology I (5)

Advanced survey of topics in cosmology and galaxy formation. Appropriate for graduate students and undergraduates with a significant background in physics and astronomy. Topics include modern physical cosmology, curved space-times, observational tests of cosmology, the early universe, dark matter, the emergence of cosmic structure and the formation and evolution of galaxies. Enrollment is by permission of the instructor.

ASTR 234 - Statistical Techniques in Astronomy (5)

Introduces probability and statistics in data analysis with emphasis on astronomical applications. Topics include probability, Bayes' theorem, statistics, error analysis, correlation, hypothesis testing, parameter estimation, surveys, time-series analysis, surface distributions, and image processing. Students learn to identify the appropriate statistical technique to apply to an astronomical problem and develop a portfolio of analytic and computational techniques that they can apply to their own research.

Prerequisite: Enrollment is restricted to graduate students.

ASTR 240A - Galaxies and Cosmology II (5)

Structure and evolutionary histories of nearby galaxies. Stellar populations, galactic dynamics, dark matter, galactic structure and mass distributions. Peculiar galaxies and starbursting galaxies. Structure and content of the Milky Way. Evolution of density perturbations in the early universe. Hierarchical clustering model for galaxy formation and evolution. (Formerly Galactic and Extragalactic Stellar Systems.)

ASTR 257 - Observational Astronomy (5)

Introduction to observational astronomy, with a multi-day field trip to Lick Observatory. Students learn the fundamentals of: (1) planning and executing observational projects; (2) manipulating and interpreting raw astronomical data with standard tools and algorithms; (3) presenting their observations in a standard written format that is appropriate for publication; and (4) observatory operations and career-paths. Enrollment is restricted to astronomy graduate students. Non-astronomy graduate students may petition the instructor for enrollment approval.

Prerequisite: Designed for graduate students; available to qualified undergraduate astrophysics majors by instructor permission.

ASTR 260 - Instrumentation for Astronomy (5)

An introduction to astronomical instrumentation for infrared and visible wavelengths. Topics include instrument requirements imposed by dust, atmosphere, and telescope; optical, mechanical, and structural design principles and components; electronic and software instrument control. Imaging cameras and spectrographs are described. Offered in alternate academic years.

Prerequisite: Enrollment is restricted to graduate students.

ASTR 289 - Adaptive Optics and Its Application (5)

Introduction to adaptive optics and its astronomical applications. Topics include effects of atmospheric turbulence on astronomical images, basic principles of feedback control, wavefront sensors and correctors, laser guide stars, how to analyze and optimize performance of adaptive optics systems, and techniques for utilizing current and future systems for astronomical observations.

Prerequisite: Enrollment is restricted to graduate students.

ASTR 292 - Seminar (0)

Seminar attended by faculty, graduate students, and upper-division undergraduate students.

ASTR 293 - Current Literature in Astrophysics (2)

Training for following daily progress in astrophysical research to keep pace with the rapidly evolving scientific field. Students learn how to select and read interesting papers (that span a wide range of topics) efficiently and how to summarize their key results. Students have an opportunity to practice presentation skills in an informal group discussion setting.

Prerequisite: Enrollment is restricted to graduatestudents.

ASTR 294 - Pedagogy of Astrophysical Research (5)

Teaches fundamental skills for scientific research in the context of coursework. Course has two branches: an instructor-intensive hands-on research training in an area beyond the thesis; and an instructor-led literature review. The research branch involves short, quarter-long projects with

faculty that are designed to introduce skills and concepts broadly applicable to research but within a focused science domain. The literature branch involves short review projects for building expertise in evaluating literature, writing papers, refereeing articles, and reviewing grants and proposals.

Prerequisite: Enrollment is restricted to astronomy and astrophysics graduate students.

ASTR 297A - Independent Study (5)

Independent study or research for graduate students who have not yet begun work on their theses. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

ASTR 297B - Independent Study (10)

Independent study or research for graduate students who have not yet begun work on their theses. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

ASTR 297C - Independent Study (15)

Independent study or research for graduate students who have not yet begun work on their theses. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

ASTR 297D - Independent Study (2)

Independent study or research for graduate students who have not yet begun work on their theses. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

ASTR 299A - Thesis Research (5)

ASTR 299B - Thesis Research (10)

ASTR 299C - Thesis Research (15)

BIOC - BIOCHEMISTRY AND MOLECULAR BIOLOGY

Upper-Division

BIOC 100A - Biochemistry and Molecular Biology (5)

Fundamentals of molecular biology, structure and function of nucleic acids, and protein structure. Designed for students preparing for research careers in biochemistry and molecular biology.

Prerequisite: Prerequisite(s): CHEM 8B; and BIOL 20A. Enrollment is restricted to chemistry, biochemistry, and biomolecular engineering and bioinformatics majors, chemistry minors, and proposed chemistry, biochemistry, and biomolecular engineering majors.

BIOC 100B - Biochemistry and Molecular Biology (5)

Covers principles of protein function from ligand binding and enzyme mechanism, kinetics and regulation to membrane composition and membrane protein function. Lecture: 3-1/2 hours; discussion: 1-1/4 hours.

Prerequisite: Prerequisite(s): BIOC 100A.

BIOC 100C - Biochemistry and Molecular Biology (5)

Biochemistry: intermediary metabolism and bioenergetics. How enzymatically catalyzed reactions are organized and regulated; how energy from molecules is extracted for chemical work. Lecture: 3-1/2 hours; discussion: 1-1/4 hours. (Formerly Biochemistry .)

Prerequisite: Prerequisite(s): BIOC 100B.

BIOC 110L - Advanced Biochemistry Laboratory (5)

An introduction to the major techniques used in the isolation and characterization of biological components. Laboratory: 8 hours; lecture: 1-3/4 hours. Students are billed a materials fee of $350.

Prerequisite: Prerequisite(s): BIOC 100B and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to chemistry majors in the biochemistry concentration. Other majors by permission.

BIOC 163A - Quantum Mechanics, Spectroscopy and Molecular Structure for Biochemistry and Molecular Biology (5)

Detailed introduction to molecular quantum mechanics and application of spectroscopic and diffraction techniques to problems involving biological macromolecules. Designed as an alternative to CHEM 163A for the biochemistry and molecular biology major requirement. Students cannot receive credit for this course and CHEM 163A.

Prerequisite: Prerequisite(s): CHEM 1B and CHEM 1C, or CHEM 3C, or CHEM 4B; and PHYS 5A and 5C, or PHYS 6A and 6C; and previous or concurrent enrollment in PHYS 5B or PHYS 6B.

BIOC 163B - Biochemical Thermodynamics and Statistical Mechanics for Biochemistry and Molecular Biology (5)

Detailed introduction to the fundamentals of classical and statistical thermodynamics and applications to problems involving biochemical equilibria, macromolecular structure and function. Course is designed as an alternative to CHEM 163B for partial fulfillment of the biochemistry and molecular biology major physical chemistry requirement. Students cannot receive credit for this course and CHEM 163B.

Prerequisite: Prerequisite(s): CHEM 1B and CHEM 1C, or CHEM 3C, or CHEM 4B; PHYS 6A or PHYS 5A; and previous or concurrent enrollment in BIOC 100A. .

BIOE - BIOLOGY ECOLOGY AND EVOLUTIONARY

Lower-Division

BIOE 16 - Introduction to Horticulture (2)

Surveys the production of indoor crops and landscape plants to gain a working knowledge of how light, temperature, water, fertilizers, and soilless media interact in a controlled environment. Also covers pest management and propagation.

Lectures and demonstrations are combined with activities in the UCSC Greenhouses and at the UCSC Arboretum to give students direct experience with horticulture practices and principles in controlled environments. The approach is to develop practical skills and familiarity with agricultural technology while mastering basic principles in plant biology. Emphasis is placed on indoor growth systems.

BIOE 19 - Biodiversity in the Age of Humans (5)

How can we better understand how humans have affected Earth and its inhabitants? Explores how DNA shed by organisms into the environment can be collected and used to study Earth's biodiversity, with applications in medicine, anthropology, agriculture, and conservation.

Prerequisite: Enrollment is restricted to first-year students, sophomores, and juniors.

BIOE 20B - Development and Physiology (5)

Topics in morphology, physiology, development, genetics, and endocrinology selected to exemplify current issues and perspectives in organismic biology.

Prerequisite: Prerequisite(s): BIOL 20A.

BIOE 20C - Ecology and Evolution (5)

Introduction to ecology and evolution covering principles of evolution at the molecular, organismal, and population levels. Evolutionary topics include genetic and phenotypic variation, natural selection, adaptation, speciation, and macroevolution. Also covers behavioral, population, and community ecology including applied ecological issues.

BIOE 20F - Field Biology in Practice (2)

Field-based, experiential course that explores local ecosystems, helps students develop nature observation skills and lead collaborative research, from formulating and testing hypotheses to sampling, data collection, analysis, interpretation, and presentation. The course builds peer and mentor networks and introduces a range of topics in ecology, conservation, and natural resource management. Some offerings include required weekend and/or overnight field trips. There are no course fees, and camping equipment is available if needed. Enrollment is by instructor permission.

BIOE 75 - Scientific Diving Methods (3)

Focuses on refining fundamental dive safety principles while introducing techniques in scientific diving. Coursework includes lectures, field practical training, confined water and ocean SCUBA dives. Topics include diving physics, physiology, decompression theory, dive planning, aquatic environment, navigation, search and recovery, blue water diving, emergency response/rescues, and subtidal sampling techniques. Course meets or exceeds AAUS standards and provides students an opportunity to become certified in scientific diving. Prerequisite for BIOE 161/L, and any SCUBA diving activities associated with BIOE 159A,B,C,D,E,F; BIOE 183/L; BIOE 193; and BIOE 195. AAUS Scientific Diving certification is required for all research SCUBA diving activities under the auspices of UCSC and is transferable to other academic institutions. Prerequisite(s): skill level equal to Advanced and Rescue Scuba Diver Certification, current AAUS/UCSC diving medical clearance, certifications in CPR/AED, First Aid and Oxygen Administration and minimum of 12 documented ocean dives; and interview: pass water skills evaluation. For details visit scientificdiving.ucsc.edu/course-info. Students are billed a materials fee of $100. (Formerly Scientific Diving Certification.)

BIOE 80S - Lies, Damn Lies, and Statistics (5)

Probability and statistics underlie much of our everyday experience and, as such, there is a fundamental need for an understanding of the use, and misuse, of statistics. This course is taught through case studies based in biology, politics, economics, crime, education, disease, conservation, and other fields of interest. For example, does a change in crime rate really affect your probability of being a victim of a crime? The goal is to provide all students with sufficient understanding probability and statistics to determine if everyday and often sensationalistic reporting of statistical results is meaningful.

BIOE 82 - Introduction to Field Research and Conservation (2)

A field-based course with overnight and day trips to regionally diverse areas throughout Central California. Field trips and lectures familiarize students with a wide variety of topics in the ecological, conservation, and environmental science as well as natural-resource management. Students are billed a materials fee of $100. Enrollment is by instructor permission.

BIOE 85 - Natural History of the UCSC Natural Reserves (5)

Lectures and field trips familiarize students with the flora and fauna of the UCSC Natural Reserves. Field trips focus on surveying and identifying vertebrates and plants at each UCSC Natural Reserve (Fort Ord, Campus Reserve, Big Creek, Younger Lagoon, and Ano Nuevo).

BIOE 95 - Seymour Center Docent Training (2)

Taught as a series of seminars, course provides a survey of marine sciences and the role of scientific research in understanding and conserving the world's oceans. Topics include: marine biology, ecology, conservation, coastal geology, and climate change. This series is intended to prepare students to interpret research and inform the public by leading tours at the Seymour Marine Discovery Center at the Long Marine Lab. Enrollment is by application and interview.

BIOE 99 - Tutorial (5)

Individual, directed study for undergraduates. Students submit petition to sponsoring agency.

Upper-Division

BIOE 106 - Principles of Genetics for EEB (5)

Provides students with a broad genetics background. Topics range from understanding the flow of genetic information within single-celled organisms to how genes and gene

products function within multicellular organisms. Students learn how genotype shapes phenotype and its role in evolution and ecology.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C. Enrollment is restricted to sophomores, juniors and seniors.

BIOE 107 - Ecology (5)

Focuses on physiological, behavioral, and population ecology, and on linking ecological processes to evolution. It includes basic principles, experimental approaches, concepts of modeling, and applications to ecological problems.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; BIOL 20A, BIOE 20B, and BIOE 20C.

BIOE 108 - Marine Ecology (5)

Paradigms and designs in marine ecology. A review of the paradigms that have shaped our understanding of marine ecology; analysis and discussion of experiments with these paradigms. Students cannot receive credit for this course and BIOE 208.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; BIOL 20A, BIOE 20B, and BIOE 20C; BIOE 107 or BIOE 140 recommended. Enrollment is restricted to juniors and seniors.

BIOE 109 - Evolution (5)

An examination of the history and mechanisms of evolutionary change. Topics include molecular evolution, natural and sexual selection, adaptation, speciation, biogeography, and macroevolution.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C, and BIOE 106 or BIOL 105.

BIOE 112 - Ornithology (5)

Introduction to the evolution, ecology, behavior, and natural history of birds, using exemplary case histories to illustrate key concepts in evolution, ecology, and behavior.

Prerequisite: Prerequisite(s): BIOE 107, BIOE 109, or BIOE 140. Concurrent enrollment in BIOE 112L is required.

BIOE 112L - Ornithology Field Studies (2)

Field trips introduce students to field identification skills and field investigation of census, foraging behavior, migration, social behavior, and communication. Examination of specimens in the laboratory will be used to highlight the diversity and taxonomy of birds. Some field trips may require students to provide their own transportation.

Prerequisite: Prerequisite(s): BIOE 107, BIOE 109, or BIOE 140. Concurrent enrollment in BIOE 112 is required.

BIOE 114 - Herpetology (5)

Lectures introduce students to evolution, development, physiology, behavior, ecology, and life history of reptiles and amphibians. The materials integrate with conceptual and theoretical issues of ecology, evolution, physiology, and behavior.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; BIOE 107, BIOE 109, BIOE 110, or BIOE 140. Concurrent enrollment in BIOE 114L is required.

BIOE 114L - Field Methods in Herpetological Research (2)

Field trips introduce students to natural history, censusing techniques, physiological ecology, and behavioral analysis of reptiles and amphibians. Laboratories introduce students to techniques for analyzing behavior and physiology. Field studies culminate with a group project in a natural setting. Some field trips may be held on weekends due to weather considerations. Some field trips may require students to provide their own transportation, some transportation will be provided by UCSC. Students are billed a materials fee of $120.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; BIOE 107, BIOE 109, BIOE 110, or BIOE 140. Concurrent enrollment in BIOE 114 is required.

BIOE 117 - Systematic Botany of Flowering Plants (5)

An examination of the taxonomy and evolution of flowering plants. Special topics include phylogenetics and cladistics, plant species concepts, and modern methods of systematic research.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Must be taken concurrently with BIOE 117L.

BIOE 117L - Systematic Botany of Flowering Plants Laboratory (2)

Weekly laboratory concerned primarily with California flora and plant families. Several field trips.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C. Must be taken concurrently with BIOE 117.

BIOE 118 - Plants and Society: the Biology of Food, Shelter, and Medicine (5)

Introduces plant biology as it affects human society. Topics include the origins of agriculture, the morphology and chemistry of food plants, the material uses of plant products, the biology of medicinal plants, and plant diversity and bioprospecting.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C; or ENVS 23 and ENVS 24.

BIOE 120 - Marine Botany (5)

An introduction to the biology of marine algae, fungi, and angiosperms with regard to form and function. Major boreal, temperate, and tropical marine plant communities. Lecture format.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Must be taken concurrently with BIOE 120L.

BIOE 120L - Marine Botany Laboratory (2)

One laboratory weekly and several field trips. Focuses on marine algae, fungi, and angiosperms.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Must be taken concurrently with BIOE 120.

BIOE 121 - Plants, Earth, Climate (5)

Explores how biotic and abiotic factors shaped the Earth’s biosphere and how climate change will challenge the resilience of plant life on the planet. By the end of the course, students will better understand the broader implications of plant function on the health of the planet. Topics include core plant physiological processes and how they feed into climate feedback loops, photosynthesis and the formation of the atmosphere, plants and the paleoclimate, plant adaptations and resilience, climate change mitigation through plants, and more.

BIOE 122 - Invertebrate Zoology (5)

An examination of invertebrates and their habitats. Lecture format.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C and satisfaction of the Entry Level Writing and Composition requirements. Must be taken concurrently with BIOE 122L.

BIOE 122L - Invertebrate Zoology Laboratory (2)

An examination of invertebrates and their habitats. Weekly laboratories or field trips.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Must be taken concurrently with BIOE 122.

BIOE 124 - Mammalogy (5)

Introduces the biology of mammals, including their classification, evolution, behavior, reproductive strategies, and general ecology. Examines the diagnostic traits of mammals; provides a survey of the living orders along with their diagnostic features, physiological and behavioral specializations, and adaptations.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C. Concurrent enrollment in BIOE 124L is required.

BIOE 124L - Mammalogy Laboratory (2)

Focuses on the identification of mammals and their specific traits. Exercises provide hands-on experience at identifying mammal orders, families, and species. Field trip provides students with field techniques in mammalogy.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C. Concurrent enrollment in BIOE 124 is required.

BIOE 125 - Ecosystems of California (5)

A survey of the diversity, structure, and functioning of California's ecosystems through time and the ways they have influenced and responded to human activities and stewardship. Topics include: ecosystem drivers such as climate, soils, and land-use history; human and ecological prehistory; comparative marine, freshwater, and terrestrial ecosystem dynamics; and managed ecosystems such as range, fisheries, and agriculture.

Prerequisite: Prerequisite(s): BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to ecology and evolution, marine biology, plant sciences, and biology B.A. majors.

BIOE 126 - Biology of Large Marine Vertebrates (5)

Broad overview of the ecology, evolution, physiology, and behavior of marine mammals, birds, and turtles, with an emphasis on local Monterey Bay species.

Prerequisite: Prerequisite(s): BIOE 20B and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements.

BIOE 127 - Ichthyology (5)

An introduction to the biology of jawless, cartilaginous, and bony fishes--their classification, evolution, form, physiology, and ecology.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Must be taken concurrently with BIOE 127L.

BIOE 127L - Ichthyology Laboratory (2)

One laboratory session a week and several field trips to study the biology of fish.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Must be taken concurrently with BIOE 127.

BIOE 128L - Large Marine Vertebrates Field Course (7)

Lectures combined on fieldwork with large marine vertebrates in the laboratory and lectures with large marine vertebrates in the field (Monterey Bay, Ano Nuevo). Fieldwork familiarizes students with research methods, study design, and statistical approaches for research on large marine vertebrates (seals, birds, fish, and sharks). Research includes: animal tracking; physiology; behavior; foraging ecology; and energetics. Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements.

BIOE 129 - Biology of Marine Mammals (5)

A survey of cetaceans, pinnipeds, sirenians, and sea otters, including natural history, systematics, physiology, behavior, anatomy, and conservation.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C; and satisfaction of the Entry Level Writing and Composition requirements. BIOL 110 is recommended.

BIOE 129L - Biology of Marine Mammals Laboratory (2)

Covers the basics of marine mammal taxonomy, anatomy, and field methods with an emphasis on local field identification and understanding of local species. Will include field trips to Long Marine Lab, Ano Nuevo, and Monterey Bay.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C. Must be taken concurrently with BIOE 129.

BIOE 131 - Animal Physiology (5)

Principles and concepts underlying the function of tissues and organ systems in animals with emphasis on vertebrate systems. Students cannot receive credit for this course and BIOL 130.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C.

BIOE 131L - Animal Physiology Laboratory (2)

Experiments conducted with primary focus on quantitative physiological principles of organ systems and intact organisms. Students cannot receive credit for this course and BIOL 130L.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C. Concurrent enrollment in BIOE 131 is required.

BIOE 133 - Exercise Physiology (5)

An advanced-level course concerning physiological and biochemical processes associated with human performance. Emphasis is on the integration of organ systems for exercise. Topics include metabolism and fuel utilization, cardiovascular and respiratory dynamics during activity, and the effects of training. Requires a good understanding of basic physiological function and anatomy.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B and BIOE 20C. BIOE 131 is recommended. Concurrent enrollment in BIOE 133L is required.

BIOE 133L - Exercise Physiology Laboratory (2)

An introduction to basic measurement techniques used in assessing the physiological response of humans to exercise. Sessions cover oxygen consumption, respiratory rate, and heart rate monitoring during aerobic and anaerobic activity.

Prerequisite: Prerequisite(s): BIOL 20A, and BIOE 20B and BIOE 20C. BIOE 131 is recommended. Concurrent enrollment in BIOE 133 is required.

BIOE 134 - Comparative Vertebrate Anatomy (5)

Course focuses on vertebrate form and function: an integration of physiology and biomechanics. Topics include: the physiology and biomechanics underlying vertebrate locomotion; vertebrate feeding; and the morphological changes associated with different locomotion and feeding strategies through evolutionary time.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C. Concurrent enrollment in BIOE 134L is required.

BIOE 134L - Comparative Vertebrate Anatomy Laboratory (2)

Course focuses on the gross dissections all major clades of vertebrates: development, form, and diversity of organ systems and basic principles of evolution; vertebrate classification; and functional morphology, with emphasis on feeding and locomotion. Anatomical dissections integrated with the associated lecture material focusing on biomechanics, form, and function.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C. Concurrent enrollment in BIOE 134 is required.

BIOE 135 - Plant Physiology (5)

Cellular and organismal functions important in the life of green plants.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C; concurrent enrollment in BIOE 135L is required.

BIOE 135L - Plant Physiology Laboratory (2)

Weekly laboratory concerning the cellular and organismal functions of green plants.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C; concurrent enrollment in BIOE 135.

BIOE 136 - Environmental Physiology (5)

Explores how an organism's physiology interacts with its environment including molecular to whole organism-level processes. How do animals thrive in the most diverse regions of Earth and why are some more vulnerable to change than others?

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B and BIOE 20C.

BIOE 137 - Molecular Ecology (5)

This combination lecture/laboratory course explores the use of molecular (DNA and/or protein) data in ecological and conservation research. Topics covered include data collection; marker choice; estimating genetic diversity and population structure; the inference of mating systems; and environmental genomics.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C, and BIOE 106 or BIOL105, and satisfaction of the Entry Level Writing and Composition requirements. Concurrent enrollment in BIOE 137L is required.

BIOE 137L - Molecular Ecology Laboratory (2)

This combination lecture/laboratory course explores the use of molecular (DNA and/or protein) data in ecological and conservation research. Topics covered include data collection; marker choice; estimating genetic diversity and population structure; the inference of mating systems; and environmental genomics. Students are billed a materials fee of $110.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C, and BIOE 106 or BIOL 105. Concurrent enrollment in BIOE 137 is required.

BIOE 138 - Modeling Evolution and Ecology (5)

Introduces students to how mathematical models can be used to ask and answer evolutionary and ecological questions. Methods covered include optimality theory, population genetics, population dynamic models, game theory, and dynamic state-variable models. Students learn to develop their own mathematical models and to use models to make predictions. Statistical methods for combining theory and data are not covered. Class focuses on learning by doing, using in-class activities, weekly problem sets and an independent project. Students cannot receive credit for this course and BIOE 238. Prerequisite(s): BIOE 107, BIOE 109 and by permission of the instructor. (Formerly BIOE 148B, Quantitative Methods in Ecology and Evolution.)

BIOE 139 - Mathematical Modeling and Data Science in Ecology and Evolution (5)

Teaches students how to build mathematical models and fit them to data to answer questions in ecology and evolution. Includes learning to write code in the R programming language to simulate models and perform statistical analyses. Topics include population and evolutionary dynamics, species interactions, and behavior. Students cannot receive credit for this course and BIOE 239. Prerequisite(s): BIOE 107, BIOE 109, and permission of instructor. (Formerly offered as BIOE 148A Quantitative Ecology.)

BIOE 140 - Behavioral Ecology (5)

An introduction to social and reproductive behavior. Emphasis on studies of vertebrates in their natural habitat. Ideas concerning the evolution of social behavior, mating systems, and individual reproductive strategies. Case histories of well-studied animals that illustrate key principles in courtship and mating, parental behavior, and food-getting behavior.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C.

BIOE 141L - Behavioral Ecology Field Course (7)

A field-based course introducing students to concepts and methods for studying behavioral ecology in nature. Students will conduct observations and field experiments on various local model organisms including elephant seals, hummingbirds, sparrows, lizards, ants, bees, frogs, and salamanders.

Prerequisite: Prerequisite(s): BIOE 107 or BIOE 140 or BIOE 110; and satisfaction of the Entry Level Writing and Composition requirements.

BIOE 142L - Animal Behavior in the Wild (A Virtual Field Course) (5)

Online laboratory course with a remote (not in-person), virtual field component.Students learn about the scientific study of animal behavior from an ecological and evolutionary perspective through lectures, behavior videos, assignments, field observations, digital labs and final research project. The general goal, however, is to develop the ability to observe the natural world, design research, collect and interpret data, and communicate ideas.

Prerequisite: Prerequisites: BIOL 20A, BIOE 20B, and BIOE 20C. Students may benefit from taking BIOE 142L after or concurrently with BIOE 107 or BIOE 140.

BIOE 145 - Plant Ecology (5)

An exploration of the ecology of plant form, function, distribution, abundance, and diversity. Topics include plant adaptation to environmental conditions, reproductive ecology, life history, population dynamics, competition, herbivory, disease, community assembly, ecosystem responses to global change, plant conservation, and restoration. Lecture with discussions of original papers and independent field projects. Students cannot receive credit for this course and BIOE 245.

Prerequisite: Prerequisite(s): Either [BIOL 20A, BIOE 20B, and BIOE 20C], or ENVS 100; and satisfaction of the Entry Level Writing and Composition requirements. BIOE 107 is recommended. Enrollment is restricted to Ecology and Evolution, Plant Sciences, and ENVS majors during first pass enrollment.

BIOE 145L - Field Methods in Plant Ecology (5)

Hands-on exploration of the concepts and techniques of plant ecology. A combination of lab, greenhouse, and field-based exercises (irrespective of weather conditions). Statistical analysis and scientific writing. One required weekend field trip. Students cannot receive credit for this course and BIOE 245L.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Concurrent enrollment in BIOE 145 is required. BIOE 107 is recommended.

BIOE 146 - Acoustic Ecology (5)

Survey of the way sound is used by various taxa (mammals, birds, amphibians) across different environmental landscapes. Through a combination of lectures, group discussions, and hands-on activities (i.e., experiential learning), students learn about the physics of sound in both air and water, the physiology of sound production (including mechanisms and drivers), the role of the physical environment in signal design, hearing and masking, and the use of acoustic signals during different life-history events in a variety of animals from beetles to blue whales. Students learn about how humans impact natural soundscapes, and how animals are affected and

respond to anthropogenic noise in the air and under the water's surface.

Prerequisite: Prerequisite(s): BIOL 20A, and BIOE 20B, and BIOE 20C. PHYS 6A/PHYS 6L or PHYS 7A/PHYS 6L or PHYS 1 recommended.

BIOE 147 - Community Ecology (5)

Develops the major themes of community biology: structure, trophic dynamics, succession, complex interactions among species, herbivory, evolution and coevolution. Uses case histories of well-studied marine and terrestrial systems. Students cannot receive credit for this course and BIOE 247.

Prerequisite: Prerequisite(s): BIOE 107, BIOE 108, BIOE 145, BIOE 155 or BIOE 159A; or ENVS 24 by permission of instructor.

BIOE 149 - Disease Ecology (5)

Focuses on the ecological and evolutionary processes that drive the transmission of pathogens between hosts; the impact of disease on host populations; and what causes the emergence of an infectious disease. Includes theoretical framework, description of field techniques, and discussion of wildlife and human diseases including malaria, West Nile virus, Lyme disease, HIV, avian influenza (bird flu), Chikungunya, tuberculosis, chytridiomycosis, and Ebola.

Prerequisite: Prerequisite(s): BIOL 20A, and BIOE 20B and BIOE 20C and BIOE 107.

BIOE 150 - Ecological Field Methods (5)

Lectures and laboratory computer exercises designed to familiarize students with research methods, study design, statistical approaches, and analysis tools for ecological research. Students cannot receive credit for this course and ENVS 104A.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Concurrent enrollment in BIOE 150L is required. BIOE 107, BIOE 108, BIOE 140, or BIOE 147 recommended.

BIOE 150L - Ecological Field Methods Laboratory (5)

Field-oriented course in the study of animal ecology and behavior. Combines overview of methodologies and approaches to field research with practical field studies.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C, and satisfaction of the Entry Level Writing and Composition requirements. Concurrent enrollment in BIOE 150 is required. BIOE 107, BIOE 108, BIOE 140, or BIOE 147 recommended.

BIOE 151A - Ecology and Conservation in Practice Supercourse: Ecological Field Methods (5)

An intensive, on-site learning experience in terrestrial field ecology and conservation, using the University of California Natural Reserves and other natural areas. Students study advance concepts in ecology, conservation, and field methods for four weeks, then experience total immersion in field research at the UC Natural Reserves and other natural areas. Lectures, field experiments, writing assignments, and computer exercises familiarize students with research methods, study design, statistical approaches, and analytical tools for ecological research. Students complete and communicate the results of short field projects in ecology, learn the natural history of the flora and fauna of California, and plan and execute a significant, independent field-research study at the end of the quarter. Enrollment is by application. Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C or ENVS 23, ENVS 24; and STAT 7 STAT 7L (formerly AMS 7 AMS 7L). Concurrent enrollment in BIOE 151B-BIOE 151C-BIOE 151D is required. Satisfies the senior exit requirement for biological sciences majors and satisfies the senior exit requirement for environmental studies majors by prior approval. Students cannot receive credit for this course and BIOE 150, BIOE 150L, ENVS 104A or ENVS 196A.

BIOE 151B - Ecology and Conservation in Practice Supercourse: Ecological Field Methods Laboratory (5)

Field-oriented course in ecological research. Combines overview of methodologies and approaches to field research with practical field studies. Students complete field projects in ecology and also learn the natural history of the flora and fauna of California. Students are billed a materials fee of $1,450. Enrollment is by application. Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C or ENVS 23, ENVS 24; and STAT 7 STAT 7L (formerly AMS 7 & AMS 7L); satisfaction of the Entry Level Writing and Composition requirements. Concurrent enrollment in BIOE 151A-BIOE 151C-BIOE 151D. Satisfies the senior exit requirement for biological sciences majors and satisfies the senior exit requirement for environmental studies majors by prior approval. Students cannot receive credit for this course and BIOE 150, BIOE 150L, ENVS 104A or ENVS 196A.

BIOE 151C - Ecology and Conservation in Practice Supercourse: Functions and Processes of Terrestrial Ecosystems (5)

From lectures and discussion of terrestrial community and ecosystem ecology, students work individually or in small groups to present an idea for a project, review relevant literature, develop a research question/hypothesis, design and perform an experiment, collect and analyze data, and write a report. The instructor evaluates the feasibility of each student's project before it begins. Enrollment is by application. Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C or ENVS 23, ENVS 24; and STAT 7 & STAT 7L. Concurrent enrollment in BIOE 151A-BIOE 151B-BIOE 151D is required. Satisfies the senior exit requirement for biological sciences majors and satisfies the senior exit requirement for environmental studies majors by prior approval. Students cannot receive credit for this course and BIOE 150, BIOE 150L, ENVS 104A or ENVS 196A.

BIOE 151D - Ecology and Conservation in Practice Supercourse: Conservation in Practice (5)

Focuses on current issues in environmental and conservation biology and the emerging field methods used to address them.

From field-oriented lectures about current issues in environmental and conservation biology, students pursue research project as individuals and small groups to develop hands-on experience with field skills in conservation research and resource management. Enrollment is by application. Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C or ENVS 23, ENVS 24; and STAT 7 & STAT 7L (formerly AMS 7 & AMS 7L). Concurrent enrollment in BIOE 151A-B-C is required. Satisfies the senior exit requirement for biological sciences majors and satisfies the senior exit requirement for environmental studies majors by prior approval. Students cannot receive credit for this course and BIOE 150, BIOE 150L, ENVS 104A or ENVS 196A.

BIOE 153A - Introduction to Arctic Ecology (5)

Field-intensive course comprised of weekly classes in preparation for the field component. Focuses on issues relevant to the ecology of arctic regions including arctic ecology, arctic geology and paleontology, and arctic environmental change. Students are charged a materials fee of $2,570. Enrollment is by permission of the instructor. Prerequisite(s): BIOL 20A, and BIOE 20B and BIOE 20C; and concurrent enrollment BIOE 153B and BIOE 153C.

BIOE 153B - Arctic Ecology (5)

Field-intensive course focusing on issues relevant to the ecology of the arctic regions. Explores the changing arctic environment through lectures and hands-on research during an 18-day camping trip transecting the subarctic boreal forest to the high Arctic. Enrollment is by permission of the instructor. Prerequisite(s): BIOL 20A, and BIOE 20B and BIOE 20C; and concurrent enrollment BIOE 153A and BIOE 153C.

BIOE 153C - Disciplinary Communication for Biologists (5)

Writing-intensive course focusing on developing skills in scientific communication with an emphasis on communicating issues relevant to the ecology of arctic regions. Communication products are developed during an 18-day camping trip in the Arctic. Enrollment is by permission of the instructor. Prerequisite(s): BIOL 20A, and BIOE 20B and BIOE 20C; and satisfaction of the Entry Level Writing and Composition requirements; and concurrent enrollment BIOE 153A and BIOE 153B.

BIOE 155 - Freshwater Ecology (5)

Provides an overview of the physical, chemical, and biological processes that characterize inland waters such as lakes, streams, rivers, and wetlands. Also addresses relationships between humans and freshwater, and discusses these challenges in conservation.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C.

BIOE 155L - Freshwater Ecology Laboratory (5)

Field and laboratory study of the ecology of freshwater systems including lakes, streams, and estuaries. Students gain experience sampling and identifying freshwater organisms, designing and analyzing ecological experiments, and writing scientific reports.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C and BIOE 155.

BIOE 157A - Evolution Field Class in Southern Africa (5)

Covers the fundamentals of evolution, including macro-evolution (the science of the evolution of organisms) and micro-evolution (the science of the evolution of populations, within a species). Field observations and field work is an integral part of the class, where demonstrations and examples are shown directly in the field. Students think, write, and report, on projects that will be elaborated and discussed with peers and faculty. Course is delivered in the field, and in person, visiting sites of archaeological importance pertinent to human evolution (caves of Sterkfontein, where hominid remains have been discovered), and national parks (Kruger National Park, Malawi National Park) where we will observe animal interactions, sexual selection, and kin selection. Students write daily journals with observations and reports.

Prerequisite: Prerequisite(s): equivalent of UCSC's BIOL 20A, BIOE 20B, and BIOE 20C; satisfaction of the Entry Level Writing and Composition requirements.

BIOE 157B - Ichthyology Field Class in Southern Africa (7)

Covers the fundamentals of ichthyology (fish biology), including taxonomy and classification, morphology, physiology, zoogeography and fisheries. Field observations and field work is an integral part of the class, where demonstrations and examples are shown directly in the field. Students think, write, and report, on projects that will be elaborated and discussed with peers and faculty. The course is delivered in the field, and in person, including visiting streams and rivers to learn about local fishes and hands-on approaches to studying the science of ichthyology. Research projects are done at Malawi National Park, a site with the greatest diversity of freshwater fishes in the world. Students write daily journals with observations and reports.

Prerequisite: Prerequisite(s): equivalent of UCSC's BIOL 20A, BIOE 20B, and BIOE 20C; satisfaction of the Entry Level Writing and Composition requirements.

BIOE 158L - Field Methods in Marine Ecology (5)

Supervised individual research projects in experimental marine biology. Students carry out a complete research project, including (1) the formation of hypotheses; (2) the design and implementation of experiments; (3) collection, analysis, and interpretation of data; and (4) write-up of an oral presentation.

Prerequisite: Prerequisite(s): BIOE 108; satisfaction of the Entry Level Writing and Composition requirements.

BIOE 159A - Marine Ecology Field Quarter: Marine Ecology with Laboratory (5)

Total immersion in marine ecology for very motivated students. Students develop a research project during first five weeks on campus and then spend five weeks of immersion in directed research without distraction in isolated locations off campus (past locations include the Gulf of California in Mexico and Moorea in French Polynesia). Not available

through University Extension. No other courses may be taken during this quarter. Students must sign a contract agreeing to standards of behavior outlined in the UCSC Rule Book and by the instructors. Students are billed a materials fee of $3500. Paradigms and designs in marine ecology. A review of the paradigms that have shaped our understanding of marine ecology and analysis and discussion of experiments with these paradigms. Students carry out a complete research project, including the formation of hypotheses; the design and implementation of experiments; the collection, analysis, and interpretation of data; and the write-up and oral presentation of results. Admission by interview during previous winter quarter. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D are equivalent to BIOE 127, BIOE 127L, BIOE 108, and BIOE 158L for major requirements. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D must be taken concurrently.

BIOE 159B - Marine Ecology Field Quarter: Ichthyology with Laboratory (5)

An introduction to the biology of jawless, cartilaginous, and bony fishes—their classification, evolution, form, physiology, and ecology. Admission by interview during previous winter quarter. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D are equivalent to BIOE 127, BIOE 127L, BIOE 108, and BIOE 158L for major requirements. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D must be taken concurrently.

BIOE 159C - Marine Ecology Field Quarter: Methods in Field Ecology (5)

Students learn quantitative methods for field experiments and surveys. Emphasis will be on marine environments, but there will also be exposure to terrestrial systems. This is the lecture component to BIOE 159D. No text is required for this course; instead, readings from the current literature will be assigned. Students are evaluated on written independent field project proposals and class participation. Admission by interview during previous winter quarter. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D are equivalent to BIOE 127, BIOE 127L, BIOE 108, and BIOE 158L for major requirements. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D must be taken concurrently.

BIOE 159D - Marine Ecology Field Quarter: Methods in Field Ecology Laboratory (5)

This is laboratory portion of BIOE 159C. Students carry out independent field projects under the supervision of course instructors. All work is done during the 5-6 week off-campus portion of BIOE 159. Students are evaluated on field techniques, the final write-up of their independent field projects, and class participation. Admission by interview during previous winter quarter. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D are equivalent to BIOE 127, BIOE 127L, BIOE 108, and BIOE 158L for major requirements. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159D must be taken concurrently.

BIOE 159E - Marine Ecology Field Quarter: Behavioral Ecology (5)

Study of animal behavior from an ecological and evolutionary perspective, using lectures, exercises, discussion, and research experience in the field. Emphasis on marine environments with exposure to extraterrestrial systems and laboratory studies. Focus on how scientists study animal behavior and what has been learned about evolution and ecology and ecology of animal behavior. Admission by interview during previous winter quarter. BIOE 159E is equivalent to BIOE 140 for major requirements. BIOE 159A, BIOE 159B, BIOE 159C, and BIOE 159E must be taken concurrently.

BIOE 159F - Marine Ecology Field Quarter: Global Change Ecology (5)

Engages students in the evolving discipline of global change biology, which examines the relationships between organisms and their environment. Includes discussion of changes in the climate system and other human disturbances, as well as the effects of these changes on biology, from shifts in organismal performance to species distributions and the timing of biological events. Includes discussion and analysis of different lines of evidence for understanding biological responses to global change, including paleoecology, observations, experiments and modeling. Last, this course also focuses on topics in climate literacy and science communication. Admission by interview during previous winter quarter. BIOE 159A, BIOE 159C, BIOE 159D, and BIOE 159F must be taken concurrently.

BIOE 161 - Kelp Forest Ecology (5)

Study of organization of kelp forests as models for examining biological communities. The physical and biotic factors responsible for community organization of kelp forests are explored using original literature and data collected in BIOE 161L. Class meets one full morning each week. Prerequisite(s): by interview only; BIOL 20A, BIOE 20B, and BIOE 20C are required. Students must pass the University Research Diving Certification (contact the diving safety officer, Institute of Marine Sciences, for further information). Enrollment is restricted to seniors. BIOE 161L must be taken concurrently; BIOE 107, BIOE 120 & BIOE 120L, BIOE 122 & BIOE 122L are recommended.

BIOE 161L - Kelp Forest Ecology Laboratory (5)

Fieldwork using SCUBA to quantitatively and qualitatively examine the abundance and distribution of organisms in kelp forests, with additional laboratory work. Culminates with a directed individual research project. Class meets one full morning each week. Students are billed a materials fee of $500. Admission by interview. Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C; satisfaction of the Entry Level Writing and Composition requirements; BIOE 161 must be taken concurrently; BIOE 107, 120/L, 122/L are recommended. Students must pass the University Research Diving Certification (contact the Diving Safety Officer, Institute of Marine Sciences, for further information).

BIOE 163 - Ecology of Reefs, Mangroves, and Seagrasses (5)

Integrated treatment of coral reefs, sea grasses, and mangroves emphasizing interactions and processes through time. Major topics: biological and geological history, biogeography, evolution and ecology of dominant organisms, biodiversity, community and ecosystem ecology, geology, biogeochemistry, global change, human impacts.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C. Concurrent enrollment in BIOE 163L is required.

BIOE 163L - Ecology of Reefs, Mangroves, and Seagrasses Laboratory (2)

An interdisciplinary laboratory exploration of the anatomy, morphology, adaptations, diversity, evolution, and ecology of corals, mangroves, and seagrasses and of their physical, chemical, and geological environments.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C. Concurrent enrollment in BIOE 163 is required.

BIOE 165 - Marine Conservation Biology (5)

Initially undertakes an in-depth comparison of the biology and conservation of marine versus terrestrial ecosystems. With this foundation, course examines marine biodiversity loss resulting from overexploitation, habitat loss, species introduction, and pollution, with particular emphasis on the resulting trophic cascades, biodiversity losses, and climate change. Students cannot receive credit for this course and ENVS 120.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, and BIOE 20C; OCEA 101 recommended.

BIOE 171 - Disciplinary Communication for Biologists (5)

Writing-intensive course focusing on developing skills in scientific communication, with an emphasis on communicating issues relevant to ecologists and evolutionary biologists. Presents the norms and standards of scientific communication spanning multiple genres Students cannot receive credit for this course and BIOE 271.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and BIOL 20A, BIOE 20B, and BIOE 20C.

BIOE 172 - Population Genetics (5)

Basic population genetics and selected topics will be covered, including genetics of speciation, tempo and mode of evolution, genetics of social behavior, natural selection in human populations, and the impact of molecular studies on evolutionary theory. Students cannot receive credit for this course and BIOE 272.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C, and BIOE 106 or BIOL 105, and satisfaction of the Entry Level Writing and Composition requirements.

BIOE 173 - Contemporary Genetics (5)

Designed for the discussion and evaluation of current topics in genetics. Integrates information from multiple fields and focuses on how genetics continues to shape numerous areas, including new emerging areas. Focuses on topics of current interest in genetics and includes lectures, readings, and discussions. Students present on a current genetics' topic of interest in the last week of the class. This is a course that requires extensive readings, participation in discussions, written assignments, and oral presentations. This course also provides an opportunity for you to practice critical thinking, quantitative analysis, and cooperative learning. Throughout the semester, students will discuss the latest genetic technologies and their impact on society including ethical, economic, and environmental concerns.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C, and BIOE 106 or BIOL 105; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to juniors and seniors.

BIOE 174 - Evolutionary Medicine (5)

Evolutionary processes and organismal evolutionary history have a profound impact in shaping the ways species develop disease susceptibility. As part of this class, students use evolution to critically evaluate human health, and explore how natural selection can shape behaviors and physiological responses. Uses concepts like trade-offs to understand how the evolution of mechanisms that were favorable under a set of conditions might seem damaging once those conditions are no longer present in modern societies. Course also extends these concepts to examine the evolution of disease susceptibility in other animals and plants providing a new tool to understand the world around us.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C, and BIOE 106 or BIOL 105, and BIOE 109, and satisfaction of the Entry Level Writing and Composition requirements.

BIOE 175 - Conservation Genomics (5)

Students learn how to interact with genomic sequence data and how it is used as a conservation tool. Focusing on the genomic sequence of the banana slug (Ariolimax dolichophallus) students assemble the first chromosome-level de novo assembly for the species. Also investigates how this genome compares to other slug species and investigates its phylogenetic position within the Order Stylommatophora.

Prerequisite: Prerequisite(s): BIOL 20A, BIOE 20B, BIOE 20C, and BIOE 106 or BIOL 105. Enrollment is restricted to sophomores, juniors, seniors, and graduate students.

BIOE 176 - Data Science for Ecology & Evolutionary Biology (5)

Practical introduction to the computational and statistical skills students in ecology and evolutionary biology need to know for working in our data-filled modern world. Topics include practices for reproducible science, scientific programming in R, and statistical reasoning with ecological

and evolutionary data. Course is taught as a flipped classroom with extensive hands-on practice so that students leave with the critical skills to continue on their own. A final project consists of analysis of a real dataset.

Prerequisite: Prerequisite(s): BIOE 107 or 109, or by permission of the instructor.

BIOE 182F - Exploring Research in EEB (2)

Provides undergraduate students with exposure to research in the laboratory of an Ecology and Evolutionary Biology (EEB) faculty member, affiliate, or adjunct. Students are not expected to do independent research but rather to assist in laboratory or field research projects under the supervision of the faculty mentor or appointed researcher. Prerequisite(s): Undergraduate research contract on file with the department. If supervised by different faculty or researchers, may be repeated for credit.

BIOE 183L - Undergraduate Research in EEB (3)

Designed to ensure that students are intellectually engaged in the planning or implementation of a supervised or independent research project, achieve a fundamental understanding of implementing the scientific method, and develop their scientific writing and and presentation skills. Prerequisite(s): concurrent enrollment in BIOE 183W and an Undergraduate Research Contract on file with the department.

BIOE 183W - Undergraduate Research in EEB--Writing (2)

Working in coordination with an Ecology and Evolutionary Biology (EEB) faculty member, affiliate or adjunct, students develop and write a formal research proposal or report and give a presentation on their research project. Includes weekly class meetings focused on the philosophy of science, basic statistics, library searches, inputting data, creating graphs, and preparing results for publication, posters, and talks.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and BIOE 107, BIOE 108, or BIOE 109; and an undergraduate research contract on file with the department.

BIOE 186 - Experimental Design and Data Analysis (7)

Students provided with the programming and statistical tools needed to undertake experimental design and data analysis in ecology and evolutionary biology—from data manipulation, exploration, and visualization to interpretation. Lectures and lab practicals provide a primer on: R programming, basic statistics and probability, hypothesis testing, linear regression, analysis of variance, multiple regression, and categorical data analysis. Students cannot receive credit for this course and BIOE 286. Enrollment is restricted to sophomore, junior, and senior biology, ecology and evolution, plant sciences, and marine biology majors and by permission of the instructor.

BIOE 189F - Special Topics Seminar Series: Ecology and Evolutionary Biology (2)

Through a special topic seminar series, students experience and discuss research in ecology, evolution, and conservation biology. Topics may include advanced concepts in our ecology and evolutionary biology (EEB) discipline, the intersections between diversity and ecology, research ethics. The goals are to advance understanding in EEB, professional development, networking, and community building.

BIOE 193 - Independent Research in EEB (5)

Continued undergraduate research on a project sponsored by an Ecology and Evolutionary Biology (EEB) faculty member, affiliate, or adjunct. Students are graded on the quality of their research and meeting the terms of their undergraduate research contract. Prerequisites: course 183W and an undergraduate research contract on file with the department.

BIOE 193F - Independent Research in EEB (2)

Continued undergraduate research on a project sponsored by an Ecology and Evolutionary Biology (EEB) faculty member, affiliate, or adjunct. Students are graded on the quality of their research and meeting the terms of their undergraduate research contract. Prerequisites: course 183W and an undergraduate research contract on file with the department.

BIOE 195 - Senior Thesis (5)

An individually supervised course, with emphasis on independent research. Students required to submit a senior thesis. Enrollment is restricted to majors in biology, ecology and evolution, marine biology, plant sciences, and the combined major with environmental studies. Students submit petition to sponsoring agency.

BIOE 197 - Summer Intensive Research in EEB (10)

Students conduct their own designed research projects in eight- to 10-week summer internships under the supervision and guidance of their principal investigator who will also be their research mentor. Students' research duties will take place in research labs at UC Santa Cruz or in the field. Students develop questions and conduct their research throughout the summer, culminating in a final research project. Enrollment is by permission of the instructor.

BIOE 198F - Independent Field Study (2)

Provides for two credits of independent field study (a) by means other than the usual supervision in person, or (b) when the student is doing all or most of the coursework off campus. Students submit petition to sponsoring agency.

BIOE 199 - Tutorial (5)

Reading, discussion, written reports, and laboratory research on selected biological topics, using facilities normally available on campus. Students submit petition to sponsoring agency.

BIOE 199F - Tutorial (2)

Two-credit Tutorial. Reading, discussion, written reports, and laboratory research on selected biological topics, using facilities normally available on campus. Students submit petition to sponsoring agency.

Graduate

BIOE 200A - Scientific Skills (5)

Exposes graduate students to teaching skills, understanding the scientific method, searching and organizing literature, grant proposal and scientific writing, data management and presentation, and scientific speaking. Students are evaluated on their participation and the quality of a written research proposal.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 200B - Advanced Organismal Biology (5)

Consists of lectures focusing on pivotal topics in ecology and evolution. Relevant background material is developed followed by a critical analysis of readings from the primary literature. Designed to give graduate (and advanced undergraduate) students direct contact with the major areas of research that are currently at the forefront of organismal biology.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 200C - Evolutionary Ecology (5)

Analysis of the ways in which evolution shapes the form and function of organisms including physiology, morphology, and behavior, as well as populations, species, and species interactions across landscapes. (Formerly BIOE 279, Evolutionary Ecology.)

Prerequisite: Enrollment is restricted to graduate students.

BIOE 200D - Foundations in Ecology & Evolutionary Biology (5)

Hones skills in graduate-level analysis and discussion of published research. Explores how to identify and relate your work to influential and “foundational” papers in your field. Examines how to develop a conceptual scaffold for research as a scientist, how to build and apply conceptual advances, and what makes a paper influential or important.

BIOE 203 - Introductory Seminar in Ecology and Evolutionary Biology (3)

Introduction to high-level analysis and discussion of published research papers in theoretical or applied ecology and evolutionary biology. Course consists of weekly meetings with extensive independent work outside of class. Course is required for all first-year graduate students and forms part of the graduate core curriculum. (Formerly offered as BIOE 293, Readings in Ecology and Evolution.)

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor.

BIOE 208 - Marine Ecology (5)

Paradigms and designs in marine ecology. A review of the paradigms that have shaped our understanding of marine ecology; analysis and discussion of experiments with these paradigms. Students cannot receive credit for this course and BIOE 108.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 215 - Advanced Seminar in Ecology and Evolutionary Biology (3)

Intensive exploration of an advanced topic in theoretical or applied evolutionary biology, ecology, physiology, behavior, or conservation biology. Course consists of weekly meetings with extensive independent work outside of class, resulting in mastery of an area of innovation in the field, or in a comprehensive familiarity with an important body of work. Independent work generally culminates in independent or group projects and products. Course is targeted at students who already have reached a professional level of expertise in their field and advanced master's students. (Formerly offered as BIOE 295, Advanced Ecology and Evolutionary Biology Seminar.)

Prerequisite: Enrollment is restricted to graduate students, except by special permission.

BIOE 238 - Modeling Evolution and Ecology (5)

Introduces students to how mathematical models can be used to ask and answer evolutionary and ecological questions. Methods covered include optimality theory, population genetics, population dynamic models, game theory, and dynamic state-variable models. Students learn to develop their own mathematical models and to use models to make predictions. Statistical methods for combining theory and data are not covered. This class focuses on learning by doing, using in class activities, weekly problem sets and an independent project. Students cannot receive credit for this course and BIOE 138. Enrollment is restricted to graduate students. Enrollment is by permission of the instructor. (Formerly offered as BIOE 248B, Quantitative Methods in Ecology and Evolution.)

BIOE 239 - Mathematical Modeling and Data Science in Ecology and Evolution (5)

Teaches students how to build mathematical models and fit them to data to answer questions in ecology and evolution. Includes learning to write code in the R programming language to simulate models and perform statistical analyses. Topics include: population and evolutionary dynamics; species interactions; and behavior. Students cannot receive credit for this course and BIOE 139. (Formerly BIOE 248A, Quantitative Ecology.)

Prerequisite: Enrollment is restricted to graduate students.

BIOE 245 - Plant Ecology (5)

An exploration of the ecology of plant form, function, distribution, abundance, and diversity. Topics include plant adaptations to environmental conditions, life history variation, competition, reproductive ecology, herbivory, and patterns of diversity. Lecture with discussions of original papers and independent field project. Students cannot receive credit for this course and BIOE 145.

Prerequisite: Prerequisite(s): BIOE 107 or ENVS 24 or permission of instructor. Enrollment is restricted to graduate students.

BIOE 245L - Field Methods in Plant Ecology Laboratory (5)

Hands-on exploration of the concepts and techniques of plant ecology. A combination of lab, greenhouse, and field-based exercises (irrespective of weather conditions), statistical analysis, and scientific writing. One required weekend field trip. Students cannot receive credit for this course and BIOE 145L.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 247 - Community Ecology (5)

Develops the major themes of community ecology: structure, trophic dynamics, succession, complex interactions among species, herbivory, evolution, and coevolution. Uses case histories of well-studied marine and terrestrial systems. Students cannot receive credit for this course and BIOE 147.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 258L - Experimental Marine Ecology (5)

Supervised individual research projects in experimental marine biology. Students carry out a complete research project, including (1) the formation of hypotheses, (2) the design and implementation of experiments, (3) collection, analysis, and interpretation of data, and (4) the write-up of an oral presentation. Prerequisite(s): BIOE 208; and interview to assess ability to carry out field project.

BIOE 262 - Facilitating Change in Coastal Science Policy (5)

Skills-based course in effective leadership and communication, including stakeholder engagement, facilitation, conflict resolution, team building, and introduction to project management. Communication training includes identifying audiences and objectives (public, philanthropy, policymakers, managers, scientist practitioners) and leveraging non-traditional communication platforms. Enrollment is by application and restricted to graduate students.

BIOE 271 - Disciplinary Communication for Biologists (5)

Writing-intensive course focusing on developing skills in scientific communication, with an emphasis on communicating issues relevant to ecologists and evolutionary biologists. This courses presents the norms and standards of scientific communication spanning multiple genres. Students cannot receive credit for this course and BIOE 171.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 272 - Population Genetics (5)

Basic population genetics and selected topics are covered including genetics of speciation, tempo and mode of evolution, genetics of social behavior, natural selection in human populations, and the impact of molecular studies on evolutionary theory. Students cannot receive credit for this course and BIOE 172.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 276 - Data Science for Ecology and Evolutionary Biology (5)

Practical introduction to the computational and statistical skills students in ecology and evolutionary biology need to know for working in our data-filled modern world. Topics include practices for reproducible science, scientific programming in R, and statistical reasoning with ecological and evolutionary data. The course is taught as a flipped classroom with extensive hands-on practice so that students leave with the critical skills to continue on their own. A final project consists of analysis of a real dataset.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 281A - Topics in Basic and Applied Marine Ecology (2)

Seminar focusing on concepts in basic and applied ecology. Structure rotates quarterly between graduate student research and readings of journal articles and textbooks.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281B - Topics in Molecular Evolution (2)

A discussion of current research and literature review on the subject of molecular evolution. Primary focus on recent results on molecular phylogenetics and molecular population genetics.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281C - Topics in Physiological Ecology (2)

An intensive seminar focusing on the interaction between physiological constraint and life history options and solutions employed by animals. Topics vary from comparative physiology to ecological theory. Participants are required to present results of their own research or review papers of interest.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281D - Topics in Global Change Ecology (2)

Focuses on fundamental concepts in global-change ecology, with emphasis on coastal and marine ecosystems and issues of sustainability. The seminar is devoted to reading and evaluating current and classic literature and discussing graduate student research.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 281E - Topics in Freshwater Ecology (2)

Current topics in freshwater ecology, eco-evolutionary dynamics, fisheries, and fish ecology.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduates may enroll with permission from instructor.

BIOE 281F - Ecological Research Topics (2)

Intensive research and discussions on plant-animal interactions. All students undertake a research project and meet weekly with the faculty sponsor to monitor progress. The group meets weekly to discuss experimental design and analysis, specific problems related to the students' research, relevant research papers, or manuscripts that the group members are writing. Each student gives a formal presentation of research plans or progress each quarter.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281G - Topics in Sexual Selection and Social Behavior (2)

Discussion of current topics, research, and methods in sexual selection and social behavior focusing on theoretical and empirical research and links between evolution and ecology. Students present and discuss their research, read and discuss current and classic literature, or read and discuss methods used in the field.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduates may enroll by permission of the instructor.

BIOE 281H - Topics in Comparative Marine Physiology (2)

Intensive seminar on selected topics in marine physiology. Students present results from their own research and discuss recent advances from the literature.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281I - Topics in Disease Ecology, Population Biology, and Conservation (2)

Selected topics in population biology and disease ecology. Students present results from their own research and discuss recent advances from the literature.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of instructor.

BIOE 281J - Topics in Evolutionary Genomics (2)

Weekly seminar course centered on reading and discussing selected publications along with peer review of research plans, grant proposals, manuscripts, lectures, and conference presentations. The overarching goal is to support the development and progress of graduate students in the Ecology and Evolutionary Biology Department whose thesis work and interests align with the course topic.

BIOE 281K - Topics in Plant Evolution (2)

Intensive seminar on selected topics in plant evolution. Students present results from their own research and discuss recent advances from the literature.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of instructor.

BIOE 281L - Topics in Behavioral and Evolutionary Ecology (2)

An intensive seminar on selected topics in behavioral and evolutionary ecology. Students are expected to discuss the current literature and present literature reviews, research proposals, and preliminary results from their ongoing research.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281M - Topics in Host-Microbe Population Genomics

Centers on reading and discussion of selected publications along with peer review of research plans, grant proposals, manuscripts, lectures, and conference presentations. The overarching goal is to support the development and progress of graduate students in the Ecology and Evolutionary Biology department whose thesis work and interests align with the course topics. Topics include: Reviewing innovative approaches to the study of host-microbiome interactions; Implementation of novel methods for the study of evolutionary demographics in populations using genomic data; Identifying signatures of selection mediated by pathogens and the environment.

BIOE 281N - Topics in Marine Vertebrate Ecology (2)

Seminar on the ecology of marine vertebrates. Topics vary from the factors that explain the distribution of marine predators to island biogeography and the ecosystem effects of introduced vertebrates on islands.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 281O - Topics in Plant-Water Relations (2)

Intensive seminar focusing on fundamental and evolutionary concepts in plant-water relations. Students present results from their own research and discuss recent advances from the literature.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of instructor.

BIOE 281P - Topics in Plant Population Ecology (2)

An intensive seminar on selected topics in plant ecology and population biology. Students present results from their own research and discuss recent advances from the literature.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission from instructor.

BIOE 281Q - Topics in Molecular Evolutionary Genetics (2)

An intensive seminar on selected topics in molecular evolutionary genetics. Students are required to present results

from their own research projects, present a critical review paper at least once during the quarter, and submit a written research proposal.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduate students may enroll with permission of instructor.

BIOE 281R - Topics in Marine Ecology and Evolutionary Biology (2)

An intensive seminar series focusing on fundamental concepts in marine ecology. Emphasis changes quarter to quarter. At least one quarter per year is devoted to discussion of graduate student research. Other quarters involve reading and evaluating current and classic literature on marine ecology and evolutionary biology.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281S - Topics in Ancient DNA and Paleogenomics (2)

Topics in population genetics and genomics, focusing on work involving paleontological and archaeological material. Students present weekly written and oral reports of their research projects. Once each term, students critique a recent publication.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduates may enroll with permission from instructor.

BIOE 281T - Topics in Evolutionary Developmental Biology (2)

Centers on reading and discussion of selected publications along with peer review of research plans, grant proposals, manuscripts, lectures, and conference presentations. The overarching goal is to support the development and progress of graduate students in the Ecology and Evolutionary Biology Department whose thesis work and interests align with the course topics. Topics include: reviewing advances in the field of regeneration; applications of novel techniques in functional genomics; and comparative genomics in evolution, development, and regeneration. (Formerly Species Interactions and Coevolution.)

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281U - Topics in Invertebrate Biology (2)

An intensive study about concepts, theory, and techniques for graduate students conducting research on the ecology, genetics, evolution, systematics, or biodiversity of marine invertebrates.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of instructor.

BIOE 281V - Topics in Behavioral Ecology (2)

A discussion of current topics in behavioral ecology including social information use, conceptual advances in understanding the evolution of animal signaling, and using a mechanistic approach to infer ecological processes from soundscapes.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281W - Topics in Exercise and Environmental Physiology (2)

A weekly seminar discussion on current research and techniques in mammalian exercise and environmental physiology. Areas covered include locomotor physiology, exercise testing and cardiovascular monitoring, and biomechanics. Oral presentation of ongoing research or current literature required from each student.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOE 281X - Topics in Behavioral Ecology of Large Marine Vertebrates (2)

Weekly seminar course centering on reading and discussion of selected publications along with peer review of research plans, grant proposals, manuscripts, lectures, and conference presentations. The overarching goal is to support the development and progress of graduate students in the Ecology and Evolutionary Biology Department whose thesis work and interests align with the course topic (reviewing innovative approaches in marine mammal science, coupling physiological with ecological concepts using integrative tools, identifying ecological and evolutionary context of large marine vertebrate research).

Prerequisite: Enrollment is restricted to ecology and evolutionary biology graduate students; other students may enroll by consent of the instructor.

BIOE 281Y - Topics in Climate Change Biology (2)

This weekly seminar course centers on reading and discussing of selected publications along with peer review of research plans, grant proposals, manuscripts, lectures, and conference presentations. Students support the development and progress of graduate students in the Ecology and Evolutionary Biology Department whose thesis work and interests align with the course topics including: reviewing impacts of extreme climate events, inferring microevolutionary processes from genomic time series, and understanding community composition change in marine ecosystems.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of the instructor.

BIOE 281Z - Conservation Science in a Changing World (2)

Selected readings and guest speakers in conservation, climate science and the ecology of environmental change coupled with peer review of participants' research proposals, grant proposals, manuscripts and scientific presentations.

Prerequisite: Enrollment is restricted to ecology and evolutionary graduate students.

BIOE 286 - Experimental Design and Data Analysis (5)

Focuses on problems and designs in ecology and population biology. Topics include experimental design; exploratory data analysis; hands-on statistics; and graphical theory. Structured around a statistical analysis and graphics program to teach students to design surveys and experiments and analyze data. Previous work in statistics strongly recommended.

Prerequisite: Concurrent enrollment in BIOE 286L is required. Enrollment is restricted to graduate students.

BIOE 286L - Experimental Design and Data Analysis Lab (2)

Lab will focuses on hands-on statistical problem solving, graphical presentations and experimental design issues.

Prerequisite: Concurrent enrollment in BIOE 286 is required. Enrollment is restricted to graduate students.

BIOE 294 - Ecology, Evolutionary Biology Seminar (0)

Selected topics of current interest to ecologists and evolutionary biologists presented by weekly guest speakers.

Prerequisite: Enrollment is restricted to graduate students.

BIOE 297A - Independent Study (5)

Independent study for graduate students who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency.

BIOE 297B - Independent Study (10)

Independent study for graduatestudents who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency.

BIOE 297C - Independent Study (15)

Independent study for graduate students who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency.

BIOE 297F - Independent Study (2)

Independent study for graduate students who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

BIOE 299A - Thesis Research (5)

Students submit petition to sponsoring agency.

BIOE 299B - Thesis Research (10)

Students submit petition to sponsoring agency.

BIOE 299C - Thesis Research (15)

Students submit petition to sponsoring agency.

BIOL - BIOLOGY MOLECULAR CELL AND DEVELOPMENTAL

Lower-Division

BIOL 15 - Undergraduate Research Reports (1)

Undergraduate students who work in faculty research laboratories present the results of their projects. Organized by the Minority Undergraduate Research Program and the Minority Access to Research Careers Program. Designed for students with membership in the above-mentioned programs. Prerequisite(s): qualifications as determined by instructor at first class meeting.

BIOL 20A - Cell and Molecular Biology (5)

Introduction to biochemistry, cell biology, molecular biology, and genetics.

Prerequisite: Prerequisite(s): CHEM 1A, CHEM 3A, or CHEM 4A. First pass enrollment restricted to proposed majors in the following: Biology BA, Biology BS, MCD Biology BS, Neuroscience BS, Ecology and Evolutionary Biology BS, Marine Biology BS, Plant Sciences BS, EEB/ENVS combined BA, Global and Community Health BS, Biochemistry and Molecular Biology BS, Microbiology BS, Science Education BS, Biomolecular Engineering BS, or Biotechnology BA.

BIOL 20L - Experimental Biology Laboratory (2)

Provides biology majors with the theory and practice of experimental biology. A wide range of concepts and techniques used in the modern laboratory are included in the exercises. Designed to satisfy the introductory biology lab requirement of many medical and professional schools.

Prerequisite: Prerequisite(s): BIOL 20A and previous or concurrent enrollment in BIOE 20B.

BIOL 21 - Genetics Preparatory Course (2)

Prepares students for BIOL 105, Introduction to Genetics. Core concepts in Mendelian and molecular genetics aree covered. These include mitosis, meiosis, the chromosome theory of inheritance, complementation, pedigree analysis, replication, and fundamental concepts in molecular biology.

BIOL 25 - Frosh/Soph Seminar in Neuroscience (1)

Overview of the field of neuroscience for students considering the neuroscience major or related academic programs. Talks by neuroscience faculty on research on nervous system function, approaches to understanding behavior, and neurological disorders/disease. Also, overview of

neuroscience careers and UC Santa Cruz's neuroscience major.

Prerequisite: Enrollment is restricted to freshman and sophomore proposed majors in biochemistry and molecular biology, biomolecular engineering and bioinformatics, cognitive science, ecology and evolution, global and community health (B.S.), marine biology, microbiology, molecular cell and developmental biology, neuroscience, biology B.A , biology B.S., biotechnology, or psychology.

BIOL 80A - Female Physiology and Gynecology (5)

Biochemical, medical, social, and clinical aspects of the female body. Emphasis will be on biological-chemical interactions in the female organs. Topics include female anatomy, cell physiology, endocrine functions, sexuality and intimacy, sexually transmitted diseases, puberty, pregnancy, menopause, birth control, abortion, immunity, cancer.

BIOL 80J - Biology of Emerging and Pandemic Diseases (5)

Designed to introduce non-biology majors to the biology of viruses, the human immune system, HIV/AIDS, and emerging viral pandemics. Also explores vaccine technology and viral mediated therapies. Social, political, and economic influences of HIV and other viral pandemics discussed.

BIOL 80N - Nutrition (5)

Provides an in-depth overview of human nutrition, focusing on the science of nutrients, their roles in the body, and the relationship between diet and health. Topics include macronutrients, micronutrients, metabolism, digestion, and the impact of nutrition on disease prevention and overall well-being. Course also coverd food safety, food equity and sustainability. Students gain practical skills for evaluating dietary patterns, understanding nutritional needs, and applying evidence-based practices in health promotion.

BIOL 81B - Global Seminar: Biochemistry of Sport (5)

Helps students connect course content to their career goals and builds knowledge in ways that reflect what is known about biochemistry of sports. Cooperative learning and problem solving is emphasized in lectures. Also seeks to understand complex topics by analyzing medical test results, discussing real-world dilemmas in teams, or reading scientific papers.

BIOL 86 - Research Deconstruction: MCD Biology (3)

Explores scientific principles and logic through research seminars in molecular, cellular, and developmental biology. Additional topics may include diseases, stem cell biology, and other medically relevant areas in biomedical research. Prerequisite(s): Mathematics 3 or equivalent (i.e., mathematics placement examination score), and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to first-year, sophomore, and junior students. Enrollment is by permission of the instructor.

BIOL 88 - Studies in Medicine: Its Art, History, Science, and Philosophy (5)

An interdisciplinary, multicultural, and historical perspective of medicine focused primarily upon therapy and practice to achieve better understanding of the scope, practice, and limits or medicine.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

BIOL 81A - Nutrition of Sport (5)

The classroom environment is designed to help students connect course content to their career goals and build knowledge in ways that reflect what is known about nutrition of sports. Cooperative learning and problem solving is emphasized in lectures. Course also seeks to understand complex topics by analyzing medical test results, discussing real-world dilemmas in teams, or reading scientific papers.

Upper-Division

BIOL 100 - Biochemistry (5)

Introduction to biochemistry including biochemical molecules, protein structure and function, membranes, bioenergetics, and regulation of biosynthesis. Provides students with basic essentials of modern biochemistry and the background needed for upper-division biology courses. Students who desire a more in-depth exposure to biochemistry should consider taking the BIOC 100A/BIOC 100B/BIOC 100C series as an alternative. Students cannot receive credit for this course after they have completed the BIOC 100A, BIOC 100B, and BIOC 100C sequence.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B; and CHEM 8B.

BIOL 100K - Introduction to Laboratory Research (2)

Introduction to authentic research in MCD Biology. Students learn a variety of methods and techniques, principles of lab safety and data analysis, how to work effectively in a group and to present their research to an audience. Intended for students new to the university. Prerequisite(s): BIOL 20A and BIOL 20L. May not be taken for credit after a student has received credit for BIOL 101L.

BIOL 100L - Biochemistry Laboratory (5)

Basic techniques and principles of laboratory biochemistry including isolation and characterization of a natural product, manipulation of proteins and nucleic acids to demonstrate basic physical and chemical properties; and characterization of enzyme substrate interactions.

Prerequisite: Prerequisite(s): BIOL 100 or BIOC 100A; BIOL 101L or BIOL 102L; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Molecular, Cell and Developmental Biology and Neuroscience majors. Other majors may enroll by permission of the instructor. Students cannot enroll in BIOL 100L after receiving credit with a 'C' or better in BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL

115L, BIOL 120L, BIOL 121L, BIOL 129L, BIOL 186L or METX 119L.

BIOL 101 - Molecular Biology (5)

Covers the basic molecular mechanism of DNA replication and transcription, protein synthesis, and gene regulation in bacterial and eukaryotic organisms. The experimental techniques used to determine these mechanisms are emphasized.

Prerequisite: Prerequisite(s): BIOL 100. Enrollment is restricted to Biology B.S.; Global and Community Health B.S.; Human Biology B.S.; Molecular, Cell, and Developmental Biology B.S.; and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor.

BIOL 101L - Molecular Biology Laboratory (2)

Laboratory course providing hands-on experience with, and covering conceptual background in, fundamental techniques in molecular biology and biochemistry, including DNA cloning, PCR, restriction digest, gel electrophoresis, protein isolation, protein quantification, protein immunoblot (Western) analysis, and use of online bioinformatics tools.

Prerequisite: Prerequisite(s): BIOL 20L or BIOL 102J or BIOL 107J; and previous or concurrent enrollment in BIOL 101, BIOC 100A & BIOC 100B, or METX 140 is required. Students cannot receive credit for this course and BIOL 102L, BIOL 107L, BIOL 122K, CHEM 160K, or CHEM 161K. Enrollment is restricted to biochemistry and molecular biology; biology B.S.; microbiology; molecular, cell, and developmental biology; and neuroscience majors.

BIOL 102J - Toxic RNA Lab I (5)

Introduction to hypothesis-driven laboratory research. Students will create models of a unique uncharacterized disease causing mutation using site directed mutagenesis. An understanding of introductory molecular biology and genetics required. Students are billed a materials fee. Prerequisite(s): BIOL 20A. Enrollment restricted to biological sciences and affiliated majors with sophomore standing or higher. Enrollment by application and permission of instructor.

BIOL 102L - Toxic RNA Lab II (5)

Introduces hypothesis-driven laboratory research. Students create models of a unique uncharacterized disease causing mutation and determine how it impacts the process of pre-mRNA splicing. An understanding of introductory molecular biology and genetics is required. Students are billed a materials fee.

Prerequisite: Prerequisite(s): BIOL 20A; and BIOL 20L or BIOL 102J. Enrollment is restricted to sophomore, junior, and senior molecular, cell, and developmental biology B.S., Biology B.S., and biochemistry and molecular biology majors. Interested students should add to the waitlist. Application will be required. Inquire with Instructor.

BIOL 103L - Toxic RNA Lab III (5)

Introduces hypothesis-driven laboratory research. Students create models of a unique, uncharacterized, disease-causing mutation and determine how it impacts the process of pre-mRNA splicing. An understanding of introductory molecular biology and genetics is required.

Prerequisite: Prerequisite(s): BIOL 102L and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to sophomores, juniors, and seniors majoring in biology, molecular, cell, and developmental biology and biochemistry and molecular biology. Interested students should add to the waitlist. Application will be required. Inquire with Instructor. Students cannot enroll in BIOL 103L after receiving credit with a 'C' or better in BIOL 100L, BIOL 104B, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 129L, BIOL 121L, BIOL 186L or METX 119L.

BIOL 104A - Human Genetic Variation Laboratory I (5)

This course together with its companion course BIOL104A provide a supportive research immersion experience and training in computational and experimental approaches in cancer genomics. Instruction in cancer biology, genomics, and applications of genomic analysis for precision medicine is provided. Students work on their own projects to identify, visualize and interpret genetic variants that contribute to human cancers. BIOL104A focuses primarily on computational biology research, while BIOL104B focuses on experimental laboratory research.

Prerequisite: Prerequisite(s): BIOL 20L and BIOL 105. Enrollment is restricted to sophomore, junior, and senior molecular, cell, and developmental biology B.S., Biology B.S., and biochemistry and molecular biology majors.Interested students should add to the waitlist. Application will be required. Inquire with instructor.

BIOL 104B - Human Genetic Variation Laboratory II (5)

This course together with its companion course BIOL104A provide a supportive research immersion experience and training in computational and experimental approaches in cancer genomics. Instruction in cancer biology, genomics, and applications of genomic analysis for precision medicine is provided. Students work on their own projects to validate genetic variants found in short-read sequencing data in both DNA and RNA. BIOL104A focuses primarily on computational biology research (identification of variants from short-read sequencing data), while BIOL104B focuses on experimental laboratory research to validate these variants using classical molecular biology approaches. Students work on the same variants for both courses.

Prerequisite: Prerequisite(s): BIOL 104A and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to sophomore, junior, and senior biology B.S. molecular, cell, and developmental biology, and biochemistry and molecular biology majors. Interested students should add to the waitlist. Application will be required. Inquire with Instructor.

BIOL 104L - Introduction to Bioinformatics Lab (2)

Covers the fundamentals of bioinformatics and how to identify a computational solution or tool for a biological question. Studies how large biological data sets are generated, processed, analyzed, and how to generate questions to ask when working collaboratively with a trained bioinformatics colleague. Students gain experience using online and software-based bioinformatic tools and the use of protein modeling software to design testable hypotheses. (Formerly Coronavirus Bioinformatics Lab.)

Prerequisite: Prerequisites: BME 105 or BIOL 105; and BIOC 100A and 100B or BIOL 100; and BIOL 20L or BIOL 101L. It is assumed that students have minimal level exposure to bioinformatic/sequence analysis tools prior to this course. Enrollment is restricted to molecular, cell and developmental biology B.S., others by permission of instructor. Students cannot enroll in BIOL 104L after receiving credit with a "C' or better in BME 110.

BIOL 105 - Genetics (5)

Mendelian and molecular genetics; mechanisms of heredity, mutation, recombination, and gene action.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B.

BIOL 105A - CRISPR Laboratory I (5)

Investigates the groundbreaking CRISPR-Cas technology and its impact on immunology. Students explore the molecular mechanisms of CRISPR-Cas, its use in engineering immune cells for therapy, and the ethical implications. Covers immunology, genomics, and CRISPR targeting for gene function studies in immune cells. Students learn computational biology research relevant to their own project, which will target a novel gene using CRISPR to determine its role in immune responses. This course lays the theoretical foundation and initiates the experimental lab work which will be expanded in BIOL105B. Prerequisite(s): BIOL 20L and BIOL 105. Enrollment is restricted to sophomore, junior, and senior MCDB B.S., BIOL B.S., and BIOC B.S. majors. Enrollment is by instructor permission. Interested students should add to the waitlist. Application will be required. Inquire with instructor.

BIOL 105B - CRISPR Laboratory II (5)

Building on BIOL105A, course provides hands-on experimental research in CRISPR-Cas technology and immunology. Students apply molecular mechanisms to learn about engineering immune cells for therapeutic purposes, consider ethical implications, and use CRISPR targeting to investigate gene function. Students conduct their own project, targeting a novel gene to determine its role in specific immune responses. This course focuses on experimental laboratory research using CRISPR as a genetic engineering tool. Prerequisite(s): BIOL 105A and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to sophomore, junior, and senior biology B.S. molecular, cell, and developmental biology, and biochemistry and molecular biology majors. Enrollment is by instructor permission. Interested students should add to the waitlist. Application will be required. Inquire with instructor.

BIOL 105L - Eukaryotic Genetics Laboratory (5)

Classical and newly developed molecular-genetic techniques used to explore genetic variation in wild populations of the fruit fly Drosophila melanogaster. Topics include Mendelian fundamentals, mapping, design of genetic screens, bio-informatic and database analysis, genetic enhancers, and population genetics.

Prerequisite: Prerequisite(s): BIOL 100 or BIOC 100A; BIOL 101L or BIOL 102L; BIOL 105; and satisfaction of the Entry Level Writing and Composition Requirements. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Molecular, Cell and Developmental Biology and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor. Students may not enroll in BIOL 105L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 129L, BIOL 186L or METX 119L.

BIOL 106L - Eukaryotic Genetic Engineering (5)

Lab course focusing on teaching students specific molecular genetic methods such as Phenotype analysis, Cloning, PCR, Expression analysis, CRISPR/Cas9-based Gene insertions, Protein Blots, etc., for the genetic manipulation of model organisms.

Prerequisite: Prerequisite(s): BIOL 100 or BIOC 100A; BIOL 101L or BIOL 102L; BIOL 105; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S. ; Molecular, Cell and Developmental Biology and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor. Students cannot enroll in BIOL 106L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 129L, BIOL 186L or METX 119L.

BIOL 107J - Synthetic Gene Regulation Lab I (5)

Goal-driven research laboratory. Students collectively formulate a goal and design experiments to achieve their objectives. Students develop molecular tools and use these and other methods to investigate various aspects of gene silencing in eukaryotes. An understanding of introductory molecular biology is required. Prerequisites: CHEM 1B and BIOL 20A. Students who have taken BIOL 102J or BIOL 20L cannot enroll in BIOL 107J. Completion of BIOL 107J is required to enroll in BIOL 107L. Enrollment is by permission and is restricted to sophomores, juniors, and seniors.

BIOL 107L - Synthetic Gene Regulation Lab II (5)

The Synthetic Gene regulation course is a goal-oriented research laboratory. Students are given a project and discuss and design experiments to reach that aim. Students develop molecular tools and use these and other methods to investigate various aspects of gene silencing in eukaryotes. An

understanding of introductory biology and genetics is required. Prerequisite(s): BIOL 107J. Completion of BIOL 107L is necessary to enroll in BIOL 108L. Enrollment is by permission of the instructor and is restricted to sophomore, junior, and senior biology B.S., molecular, cell, and developmental biology, biochemistry and molecular biology majors and proposed majors.

BIOL 108L - Synthetic Gene Regulation Lab III (5)

The Synthetic Gene regulation course is a goal-oriented research laboratory. Students are given a project and discuss and design experiments to reach that aim. Students develop molecular tools and use these and other methods to investigate various aspects of gene silencing in eukaryotes. An understanding of introductory biology and genetics is required. Interested students should add to the waitlist. Application is required. Inquire with Instructor.

Prerequisite: Prerequisite(s): BIOL 107L and satisfaction of the Entry Level Writing and Composition is required. Students cannot enroll in BIOL 108L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 104B, BIOL 105L, BIOL 106L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 186L and METX 119L.

BIOL 109L - Yeast Molecular Genetics Laboratory (5)

Using budding yeast as a eukaryotic model organism, this laboratory provides practical experience in classic and modern molecular biology techniques and experimental genetic and epigenetic methods, alongside developing strong scientific analysis, interpretation and communication skills. Topics include mendelian genetics, linkage, gene replacement, chromatin immunoprecipitation and gene function assays.

Prerequisite: Prerequisite(s): BIOL 100 and BIOL 101; or BIOC 100A and BIOC 100B; and BIOL 101L or BIOL 102L or BIOL 107L; and BIOL 105. Satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Molecular, Cell and Developmental Biology and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor. Students cannot enroll in BIOL 109L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 129L, BIOL 186L, and METX 119L.

BIOL 110 - Cell Biology (5)

Covers the structure, organization, and function of eukaryotic cells. Topics include biological membranes, organelles, protein and vesicular trafficking, cellular interactions, the cytoskeleton, and signal transduction. Requires a good understanding of basic biochemistry and molecular biology.

Prerequisite: Prerequisite(s): BIOL 100 and BIOL 101, or BIOC 100A and BIOC 100B; and BIOL 105; and BIOL 101L or BIOL 102L or BIOL 107L or BIOL 122K or CHEM 160K or CHEM 161K or BIOL 20L. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Global and Community Health B.S. (Biomedical concentration); Molecular, Cell and Developmental Biology, Human Biology, and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor.

BIOL 111A - Immunology I (5)

Principles and concepts of the innate and adaptive immune systems, with emphasis on mechanisms of action and molecular and cellular networks. The development, differentiation, and maturation of cells of the immune system are also discussed.

Prerequisite: Prerequisite(s): courses BIOE 20B, BIOL 20A, BIOL 105, and BIOL 110.

BIOL 111B - Immunology II (5)

The immune system in health and disease, including failures of host immune-defense mechanisms, allergy and hypersensitivity, autoimmunity, transplantation biology, the immune response to tumors, immune-system interactions with pathogens, and manipulation of the immune response.

Prerequisite: Prerequisite(s): BIOL 111A.

BIOL 112 - Principles of Virology (5)

Introduces students to basic principles of virology, including viral replication, transmission, and pathogenesis. Students apply knowledge of these basic principles to the development of interventions to prevent viral outbreaks and reduce the burden of viral disease. Formerly offered as Virology.

Prerequisite: Prerequisite(s): BIOL 110.

BIOL 113 - Principles of Epidemiology (5)

Epidemiology is the study of the distribution and determinants of health and disease across human populations; it is the basic science of public health. This course introduces students to the principles and methodologies of public health epidemiology. Students read, analyze, and discuss epidemiological data. This course is intended for undergraduate students majoring in global and community health.

Prerequisite: Prerequisite(s): STAT 5, or STAT 7 and STAT 7L.

BIOL 114 - Cancer Cell Biology (5)

Focuses on the molecular and cellular mechanisms behind cancer. Topics covered include oncogenes, tumor suppressor genes, cell growth genes, checkpoint genes, telomeres, and apoptosis. Students will gain experience in reading the primary scientific literature.

Prerequisite: Prerequisite(s): BIOL 110.

BIOL 115 - Eukaryotic Molecular Biology (5)

Covers eukaryotic gene and genome organization; DNA, RNA, and protein synthesis; regulation of gene expression;

chromosome structure and organization; and the application of recombinant DNA technology to the study of these topics.

Prerequisite: Prerequisite(s): BIOL 101 or BIOC 100A; and BIOL 105; and BIOL 101L or BIOL 102L or BIOL 107L or BIOL 122K or CHEM 160K or CHEM 161K. Enrollment restricted to biological sciences and affiliated majors, non-majors by permission of instructor.

BIOL 115L - Eukaryotic Molecular Biology Laboratory (5)

A laboratory designed to provide students with direct training in basic molecular techniques. Each laboratory is a separate module which together builds to allow cloning, isolation, and identification of a nucleic acid sequence from scratch. Students are billed a materials fee of $160.

Prerequisite: Prerequisite(s): BIOL 100 and 101; or BIOC 100A and 100B; and BIOL 101L or BIOL 102L or BIOL 107L; and satisfaction of the Entry Level Writing and Composition Requirements. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Molecular, Cell and Developmental Biology and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor. Students cannot enroll in BIOL 115L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 120L, BIOL 121L, BIOL 129L, BIOL 186L or METX 119L.

BIOL 117 - Global Health and Neglected Diseases (5)

Neglected tropical diseases afflict more than 1 billion of the poorest individuals on the planet. Course covers the molecular basis and pathology of the most prevalent neglected diseases and emerging strategies to combat these diseases.

Prerequisite: Prerequisite(s): BIOL 110. Enrollment is restricted to senior human biology, molecular, cell, and developmental biology, and neuroscience majors. Other majors by permission of instructor.

BIOL 118 - Principles of Human Genetics (5)

Overview of human and medical genetics covering the molecular basis of genetic disease, quantitative methodologies utilized in calculation of genetic risk, and genetic testing and counseling. Includes discussion of ethical issues in genetics and genomic medicine.

Prerequisite: Prerequisite(s): STAT 5, or STAT 7 and STAT 7L; BIOL 105 or BME 105; and BIOL 101 or BIOL 115. Enrollment is restricted to biology B.S.; human biology; neuroscience; and molecular, cell, and developmental biology majors. Other students may enroll with instructor permission.

BIOL 120 - Developmental Biology (5)

A description and analysis of selected developmental events in the life cycle of animals. Experimental approaches to understanding mechanisms are emphasized.

Prerequisite: Prerequisite(s): BIOL 110.

BIOL 120L - Development Laboratory (5)

Experimental studies of animal development using a variety of locally obtainable organisms. Approximately eight hours weekly, but it will often be necessary to monitor continuing experiments throughout the week.

Prerequisite: Prerequisite(s): BIOL 100 or BIOC 100A; and BIOL 101L or BIOL 102L; satisfaction of the Entry Level Writing and Composition requirements. Previous or concurrent enrollment in BIOL 120 is required. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Molecular, Cell and Developmental Biology and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor. Students cannot enroll in BIOL 120L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 121L, BIOL 129L, BIOL 186L, and METX 119L.

BIOL 121L - Environmental Phage Biology Laboratory (5)

Introduction to hypothesis-driven laboratory research. Students isolate a unique bacteriophage and characterize its structure and genome. An understanding of molecular biology and basic genetics is required. Prerequisite(s): BIOL 100 or BIOC 100A; and BIOL 101L or BIOL 102L; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Molecular, Cell and Developmental Biology and Neuroscience B.S. majors. Enrollment is by application and permission of instructor. Students are billed a materials fee of $170. Students cannot enroll in BIOL 121L after receiving credit with a "C" or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 129L, BIOL 186L or METX 119L.

BIOL 122K - Phage Biology Lab I (5)

Hypothesis-driven research laboratory. Students isolate a unique bacteriophage from the environment and characterize its structure using electron microscopy and genome by restriction digest analysis. Students develop wet lab skills and use these skills and other methods to investigate various aspects of bacteriophage. An understanding of introductory molecular biology is required. Note that completion of this course, BIOL122K, is necessary to enroll in BIOL122L. Enrollment is by permission of the instructor. Prerequisite(s): CHEM1B, CHEM 3A, or CHEM 4A; and BIOL20A, BIOL20L, BIOL86. Enrollment is restricted to biology; biochemistry and molecular biology; and molecular, cell, and developmental biology majors. Students with credit for BIOL121L may not enroll in this course.

Prerequisite: Prerequisite(s): CHEM1B, BIOL20A, BIOL20L, and BIOL86. Enrollment is by permission of the instructor. Enrollment is restricted to biology; biochemistry and molecular biology; and molecular, cell, and developmental biology majors. Students with credit for BIOL121L may not enroll in this course.

BIOL 122L - Phage Biology Lab II (5)

Hypothesis-driven research laboratory. Students amplify unique genes from a bacteriophage genome and complete gene-function exploration, Students also develop wet lab skills including PCR, Tet expression plasmids, and immunity screens and use these skills and other methods to investigate various aspects of bacteriophage gene function. An understanding of introductory molecular biology is required. Students are billed a materials fee.

Prerequisite: Prerequisite(s): BIOL122K. Enrollment is restricted to biology, biochemistry and molecular biology; and molecular, cell, and developmental biology majors. Interested students should add to the waitlist. Application will be required. Inquire with instructor.

BIOL 124 - Optical Imaging for Biological Research (3)

Covers the theory and application of light microscopy in a non-mathematical way. Course starts with basic optics, introduces the working principles of various microscopes, and discusses recent innovations in imaging techniques with an emphasis on neuroscience applications.

Prerequisite: Prerequisite(s): PHYS 5B or PHYS 6B; and BIOL 110.

BIOL 125 - Introduction to Neuroscience (5)

The structure and function of the nervous system. Topics include elementary electrical principles, biophysics and physiology of single nerve and muscle cells, signal transduction at synapses, development of the nervous system, and neural basis of behavior. Requires a good understanding of basic biochemistry, cell biology, and molecular biology.

Prerequisite: Prerequisite(s): BIOL 20A, and BIOE 20B; and BIOL 100, or BIOC 100A and BIOC 100B.

BIOL 126 - Neural Plasticity and Cognitive Neuroscience (5)

Focuses on the dynamic aspect of the nervous system and how it subserves various cognitive functions. Starting with synaptic plasticity, students explore the neural circuit mechanisms underlying various cognitive functions and how they go astray in neurological disorders. Students cannot receive credit for this course and BIOL 226. (Formerly Advanced Molecular Neuroscience.)

Prerequisite: Prerequisite(s): BIOL 125. Enrollment is restricted to neuroscience majors and proposed majors.

BIOL 127 - Mechanisms of Neurodegenerative Disease (5)

Focuses on cellular and molecular processes that underlie neurodegenerative diseases. Includes lectures, student oral presentations, discussions, a term paper, and exams.

Prerequisite: Prerequisite(s): BIOL 110.

BIOL 128 - Developmental Neurobiology (5)

Covers the principles of nervous-system development from the molecular control of development, cell-cell interactions, to the role of experience in influencing brain structure and function. Students cannot receive credit for this course and BIOL 228.

Prerequisite: Prerequisite(s): BIOL 105 and BIOL 125. Enrollment is restricted to Neuroscience B.S. majors; other majors may enroll with the permission of the instructor.

BIOL 129A - Advanced Topics in System Neuroscience (5)

Covers the principles and applications of a wide spectrum of modern approaches in systems neuroscience. Students read and analyze the original literature describing these techniques and exemplary works that utilize the techniques to address important neurobiological questions.

Prerequisite: Prerequisite(s): BIOL 126, BIOL 129L; students cannot enroll in BIOL 129A after receiving credit with a 'C' or better in BIOL 129B. Enrollment is restricted to seniors and graduate students.

BIOL 129B - Advanced Topics in Developmental Neurobiology (5)

Covers current research topics and methods in the field of developmental neurobiology. Students read, analyze, and discuss original research articles related to the development of the nervous system. Intended for upper-level undergraduate students majoring in neuroscience.

Prerequisite: Prerequisite(s): BIOL 105, BIOL 125 and BIOL 128; students cannot enroll in BIOL 129B after receiving credit with a 'C' or better in BIOL 129A. Enrollment is restricted to seniors.

BIOL 129C - Advanced Topics in Nervous System Disorders (5)

Provides a basic introduction to the fundamental aspects of common diseases affecting the central nervous system and current methods used to treat them. Students read, analyze, and discuss original research articles related to nervous system disorders. To facilitate in-class discussion and presentation, enrollment is limited to 30 students.

Prerequisite: Prerequisite(s): BIOL 125; students cannot enroll in BIOL 129C after receiving credit with a 'C' or better in BIOL 129A or BIOL 129B. Enrollment is restricted to seniors majoring in neuroscience.

BIOL 129L - Neurobiology Lab (5)

Laboratory course giving students experience with electrophysiological, molecular, microscopic, and behavioral techniques used to analyze the function of nervous systems. Students gain experience with collecting and analyzing neurobiological data and presenting their results in written, oral, and visual presentation formats. Students also learn to critically read and analyze primary literature in neurobiology and to use the knowledge they gain to develop their own research proposal. Restricted to Neuroscience B.S. majors during first pass enrollment and Neuroscience B.S., MCD Biology B.S. and Biology B.S. majors during second pass enrollment.

Prerequisite: Prerequisite(s): either BIOL 100 and BIOL 101; or BIOC 100A and BIOC 100B; and BIOL 125; and STAT 5 or STAT 7 and STAT 7L. Satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to declared Neuroscience B.S. majors. Other majors may enroll by permission of the instructor. Students cannot enroll in BIOL 129L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 186L and METX 119L.

BIOL 130 - Human Physiology (5)

Function, organization, and regulation of the major organ systems of humans, with emphasis on integration among systems. Students cannot receive credit for this course and BIOE 131.

Prerequisite: Prerequisite(s): BIOL 110.

BIOL 130L - Human Physiology Laboratory (2)

Examines fundamental principles of systemic physiology focusing on the human. Students cannot receive credit for this course and BIOE 131L.

Prerequisite: Prerequisite(s): BIOL 110; BIOL 20L or BIOL 102J; and previous or concurrent enrollment in BIOL 130 is required.Satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to biological sciences and affiliated majors; biology minors; other majors by permission.

BIOL 140 - The RNA World (5)

This active-learning course explores the origins, evolution, and functions of ribonucleic acid (RNA), including ribozymes, ribosomes, IRNAs, spliceosomes, riboswitches, messenger RNA, microRNAs, snRNAs, snoRNAs, and other guide RNAs, CRISPR, long noncoding RNAs, retrotransposons, and RNA viruses.

Prerequisite: Prerequisite(s): BIOL 105 or BME 105, and BIOL 101.

BIOL 186F - Undergraduate Research in MCD Biology (2)

Supervised undergraduate research in laboratory of an MCD biology faculty member accompanied by weekly lectures on ethical and practical scientific issues. Topics include: laboratory safety; the scientific method; the collection, treatment, and presentation of data; critical evaluation of scientific literature; scientific misconduct; and peer review. Career issues, including how to apply for admission to graduate and professional schools, are also discussed. Prerequisite(s): BIOL 100 or BIOC 100A; and BIOL 20L or BIOL 102J; and previous completion of the Disciplinary Communication requirement. Each enrolled student must have a committed MCD faculty sponsor by the first class meeting. Enrollment is restricted to biology and affiliated majors.

BIOL 186L - Undergraduate Research in MCD Biology (5)

Supervised undergraduate research in laboratory of an MCD biology faculty member accompanied by weekly lectures on ethical and practical scientific issues. Topics include: laboratory safety; the scientific method; the collection, treatment, and presentation of data; critical evaluation of scientific literature; scientific misconduct; and peer review. Career issues, including how to apply for admission to graduate and professional schools, are also discussed. Prerequisite(s): Entry Level Writing and Composition requirements; BIOL 100 or BIOC 100A; and BIOL 20L or BIOL 102J. Each enrolled student must have a committed MCD faculty sponsor by the first class meeting. Enrollment is restricted to declared Biochemistry and Molecular Biology; Biology B.S.; Molecular, Cell and Developmental Biology and Neuroscience B.S. majors. Other majors may enroll by permission of the instructor. Students cannot enroll in BIOL 186L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 129L, or METX 119L.

BIOL 186R - Undergraduate Research in MCD Biology (5)

Supervised undergraduate research in the laboratory of an MCD biology faculty member accompanied by weekly lectures on practical scientific issues. Topics include: laboratory safety; the scientific method; the collection, treatment, and presentation of data; critical evaluation of scientific literature; ethics and scientific misconduct; and peer review. Career issues, including how to apply for admission to graduate and professional schools, are discussed. Students cannot receive credit for this course and course 186L. Prerequisite(s): BIOL 100 or BIOC 100A; and BIOL 20L or BIOL 102J; and previous completion of the Disciplinary Communication requirement. Each enrolled student must have a committed MCD faculty sponsor by the first class. Enrollment is restricted to MCD Biology-affiliated majors.

BIOL 188 - A Life in Medicine (3)

Students explore healthcare from the perspectives of both clinicians and patients. The class focuses on medicine's cognitive, emotional, and spiritual elements, with the goal of understanding the rewards and costs of healthcare practice.

Prerequisite: Enrollment is restricted to global and community health B.A., global and community health B.S., and human biology B.S. majors; other students may be admitted with the permission of instructor.

BIOL 189 - Health Sciences Internship (3)

Structured off-campus learning experience providing experience and pre-professional mentoring in a variety of health-related settings. Interns are trained and supervised by a professional at their placement and receive academic guidance from their faculty sponsor. Students spend 8 hours per week at their placement, participate in required class meetings on campus, and keep a reflective journal. Enrollment is by application. Students interview with health sciences internship coordinator; applications are due one quarter in advance to the Health Sciences Internship Office. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to global and community health B.S. and human biology majors.

BIOL 189W - Disciplinary Communication: Human Biology (3)

Writing-intensive course offered in conjunction with the health sciences internship. Weekly class meetings include academic guidance and mentoring as well as discussion of the mechanisms and conventions of academic writing about heath and health care. Students complete multiple writing assignments, culminating in a term paper in the format of a scholarly article. Enrollment is by application. Students interview with the health-sciences internship coordinator; applications are due one quarter in advance to the Health Care Sciences Internship Office. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Previous or concurrent enrollment in course 189 is required. Enrollment is restricted to human biology majors.

BIOL 195 - Senior Thesis Research (5)

An individually supervised course, with emphasis on independent research, to culminate in a senior thesis. Students submit petition to sponsoring agency.

BIOL 198 - Independent Field Study (5)

Provides for individual programs of study (a) by means other than the usual supervision in person, or (b) when the student is doing all or most of the coursework off campus. With permission of the department, may be repeated for credit, or two or three courses taken concurrently. Students submit petition to sponsoring agency.

BIOL 198F - Independent Field Study (2)

Provides for two credits of independent field study (a) by means other than the usual supervision in person, or (b) when the student is doing all or most of the coursework off campus. Students submit petition to sponsoring agency.

BIOL 199 - Tutorial (5)

Reading, discussion, written reports, and laboratory research on selected biological topics, using facilities normally available on campus. Students submit petition to sponsoring agency.

BIOL 199F - Tutorial (2)

Two-credit Tutorial. Reading, discussion, written reports, and laboratory research on selected biological topics, using facilities normally available on campus. Students submit petition to sponsoring agency.

Graduate

BIOL 200A - Critical Analysis of Scientific Literature (5)

Development of critical thinking skills via discussion of research articles on a broad range of topics. Prepares students to critically evaluate research publications, and improves their ability to organize effective oral presentations and to evaluate the oral presentations of other scientists.

Prerequisite: Enrollment is restricted to graduate students in MCD biology, or by permission of instructor.

BIOL 200B - Advanced Molecular Biology (5)

An in-depth coverage of the structure, function, and synthesis of DNA, RNA, and proteins. Discussion of the roles of macromolecules in the regulation of information in the cell.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students.

BIOL 200C - Advanced Cell Biology (5)

An in-depth coverage of topics in cellular and subcellular organization, structure, and function in plants and animals. Emphasis on current research problems.

Prerequisite: Prerequisite(s): BIOL 200B. Enrollment is restricted to graduate students.

BIOL 200D - Developmental Biology (5)

Key topics in developmental biology, including developmental genetics, epigenetics, stem cell biology, and developmental neurobiology. Lectures are accompanied by critical analysis and discussion of recent publications.

Prerequisite: Enrollment is restricted to graduate students in MCD biology, or by permission of instructor.

BIOL 200E - Experimental Design (3)

A multidisciplinary course that focuses on topics to consider when tackling biomedical research questions experimentally. Lectures highlight important issues to take into account, are coupled with group discussions and intensive analysis of primary literature, and involve case studies to practically demonstrate how how these considerations might be implemented.

Prerequisite: Concurrent enrollment in BIOL 200A is required.

BIOL 200F - Logic and Approaches to Scientific Discovery (5)

Multidisciplinary course with an emphasis on discussion of approaches and methods involved in the study of biological questions. Lectures focus on current gaps in our knowledge of topics and approaches to test models and hypotheses. Course focuses on current topics in RNA and DNA molecular biology, cell biology, developmental biology, stem cells, neurobiology, and genomics. Lectures coupled with small group discussions and written assignments.

Prerequisite: Prerequisite(s): BIOL 200A or METX 200 or CHEM 200A or BME 205. Enrollment is restricted to graduate students.

BIOL 201 - RNA Processing (5)

An advanced graduate-level course on biological aspects of RNA function and processing in eukaryotes. Lectures and discussions will be developed using the current literature.

Prerequisite: Prerequisite(s): BIOL 200B or permission of instructor. Enrollment is restricted to graduate students.

BIOL 203 - Ribosomes and Translation (5)

Covers the field of ribosome research in depth, including the structure and function of ribosomes and the molecular mechanisms of protein synthesis. Begins with historical review of the ribosome field and proceeds to the most recent findings. Focus is on central questions: (1) How is the accuracy of the aminoacyl-tRNA selection determined? (2) What is accommodation? (3) What is the mechanism of peptide bond formation (peptidyl transferase)? (4) What is the mechanism of translocation? (5) What are the mechanistic roles of the ribosome and translation factor EF-G in translocation? (6) To what extent is the mechanism of translation determined by RNA? (7) Why is RNA so well suited for the ribosome? (8) How did translation evolve from an RNA world?

Prerequisite: Prerequisite(s): BIOC 100A, BIOL 200B or permission of instructor. Enrollment is restricted to graduate students.

BIOL 204 - Chromatin (5)

Eukaryotic DNA is complexed with histones to form chromatin. This course focuses on the ways in which chromatin influences and is manipulated to regulate gene expression

Prerequisite: Prerequisite(s): BIOL 105 and BIOL 115; undergrads by permission of instructor. Enrollment is restricted to graduate students.

BIOL 205 - Epigenetics (5)

In-depth coverage of epigenetics focusing on how alterations in chromatin structure and DNA methylation establish and maintain heritable states of gene expression. Lectures are supplemented with critical discussion of recent publications.

Prerequisite: Prerequisite(s): BIOL 105 and BIOL 115, or permission of instructor. Enrollment is restricted to graduate students.

BIOL 206 - Introduction to Stem Cell Biology (5)

Fundamental concepts, experimental approaches, and current advances in stem cell biology, with consideration of key ethical issues. Topics include: self-renewal and differentiation; the microenvironment; epigenetics; cell-cycle regulation; and how basic research translates to medical therapeutics. Ethical, moral, and political issues surrounding stem cell research are discussed with lectures from philosophy and other relevant disciplines.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 206L - Current Protocols in Stem Cell Biology (5)

Provides students with hands-on experience in embryonic stem cell culture methods.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of instructor.

BIOL 208 - Cellular Signaling Mechanisms (5)

All eukaryotic cells utilize intricate signaling pathways to control such diverse events as cell-cell communication, cell division, and changes in cell morphology. This course covers the molecular basis of these cellular signaling pathways, focusing on the most current research.

Prerequisite: Prerequisite(s): BIOL 105, BIOL 110, and BIOL 115. Enrollment is restricted to seniors and graduate students.

BIOL 214 - Advances in Cancer Biology (5)

Provides students with knowledge of the latest concepts in cancer biology and cancer therapeutics, and a general appreciation of the rapid advances being made in this area of biomedicine.

Prerequisite: Prerequisite(s): BIOL 200B or by permission of instructor. Enrollment is restricted to graduate students.

BIOL 215 - Applied Statistics for Molecular, Cell, and Developmental Biology (5)

For experimental biologists: focuses on resolving practical statistical issues typically encountered in molecular, cellular, and developmental biology lab research. No prior experience in statistics or programming is necessary.

Prerequisite: Enrollment is restricted to graduate students in molecular, cellular, and developmental biology.

BIOL 217 - Influence of Environment and Experience on Brain Development (5)

How environmental factors (animals' experiences, environmental toxins, etc.) affect the formation of neuronal circuits and brain function. Lectures and discussions use current literature.

Prerequisite: Prerequisite(s): BIOL 200A, BIOL 200B, BIOL 200C, and BIOL 200D, or by permission of the instructor. Enrollment is restricted to graduate students.

BIOL 218 - CRISPR/Cas Technologies (5)

Provides an overview of the continually emerging roles for CRISPR in biomedical research. Topics will include an overview of the CRISPR genome defense systems in bacteria, the mechanisms of DNA cleavage and repair, the many uses of CRISPR as a genome editing tool in model organisms, and discussions on the ethical use of the technology in precision medicine.

Prerequisite: Prerequisite(s): BIOL 200A, BIOL 200B, and BIOL 200C. Enrollment restricted to graduate students.

BIOL 220 - STEM Outreach (2)

Trains students how to plan, design, and develop STEM outreach programs. Outreach proposals focused on engaging communities from under-represented backgrounds.

BIOL 226 - Advanced Molecular Neuroscience (5)

Basis of neural behavior at the cellular, molecular and system levels. First half of course focuses on cellular, molecular, and

developmental aspects of the nervous system and covers two sensory systems: olfaction and auditory. Last half of course concerns higher-level functions of the nervous system, such as processing and integrating information. Discusses human diseases and disorders. Students cannot receive credit for this course and BIOL 126.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 228 - Developmental Neurobiology (5)

Covers the principles of nervous-system development from the molecular control of development, and cell-cell interactions, to the role of experience in influencing brain structure and function. Students cannot receive credit for this course and course 128. Enrollment is restricted to graduate students and by permission of the instructor.

BIOL 230 - Grant Writing in the Biomedical Sciences (5)

Introduction to the fundamentals of grant writing in biomedical research, including best practices for presentation of data and communication of research findings. Participants write and peer-edit most components of the NIH Ruth Kirschstein F31/F32 pre- or post-doctoral fellowship.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 247 - Stem Cell Research: Scientific, Ethical, Social, and Legal Issues (2)

Investigates the scientific, ethical, social, and legal dimensions of human embryonic stem-cell research, including the moral status of the embryo; the concept of respect for life; ethical constraints on oocyte procurement; creation of embryonic chimeras; federal policies; and political realities. (Also offered as Biomolecular Engineering 247. Students cannot receive credit for both courses.) Prerequisite(s): Course in stem cell biology (ex: BME 278 Stem Cell Research) or the equivalent knowledge. Enrollment is restricted to graduate students.

Prerequisite: Prerequisite(s): Course in stem cell biology (ex: BME 278 Stem Cell Research) or the equivalent knowledge. Enrollment is restricted to graduate students.

BIOL 280A - Topics in Research on Molecular Genetics of Yeast (2)

Intensive research seminar on the structure and function of the gene expression machinery in the simple eukaryote *Saccharomyces cervisiae* and its relationship to the human gene expression machinery.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with approval of instructor.

BIOL 280B - Chromatin Structure and Transcriptional Regulation (2)

Weekly seminar on structure and gene regulatory function of chromatin. Discusses research of participants and relevant scientific literature.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280C - Mammalian Brain Development (2)

Seminar covers research into the development of the mammalian brain.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

BIOL 280D - Muscle Biology and Gene Regulation (2)

Weekly seminar and group discussion on current topics in the study of muscle biology and gene regulation as it relates to transcriptional dynamics. Students present, review, and discuss relevant research pertaining but not limited to muscle development, epigenetics, and skeletal muscle adaptation. In addition to presenting and discussing published research, students present their own independent research and receive feedback from the instructor and other students.

Prerequisite: Enrollment is restricted to molecular, cell, and developmental biology graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280E - Meiotic Chromosome Dynamics (2)

Intensive course on the molecular mechanisms underlying homolog pairing, synapses, and recombination; and how they are regulated, coordinated, and monitored to ensure accurate meiotic chromosome segregation.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

BIOL 280F - Development of Vertebrate Neural Connections (2)

Intensive research seminar on molecular mechanisms by which neural connections are established during mouse development. Special focus on topographic maps and role of Eph receptors and ephrins in this process.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280G - Molecular Mechanisms of Behavioral Development and Evolution (2)

Weekly seminar and group discussion on current topics in the study of birdsong neurobiology and the development and evolution of the nervous system generally. Students present, review, and discuss relevant research pertaining but not limited to birdsong molecular and systems neurobiology, developmental gene regulatory mechanisms in the brain, and comparative neurobiology. In addition to presenting and discussing published research, students present their own independent research and receive feedback from the instructor and other students.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280H - Topics on Research into Chromatin and Transcription (2)

Seminar covering research into the effects of chromatin on transcription in yeast.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

BIOL 280I - Epigenetic Gene Silencing and Insulators (2)

Intensive course on molecular mechanisms by which insulator elements regulate epigenetic gene silencing.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280J - Structures of Macromolecular Complexes (2)

Focuses on structure and function of the spliceosome using electron microscopy and x-ray crystallography. Participants present results from their own research and relevant journal articles.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280K - Topics in Cell Cycle Research (2)

An intensive seminar focusing on current research on the molecular mechanisms that control cell division. Participants are required to present results of their own research or to review journal articles of interest.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280L - Development (2)

Seminar covering research into breast development and cancer.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 280M - Post-Transcriptional Control of Mammalian Gene Expression (2)

Intensive course on the molecular mechanisms by which RNA binding proteins regulate gene expression.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with the permission of the instructor.

BIOL 280N - Long Noncoding RNA and the Immune System (2)

Weekly seminar discussion of the current research and literature concerning the functions for long noncoding RNA in gene regulation within inflammatory signaling pathways.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of the instructor.

BIOL 280O - Cell type specific computations in neural circuits (2)

Introduces students to classic and current research in the area of systems neuroscience with specific focus on how different neural cell types shape the computations that are performed in neural circuits. Each week, a different student or the instructor will give a presentation and/or lead a discussion on a topic of their choosing. These topics can be the student's research project, a classic or current neuroscience journal article, or a tutorial on a new method. Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor. Enrollment limited to 10. May be repeated for credit.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280P - Quality Control in Gene Expression (2)

Intensive, discussion-based course concerning ongoing research in quality control and gene expression via analysis of published and unpublished observations and theories.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 280Q - Telomeres and Telomerase (2)

Weekly seminar and group discussion on current topics telomerase and telomere length regulation. Students present, review, and discuss relevant research on telomerase, regulation of telomere length equilibrium, analysis of telomere length data. In addition to presenting and discussing published research, students present their own independent research and receive feedback from the instructor and other members of the laboratory. Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280R - Gene regulation in C. elegans and human parasitic namtodes (2)

Intense weekly seminar on the mechanisms of gene regulation, focusing on C. elegans and human parasitic nematodes.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with the permission of the instructor.

BIOL 280S - Stem Cell Genomics and Neurodevelopment (2)

Weekly seminar and group discussion on current topics related to the role of human genome variants, including retrotransposons and segmental duplications, on gene regulation and human brain development and disease. Students present, review, and discuss research pertaining, but not limited, to the evolution of retrotransposons and KZNF proteins and their effect on early embryonic gene regulatory programs as well as the development and characterization of pluripotent stem cell-derived brain organoid models. In addition to presenting and discussing published research, students also present their own independent research and

receive feedback from the instructor and other class participants.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280T - Cancer Stem Cell Biology (2)

Intensive, discussion-based course covering recent published and unpublished research in mechanisms regulating cancer stem cells and metastasis in breast cancer and their relationship with normal stem cells. Students also present their own research and solicit feedback from students and instructors. May be repeated for credit. Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280U - Discussions on the Development of the <I>Drosophila</I> Embryo (2)

Involves a two-hour weekly meeting in which the students discuss topics concerning the cell cycle, early embryonic development, and the cytoskeleton. These discussions critically evaluate ongoing research in this area. Material is drawn from student research and recently published journal articles. Students are also expected to meet individually with the instructor two hours weekly. In addition to a three–five page research proposal, each student gives two one-hour oral presentations.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280V - Translational pediatric genomics (2)

Weekly discussion of the current research and literature on translational pediatric genomics. Specific patient cases may be discussed.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of the instructor.

BIOL 280W - Development, Connectivity, and Genetic Identity of Neural Circuits (2)

This seminar course will cover the current topics and progress of neuroscience research on neural circuit development, connectivity, function and genetics. (Formerly Membrane Proteins.)

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 280X - RNA-mediated epigenetic inheritance (2)

Intensive research seminar about epigenetic inheritance and the role of small non-coding RNAs in the intergenerational inheritance of paternal environmental effects. Participants present their research results and report on related journal articles.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of the instructor.

BIOL 280Y - Activity-Dependent Synaptic Plasticity (2)

Research seminar covering the regulation of synaptic plasticity in the mammalian nervous system, focusing on how the activity regulates the structural and functional dynamics of synapses.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

BIOL 280Z - Prostate Development and Cancer Biology (2)

Weekly research seminar covering gene regulation, cellular interactions, and stem cell behaviors in mammalian prostate development and prostate cancer progression.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll by the permission of the instructor.

BIOL 281A - Host Responses to Respiratory Viral Infections (2)

Weekly seminar and discussion of current research and literature concerning mechanisms by which the host immune response determines the severity of disease following a respiratory viral infection. Enrollment is limited to 10.

Prerequisite: Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 281B - Mucosal Immunology and Microbiology (2)

Weekly seminar covering current research and literature concerning the gut barrier and microbes, with particular emphasis on enteric viruses. Enrollment is limited to 10.

Prerequisite: Enrollment restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 281C - Lentiviral Replication (2)

Weekly seminar and discussion on current research and literature related to lentiviral replication, evolution, and cross-species transmission as it relates to the host DNA damage response and antiviral innate immunity. Participants present their research results, report on relevant journal articles, and actively engage in group discussions on the topics.

Prerequisite: Enrollment is restricted to molecular, cell, and developmental biology graduate students; qualified undergraduates may enroll with permission of instructor.

BIOL 288 - Pedagogy in STEM (2)

Prepares graduate students to help teach university science courses. Weekly class sessions include activities and interactive discussions of diverse modes of learning, diverse ways of teaching, peer instruction, assessment of learning,

equity and inclusion, and professional ethics. Students also visit an active learning class and an active learning discussion section at UCSC, then write evaluations of the teaching strategies used in those classes. (Formerly Teaching Assistant Training.)

Prerequisite: Enrollment is restricted to graduate students.

BIOL 289 - Practice of Science (5)

Examination of ethical and practical scientific issues, including the collection and treatment of data, attribution of credit, plagiarism, fraud, and peer review. Career issues, including how to apply for grants and positions in industry or academia, will be discussed.

Prerequisite: Prerequisite(s): BIOL 200A or permission of instructor. Enrollment is restricted to graduate students; undergraduates may enroll with permission of the instructor.

BIOL 290 - Career Planning (2)

An important goal of graduate programs is to train students for diverse careers. Exposes molecular cell and developmental biology graduate students to diverse career options and helps them develop individual development plans to target their graduate training to their selected career goals.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 291 - Molecular, Cellular, and Developmental Biology Seminar (2)

Topics of current interest in molecular, cellular, and developmental biology are presented weekly by graduate students, faculty, and guest speakers.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 292 - MCD Seminar (0)

Various topics by weekly guest speakers.

Prerequisite: Enrollment is restricted to graduate students.

BIOL 296 - Laboratory Research in Molecular, Cell, and Developmental Biology (5)

Independent laboratory research in molecular, cellular, and developmental biology. Students submit petition to sponsoring agency.

BIOL 297A - Independent Study (5)

Independent study for graduate students who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency.

BIOL 297B - Independent Study (10)

Independent study for graduate students who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency.

BIOL 297C - Independent Study (15)

Independent study for graduate students who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency.

BIOL 297F - Independent Study (2)

Independent study for graduate students who have not yet settled on a research area for their thesis. Students submit petition to sponsoring agency.

BIOL 299A - Thesis Research (5)

Students submit petition to sponsoring agency.

BIOL 299B - Thesis Research (10)

Students submit petition to sponsoring agency.

BIOL 299C - Thesis Research (15)

Students submit petition to sponsoring agency.

BIOL 299F - Thesis Research (2)

Students submit petition to sponsoring agency.

Prerequisite: Enrollment is restricted to graduate students.

BME - BIOMOLECULAR ENGINEERING

To view planned offerings for the current academic year, please visit this page.

Lower-Division

BME 1 - Introduction to Biomolecular Engineering Problem Solving (2)

Introduction to biomolecular engineering through identification of current problems and their solutions. Intended for any student interested in BME. Students critically read primary research articles, search scientific literature, and identify relevant, trustworthy sources of information. Students learn about the engineering design process and common experimental tools used in biomolecular engineering research. Major course assignments include writing assignments and a team presentation.

BME 5 - Introduction to Biotechnology (5)

Introduces the tools and applications of biotechnology in the fields of medicine, agriculture, the environment, and industry.

BME 18 - Scientific Principles of Life (5)

The principles of life as it exists on this planet and how they generalize. Darwinian evolution, genomes, scientific theories of life (mechanistic, thermodynamic, information theoretic). Future of life: Internet, machine learning and adaptation, artificial intelligence, genome editing, fully artificial life.

BME 21L - Introduction to Basic Laboratory Techniques (3)

Laboratory course providing hands-on training in fundamental techniques used to express, isolate, and analyze genes in prokaryotic cells. Introduction to common laboratory instruments and fundamental skills required for basic research in molecular biology and biomolecular engineering.

Prerequisite: Prerequisites: CHEM 1M or CHEM 3BL, or CHEM 4BL. Enrollment is restricted to bioengineering, bioinformatics, and biomolecular engineering and bioinformatics majors and proposed majors.

BME 22L - Foundations of Design and Experimentation in Molecular Biology (2)

Project-based laboratory course providing hands-on training in fundamental molecular biology and biomolecular engineering techniques used to manipulate expression of DNA and proteins in prokaryotic cells. Students are introduced to essential processes in experimental design. (Formerly Foundations of Design and Experimentation in Molecular Biology, Part I.)

Prerequisite: Prerequisite(s): BME 21L. Enrollment is restricted to bioengineering, bioinformatics, and biomolecular engineering and bioinformatics majors and proposed majors.

BME 23L - Foundations of Design and Experimentation in Molecular Biology, Part II (2)

Laboratory-based course extending the wet lab skills developed in the first two quarters of the BME 2x series with bioinformatics skills that form the foundation of biomolecular engineering. Focuses on sequencing of low-diversity environmental samples, including: field sampling, DNA extraction from those samples, library preparation, hands-on sequencing using a Nanopore device, base-calling of the raw data, assembly of contigs, quality assessment, contig assignment to species/bins, automated annotation of a single assemblage from collection genome publication.

Prerequisite: Prerequisites: BME 22L. Enrollment is restricted to bioengineering, bioinformatics, and biomolecular engineering and bioinformatics majors and proposed majors.

BME 35 - Strategies for a Successful Summer Internship (10)

Open only to UCSC students in the QB3 Summer Internship Program. Course provides hands-on experience working in a lab on campus or at an industry partner. It is designed for students to integrate an intensive research experience with their major and prior coursework. Enrollment is by permission of the instructor.

BME 51A - Applied Electronics for Bioengineers Part 1 (5)

Lab-based course that introduces measuring, modeling, and designing electronics circuits, emphasizing voltage dividers and complex impedance culminating in simple, negative-feedback op amp circuits for amplifying audio signals.

Prerequisite: Prerequisite(s): MATH 19A; or MATH 11A by consent of instructor. High school physics recommended. Enrollment is restricted to bioengineering and biomolecular engineering & bioinformatics majors and proposed majors; other majors by consent.

BME 51B - Applied Electronics for Bioengineers Part 2 (5)

Lab-based course that introduces designing, measuring, and modeling electronics circuits, emphasizing RC filters and negative-feedback amplifiers for various sensors circuits for amplifying audio signals, design of multi-stage amplifiers, instrumentation amplifiers, and class-D power amplifiers.

Prerequisite: Prerequisite(s): BME 51A.

BME 55 - Introduction to Lab Groups (2)

Course intended to assist second-year biomolecular engineering and bioinformatics undergraduates find research labs that they might join. Students sit in on different lab group meetings, read papers recommended by the lab groups, and report back to other students in the class both verbally and in writing. Course is offered for pass/no pass only.

Prerequisite: Enrollment is restricted to sophomore and junior proposed biomolecular engineering and bioinformatics majors, or by permission of the instructor.

BME 80G - Bioethics in the 21st Century: Science, Business, and Society (5)

Serves science and non-science majors interested in bioethics. Guest speakers and instructors lead discussions of major ethical questions having arisen from research in genetics, medicine, and industries supported by this knowledge.

BME 80H - The Human Genome (5)

Course will focus on understanding human genes. Accessible to non-science majors. Will cover principles of human inheritance and techniques used in gene analysis. The evolutionary, social, ethical, and legal issues associated with knowledge of the human genome will be discussed.

BME 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

BME 94F - Group Tutorial (2)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

BME 99 - Tutorial (5)

Students submit petition to sponsoring agency.

BME 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

BME 101 - Molecular Biology for Biomolecular Engineers (5)

Provides an overview of the biochemistry of three types of biomolecules. Also covers how DNA is replicated and stores genetic information, how RNA is transcribed and transports genetic information, and how proteins are synthesized and perform a variety of functions. Focuses on genes and how they are regulated.

Prerequisite: Prerequisites: BIOL 20A.

BME 105 - Genetics in the Genomics Era (5)

Principles of genetics and genomics focusing on how sequencing technologies enable us to understand gene function, genotype to phenotype relationships, and genetic inheritance.

Prerequisite: Prerequisite(s): BIOL 20A. Enrollment is restricted to bioengineering, biomolecular engineering and bioinformatics, biotechnology, bioinformatics, and microbiology majors, and proposed majors; and bioinformatics minors.

BME 110 - Computational Biology Tools (5)

Hands-on lectures and laboratory geared to teach basic tools and skills used in computational biology (genome browsers, sequence database searching, motif analysis, multiple sequence alignment, gene finders, phylogenetics analysis, protein structure visualization, and others). Web-based tools/databases are used on student laptops. Open to all science students; no prior programming or Unix experience required.

Prerequisite: Prerequisite(s): BME 105, or BIOL 100, or BIOL 105, or BIOC 100A, or CHEM 103, or bioinformatics majors, or biomolecular engineering and bioinformatics majors.

BME 118 - Mathematics of the Mind (5)

Investigates the mind as an adaptive system, the evolutionary history of the brain, and mathematical theories of knowledge representation and learning in humans and machines. Students build Jupyter notebooks that interact with human cerebral cortex organoids to explore adaptive processes in neural circuits. Taught in conjunction with BME 218. Students cannot receive credit for this course and BME 218.

Prerequisite: Prerequisites: either MATH 19A and MATH 19B, or MATH 20A and MATH 20B; and MATH 21 or AM 10; and CSE 20, CSE 20 Testout, or BME160; or by permission of the instructor.

BME 122H - Extreme Environmental Virology (5)

Examines life in extreme environments with an emphasis on the viruses that live there. Integrates aspects of virology, molecular biology, and computational biology. Students investigate a high-salt, extreme environment at the Don Edwards National Wildlife Refuge, and use DNA extraction methods to find molecular evidence of the organisms that live there and describe the genetic content of viruses and the community living in those high-salt ponds.

Prerequisite: Enrollment is restricted to College Scholar Students, and or by permission of the instructor.

BME 123L - Long Read Sequencing (2)

Two-credit hands-on course in DNA sequencing, sequence assembly, and gene annotation. Students make use of low-diversity metagenomic samples drawn from environmental locations to follow all steps in sequence and the discovery of prokaryotic and viral life. For students who have already completed sequencing experience in BME 23L, please consult with the instructor prior to enrolling in BME 123L to determine eligibility and course availability.

Prerequisite: Prerequisite(s): BME 22L, and previous or concurrent enrollment in BME 122H or BME 130.

BME 123T - Senior Thesis Writing (5)

For bioengineering senior thesis students, guidance in preparing a draft manuscript describing their senior research project. Students also practice conference-style oral or poster presentation.

Prerequisite: Prerequisite(s): BME 185 or CSE 185E. Concurrent enrollment in BME 193F or BME 195F or BME 198F or CSE 193F or CSE 195F or CSE 198F or ECE 193F or ECE 195F or ECE 198F is required. Enrollment is restricted to senior biomolecular engineering and bioinformatics and bioengineering majors.

BME 128 - Protein Engineering (5)

For bioengineering, bioinformatics, and biology majors, focuses on engineering (i.e., changing) of proteins. Topics focus on practical aspects of protein engineering strategies that are crucial to modern biotechnology and biomedicinal applications.

Prerequisite: Prerequisite(s): BIOL 100 or BIOC 100A or CHEM 103, or by permission of instructor.

BME 128L - Protein Engineering Laboratory (2)

Students address a current scientific question about protein stability using structure-guided protein engineering. Specifically, Students use recombinant DNA technology to produce an engineered protein that is predicted to have enhanced stability. Students then assess its stability with differential scanning fluorimetry.

Prerequisite: Prerequisite(s): BME 22L; and previous or concurrent enrollment in BME 128. Enrollment is restricted to junior and senior bioengineering, biomolecular engineering, and bioinformatics majors; other majors by permission of instructor.

BME 129A - Project Design and Implementation in Biomolecular Engineering I (5)

First of a three-part series focused on senior design projects in biomolecular engineering. In this first part, students examine experiments that elucidated the function of biological

macromolecules at the Angstrom scale, and how technologies related to those functions were invented and implemented. Guided by these examples, each student develops a senior design project concept or small business proposal and defends its utility, plausibility, and inventiveness in a written document and an oral presentation.

Prerequisite: Prerequisite(s): BME 22L; BIOL 100 or BIOC 100A or CHEM 103 or BME 101; and previous or concurrent enrollment in BME 185 or CSE 185E or CSE 185S. Enrollment is restricted to junior and senior bioengineering and biomolecular engineering and bioinformatics majors or by permission of the instructor.

BME 129B - Project Design and Implementation in Biomolecular Engineering II (5)

Second part of a three-course sequence that is the culmination of the bioengineering program for students who chose a senior design group project to fulfill their capstone requirement. Students apply knowledge and skills gained in biomolecular engineering coursework to articulate, organize, and plan a senior design group project. Student groups complete research, specification, planning, and procurement for their project. Includes technical discussions, design reviews, and formal presentations.

Prerequisite: Prerequisite(s): BME 129A or BME 150. Enrollment is restricted to senior bioengineering or biomolecular engineering and bioinformatics majors.

BME 129C - Project Design and Implementation in Biomolecular Engineering III (5)

Final part of a three-course sequence that is the culmination of the bioengineering program for students who chose a senior design group project to fulfill their capstone requirement. Students apply knowledge and skills gained in biomolecular engineering coursework to articulate, organize, and plan a senior design group project. Student groups complete research, specification, planning, and procurement for their project. Includes technical discussions, design reviews, and formal presentations.

Prerequisite: Prerequisite(s): BME 129B or BME 230A. Enrollment is restricted to senior bioengineering or biomolecular engineering and bioinformatics majors.

BME 130 - Genomes (5)

Advanced elective for biology majors, examining biology on the genome scale. Topics include genome sequencing; large scale computational and functional analysis; features specific to prokaryotic, eukaryotic, or mammalian genomes; proteomics; SNP analysis; medical genomics; and genome evolution.

Prerequisite: Prerequisite(s): BIOL 105 or BME 105 or METX 140; or permission of the instructor.

BME 132 - Evolutionary Genomics (5)

Covers major recent advances in evolutionary genomics. Students learn to analyze and interpret scientific writing in depth. Students also present on work covered in the class and produce one research or review paper. Students cannot receive credit for this courses and course 232.

Prerequisite: Prerequisite(s): BME 105 or BIOL 105 or METX 140. Enrollment is restricted to juniors and seniors.

BME 140 - Bioinstrumentation (5)

Introduces the fundamental aspects of bioinstrumentation that are essential for beginning-level employment in clinical, pharmaceutical , and biotechnology laboratories. The advantages and disadvantages of several instruments are discussed and demonstrated, such as thermocycler, polymerase chain reaction (PCR), next-generation DNA sequencing platforms, pyrosequencing, fabless nanofabrication, ion-sensitive measurements, microarray fabrication, and fluorescent-activated cell sorter (FACS).

Prerequisite: Prerequisite(s): BME 5; or BME 51A and BME 51B; or ECE 101 and ECE 101L; or BIOL 100; or BIOC 100A.

BME 160 - Research Programming in the Life Sciences (6)

Teaches programming while exploring object-oriented design, use of high-performance data containers (dictionaries and sets), and team-based development—all with the goal of producing reliable and usable research tools. No programming experience is required, but basic computer and molecular biology understanding is assumed. Students without prior programming experience may benefit from taking CSE 20 in preparation for this course. Students learn programming in Python to manipulate biological data. Programming assignments comprise the majority of the assignments, and a final project using skills developed in this course is required. Lab section registration is required. BioPython and other modules are introduced for use in the final project.

Prerequisite: Prerequisite(s): BIOL 20A or BIOL 21A.

BME 163 - Applied Visualization and Analysis of Scientific Data (5)

Python and its Numpy, Scipy, and Matplotlib packages as well as Inkscape are used on scientific data to generate publication-quality figures. Students cannot receive credit for this course and course 263.

Prerequisite: Prerequisite(s): BME 160 or BME 205 or CSE 20. Prerequisites can be waived in cases where students have the required programming skills, or who have passed the CSE 20 test-out exam. Enrollment is restricted to juniors and seniors.

BME 175 - Entrepreneurship in Biotechnology (5)

Focuses on contemporary issues in commercializing biotechnology and genomics, emphasizing development of teamwork and communication skills. Topics include intellectual property management, fundraising, market analysis, and technology development as related to biotechnology start-ups. Students perform real-world tasks preparing for commercialization. Taught in conjunction with BME 275.

BME 177 - Engineering Stem Cells (5)

For bioengineering students interested in stem cells. Class uses project-based learning to discuss basic stem cell concepts and past breakthrough approaches to identify and design solutions for technological hurdles in stem cell research.

Prerequisite: Prerequisite(s): BIOL 20A or by consent of instructor. Basic knowledge of molecular and cellular biology is required.

BME 177L - Engineering Stem Cell Laboratory (2)

Introduces students to laboratory techniques for growing and differentiating embryonic stem cells, genetic manipulation of stem cells and imaging of stem cells. Students learn how to culture stem cells, count cells, transfect cells, image cells and analyze morphology of stem cells. In addition, students learn how to write lab reports and present their findings. Students are billed a materials fee of $175.

Prerequisite: Prerequisites: BME 22L; and previous or concurrent enrollment in BME 177. Enrollment is restricted to biomolecular engineering and bioinformatics majors or by permission.

BME 178 - Stem Cell Biology (5)

Basic concepts, experimental approaches, and therapeutic potential are discussed. Students gain experience in reading the primary scientific literature.

Prerequisite: Prerequisite(s): BIOL 110 or BME 101 or BIOC 100A or BIOL 100 or CHEM 103; BIOL 115 recommended.

BME 180 - Professional Practice in Bioengineering (2)

Seminar course where students develop a research proposal and the collaborative skills needed for independent research projects. Includes professional practice development in collaboration skills, project management, proposal development, and funding.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in BME 185 or CSE 185E. Enrollment is restricted to junior and senior bioengineering, biomolecular engineering and bioinformatics, and bioinformatics majors or by permission.

BME 185 - Technical Writing for Biomolecular Engineers (5)

Writing by biomolecular engineers, not to general audiences, but to engineers, engineering managers, and technical writers. Exercises include job application and resume, library puzzle, graphics, laboratory protocols, document specification, progress report, survey article or research proposal, poster, and oral presentation.

Prerequisite: Prerequisite(s): BIOL 20A; satisfaction of Entry Level Writing and Composition requirements; Enrollment restricted to junior and senior bioengineering, biomolecular engineering and bioinformatics, and biotechnology majors.

BME 188A - Synthetic Biology--Mentored Research A (2)

This two-credit course is the first of three courses in a 12-credit collaborative research project available to students in physical sciences, and biomolecular engineering intended to satisfy the capstone requirement. Provides a multidisciplinary, collaborative research experience working on a project in synthetic biology. Working with one or more research faculty, student teams complete a substantial project. Multiple oral/written presentations are required, including a formal conference presentation. Prerequisite(s): BME 180. Enrollment is restricted to juniors and seniors. Enrollment is by instructor permission.

Prerequisite: Prerequisite(s): BME 180. Enrollment is restricted to juniors and seniors. Enrollment is by instructor permission.

BME 188B - Synthetic Biology--Mentored Research B (5)

This five-credit course is the second of three courses in a 12-credit collaborative research project available to students in physical sciences and biomolecular engineering intended to satisfy the capstone requirement. Multiple oral/written presentations are required, including a formal conference presentation. Prerequisite(s): BME 188A. Enrollment is restricted to juniors and seniors. Enrollment is by instructor permission.

BME 188C - Synthetic Biology Mentored Research C (5)

Third of three courses in a 12-credit collaborative research project available to students in physical sciences and biomolecular engineering intended to satisfy the capstone requirement. Students in this course sequence may be participating in the annual IGEM (International Genetically Engineered Machines) competition. Course includes training in specific skills relevant to the specific sub-team and overall project, including lab-specific training (pcr, DNA electrophoresis, gel documentation, standard reagent prep, lab safety, lab equipment, project specifics). Prerequisite(s): BME 188B. Enrollment is restricted to juniors and seniors. Enrollment is by instructor permission.

BME 193 - Field Study (5)

Provides for individual programs of study with specific aims and academic objectives carried out under the direction of a BME faculty member and a willing sponsor at a field site, using resources not normally available on campus. Credit is based upon written and oral presentations demonstrating the achievement of the objectives of the course. Students submit petition to sponsoring agency.

BME 193F - Field Study (2)

Provides for individual programs of study with specific aims and academic objectives carried out under the direction of a BME faculty member and a willing sponsor at a field site, using resources not normally available on campus. Credit is based upon written and oral presentations demonstrating the achievement of the objectives of the course. Students submit petition to sponsoring agency.

BME 194 - Group Tutorial (5)

A program of study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

BME 194F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

BME 195 - Senior Thesis Research (5)

Students submit petition to sponsoring agency.

BME 195F - Senior Thesis or Research (2)

Students submit petition to sponsoring agency.

BME 198 - Individual Study or Research (5)

Students submit petition to sponsoring agency.

BME 198F - Individual Study or Research (2)

Students submit petition to sponsoring agency.

BME 199 - Tutorial (5)

For fourth-year students majoring in bioinformatics or bioengineering.

Graduate

BME 201 - Scientific Writing (3)

Covers effective writing styles for scientific communication for bio-science and engineering graduate students. Covers instruction for writing grant applications, scientific manuscripts, and thesis proposals. Students practice by preparing, editing, and evaluating each of these documents.

Prerequisite: Enrollment is restricted to graduate students.

BME 205 - Bioinformatics Models and Algorithms (5)

Covers bioinformatics models and algorithms: the use of computational techniques to convert the masses of information from biochemical experiments (DNA sequencing, DNA chips, and other high-throughput experimental methods) into useful information. Emphasis is on DNA and protein sequence alignment and analysis.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates may enroll with prerequisite(s): BME 160 or CSE 30; and CSE 107 or STAT 131; and previous or concurrent enrollment in BIOC 100A or BME 101 or BIOL 100 or CHEM 103.

BME 215 - Applied Gene Technology (5)

Detailed insight into the techniques and technological trends in genomics and transcriptomics, building the necessary foundations for further research in genetic association studies, population genetic association studies, population genetics, diagnostics, medicine, and drug development. Students should already have a deeper understanding of the basic tools of molecular biotechnology than acquired in introductory courses in biotechnology, biochemistry, and molecular biotechnology.

Prerequisite: Enrollment is restricted to graduate students.

BME 218 - Mathematics of the Mind (5)

Investigates the mind as an adaptive system, the evolutionary history of the brain, and mathematical theories of knowledge representation and learning in humans and machines. Students build Jupyter notebooks that interact with human cerebral cortex organoids to explore adaptive processes in neural circuits. Taught in conjunction with BME 118. Students cannot receive credit for this course and BME 118.

Prerequisite: Enrollment is restricted to graduate students. Students should have knowledge of calculus, linear algebra, and Python programming.

BME 228 - Protein Design and Engineering (5)

Explore computational protein design approaches and engineering techniques. Students learn to engineer functional proteins, formulate a protein design project, and communicate research effectively for practical applications. Taught in conjunction with BME 128. Students cannot receive credit for this course and BME 128.

Prerequisite: Enrollment is restricted to graduate students.

BME 229 - Protein and Cell Engineering (5)

Focuses on established and novel strategies for protein and cell engineering. Explores concepts, design, and practical applications of engineered proteins, cells, and organisms as research tools and in therapeutic applications. Recommended for graduate students with interests in bioengineering.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates by permission of instructor.

BME 230A - Introduction to Computational Genomics and Systems Biology (5)

Introductory and intermediate-level topics in computational genomics, DNA and RNA sequence analysis, mapping, quantification, detection of variants and their associations with disease. Covers topics in machine-learning, probabilistic graphical models, gene regulatory network inference, and single cell analysis. Students conduct related independent research.

Prerequisite: Prerequisite(s): BME 205. Enrollment is restricted to juniors, seniors, and graduate students.

BME 230B - Advanced Computational Genomics and Systems Biology (5)

Covers advanced topics in computational genomics, DNA and RNA sequence analysis, mapping, quantification, detection of variants and their associations with disease. Topics include machine-learning, probabilistic graphical models, gene regulatory network inference, and single cell analysis.

Students participate in teams in a computational analysis competition.

Prerequisite: Prerequisite(s): BME 230A. Enrollment is restricted to juniors, seniors, and graduate students.

BME 232 - Evolutionary Genomics (5)

Covers major recent advances in evolutionary genomics. Students learn to analyze and interpret scientific writing in depth. Students also present on work covered in the class and produce one research or review paper. Students may not receive credit for this course and course 132.

Prerequisite: Enrollment is restricted to graduate students. BME 105 or BIOL 105 or equivalent courses in higher-level genetic processes are highly recommended.

BME 237 - Applied RNA Bioinformatics (5)

Teaches methods for RNA gene discovery; gene expression quantification; probabalistic modeling, secondary structure/trans-interaction prediction; mRNA splicing; and functional analysis. Emphasis on leveraging comparative genomics and employing high-throughput RNA sequencing data. Includes lectures, scientific literature discussion, problem sets, and final gene-discovery project.

Prerequisite: Enrollment is restricted to seniors and graduate students.

BME 263 - Applied Visualization and Analysis of Scientific Data (5)

Python and its Numpy, Scipy, and Matplotlib packages as well as Inkscape are used to generate publication quality figures from scientific data. Students cannot receive credit for this course and course 163.

Prerequisite: Prerequisite(s): BME 160 or BME 205. Prerequisite(s) can be waived in cases where students have required programming skills. Enrollment is restricted to graduate students.

BME 272 - Precision Medicine (5)

Focuses on modern "precision" approaches to understanding human health, where every patient is unique. Explores basic and clinical discoveries and 'omics-based medicine for the prevention, diagnosis, and treatment of disease. Emphasis is on genomic approaches and applications to cancer.

Prerequisite: Enrollment restricted to juniors, seniors, and graduate students.

BME 273 - Stem Cell Epi/Genomics (3)

Course focuses on the application of epi/genomic technologies of stem cells. Topics include 'omics to interrogate pluripotency, cell lineages, hierarchies, trajectories, epigenomic reprogramming. Class includes hands-on computational analysis of epi/genomics data. For graduate/postdoctoral trainees engaged in stem cell research. Enrollment is restricted to graduate students and by permission of the instructor. Basic programming knowledge is recommended.

BME 275 - Entrepreneurship in Biotechnology (5)

Focuses on contemporary issues in commercializing biotechnology and genomics, emphasizing development of teamwork and communication skills. Topics include intellectual property management, fundraising, market analysis, and technology development as related to biotechnology start-ups. Students perform real-world tasks preparing for commercialization. Taught in conjunction with Biomolecular Engineering 175.

BME 278 - Stem Cell Biology (5)

Basic stem cell concepts, experimental approaches, and therapeutic potential are discussed. Students gain experience in reading and critically evaluating the primary scientific literature. Students cannot receive credit for this course and BME 178.

Prerequisite: Enrollment is restricted to graduate students in PBSE program (Program in Biomedical Science and Engineering: Biomolecular Engineering and Bioinformatics (BMEB), Microbial Biology and Pathogenesis (MICRO), Chemical Biology, Biochemistry and Biophysics (CB3), Molecular, Cell and Developmental Biology (MCDB)) or consent of instructor.

BME 280B - Seminar on Bioinformatics and Bioengineering (2)

Weekly seminar series covering topics of current research in computational biology, and bioinformatics. Current research work and literature in these areas are discussed. Short papers reflecting on presentations required. Available for Satisfactory/Unsatisfactory (or Pass/No Pass) grading only.

BME 281A - Seminar on Processive Enzymes and Nanopores (2)

Weekly seminar series covering experimental research in nanopore technology and single-molecule analysis of polymerase function. Current research work and literature is discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduates may enroll with permission of instructor.

BME 281C - Seminar in Cancer Genomics (2)

Presents current computational biology research to identify genomics-based signatures of cancer onset, progression, and treatment response. Examples of such investigations include: genetic pathway interpretation of multivariate high-throughput datasets; discovery of mutations in whole-genome sequence; identifications and quantification of gene isoforms, alleles, and copy number variants; and machine-learning tools to predict clinical outcomes. Students present their own research, host journal clubs, and attend lectures and teleconferences to learn about research conducted by national and international projects.

Prerequisite: Enrollment is restricted to graduate students.

BME 281D - Seminar on Protein Engineering (2)

Weekly seminar series covering experimental research in protein structure, function, and engineering. Current research work and literature in this area are discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment is restricted to graduate students.

BME 281E - Seminar in Genomics (2)

Current topics in genomics including high-throughput sequencing, genome assembly, and comparative genomics. Students design and implement independent research projects. Weekly laboratory meetings are held to discuss these projects and related research in the field.

Prerequisite: Enrollment is restricted to graduate students.

BME 281F - Blood Cell Development (2)

Weekly seminar covering topics in current research on blood cell development and stem cell biology. Current research and literature in these areas discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates may enroll with permission of instructor.

BME 281G - Seminar on Cell Fate Decisions (2)

Weekly seminar series covering experimental research in cell fate decisions. Current research work and literature in this area is discussed. Students lead some discussions and participate in all meetings. Available for Satisfactory/Unsatisfactory or Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to graduate students only; qualified undergraduate students may enroll with permission of the instructor.

BME 281H - Live Cell Biotechnology Seminar (2)

Weekly seminar series covering topics of current computational and experimental research in live cell biotechnology. Current research work and literature in this area are discussed. Students lead some discussions and participate in all meetings. (Formerly offered as Seminar in Comparative Genomics.)

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BME 281J - Seminar in Computational Genomics and Biomedicine (2)

Research seminar of the UCSC Computational Genomic Laboratory and Platform Teams. Students receive hands-on instruction in modern computational methods to address research questions. Topics include: genomic and transcriptomic sequence analysis methods, comparative and evolutionary genomics, big-data genomic analysis, biomedical data sharing, and precision medicine. Students attend and participate in monthly lab meetings, monthly all-hands meetings, where students give a quick report on their progress and the next month's goals, and a bi-weekly journal club, where pairs of students present and discuss a paper of their choosing with the lab. Students also participate in hands-on, active computational laboratory-based research. Student evaluation is based on suitable progress toward research goals and graduate program progress.

Prerequisite: Enrollment is restricted to graduate students.

BME 281L - Seminar in Computational Genetics (2)

Weekly seminar series covering topics and experimental research in computational genetics. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BME 281M - Seminar on Chromosome Biology and Function (2)

Weekly seminar series covering experimental research in chromosome structure and repeat biology. Current research work and literature in this area is discussed. Students lead some discussions and participate in all meetings. Available for Satisfactory/Unsatisfactory or Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduates may enroll with permission of instructor.

BME 281N - Seminar in Transcriptomics (2)

Covers current topics in computational and experimental research in transcriptomics. Current research work and literature discussed. Weekly laboratory meetings held to discuss these projects and related research in the field.

Prerequisite: Enrollment is restricted to graduate students.

BME 281P - Seminar on Nanotechnology and Biosensors (2)

Weekly seminar covering topics of research in the development of new tools and technologies to detect and study genes and proteins. Latest research work and literature in these areas are discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BME 281R - Seminar in Stem Cell Genomics (2)

Weekly seminar series covering topics in research on stem cell genomics. Current research and literature in this area is discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment restricted to graduate students; qualified undergraduates may enroll with instructor permission.

BME 281S - Seminar in Computational Functional Genomics

(2)

Weekly seminar series covering topics of current computational and experimental research in computational functional genomics. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BME 281T - Seminar in Neuroengineering and Systems Neuroscience (2)

Discusses research topics in 3D stem cell-derived brain organoid models, neuroengineering and systems neuroscience. Students lead some discussions and participate in all meetings. Available for Satisfactory/Unsatisfactory or Pass/No Pass grading only. Enrollment is restricted to graduate students; qualified undergraduate students may enroll with permission of the instructor.

Prerequisite: Enrollment is restricted to graduate students.

BME 281V - Immunogenomics Seminar (2)

Journal club and research presentations in immunogenomics. Enrollment is by consent of the instructor and is restricted to graduate students, juniors, and seniors.

BME 281X - Microbial Symbiosis (2)

Seminar course consisting of the Russell Lab's weekly meeting to cover lab business, present and discuss new results, practice presentations, and read recent scientific literature. May be repeated for credit. Enrollment is restricted to graduate students and is by permission of the instructor.

BME 281Y - Seminar on Protein Design (2)

Includes the Yeh Lab’s weekly group meeting to discuss new data, present research paper, pitch new scientific idea, cover lab business, and practice presentations. Available for Satisfactory/Unsatisfactory or Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to graduate students only; qualified undergraduate students may enroll with permission of the instructor.

BME 281Z - Seminar in Population and Evolutionary Genomics (2)

Covers major recent topics in evolutionary and population genomics. Consists primarily of discussions of recent literature and updates on group members' research. Enrollment is available only to members of the Corbett-Detig laboratory.

BME 293 - Seminar in Biomolecular Engineering (5)

Weekly seminar series covering topics of bioinformatics and biomolecular engineering research. Current research work and literature in this area discussed. Students lead some discussions and participate in all meetings.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

BME 296 - Research in Bioinformatics (5)

Independent research in bioinformatics under faculty supervision. Although this course may be repeated for credit, not every degree program accepts a repeated course toward degree requirements. Students submit petition to sponsoring agency.

BME 297A - Independent Study or Research (5)

Independent study or research under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course toward degree requirements. Students submit petition to sponsoring agency.

BME 297B - Independent Study or Research (10)

Independent study or research under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course toward degree requirements. Students submit petition to sponsoring agency.

BME 297C - Independent Study or Research (15)

Independent study or research under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course toward degree requirements. Students submit petition to sponsoring agency.

BME 297F - Independent Study or Research (2)

Independent study or research under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course toward degree requirements. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

BME 299A - Thesis Research (5)

Thesis research conducted under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements.Students submit petition to sponsoring agency.

BME 299B - Thesis Research (10)

Thesis research conducted under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements.Students submit petition to sponsoring agency.

BME 299C - Thesis Research (15)

Thesis research conducted under faculty supervision. Although course may be repeated for credit, not every degree program accepts a repeated course towards degree requirements.Students submit petition to sponsoring agency.

CHEM - CHEMISTRY AND

BIOCHEMISTRY

Lower-Division

CHEM 1A - General Chemistry (5)

An integrated study of general chemistry. Covers a range of topics including the atomic structure of matter; molecules; chemical reactions; acids and bases; gases; and equilibria in the gas and liquid phase. Students are expected to use algebra to solve problems. General Chemistry is articulated in a full-year series. Partial transfer credit is not allowed for the A,B,C series.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in MATH 3, AM 3, or equivalent, or a mathematics placement score of 300 or higher. Enrollment is restricted to sophomores, juniors, and seniors.

CHEM 1C - General Chemistry (5)

An integrated study of general chemistry. Coverage includes thermodynamics; oxidation-reduction and electrochemistry; liquids and solids; intermolecular forces and solutions, including colligative properties; and nuclear chemistry. General Chemistry is articulated in a full-year series. Partial transfer credit is not allowed for the A,B,C series.

Prerequisite: Prerequisite(s): CHEM 1A. Concurrent enrollment in course 1N is recommended. Enrollment is restricted to sophomores, juniors, and seniors.

CHEM 1M - General Chemistry Laboratory (2)

Laboratory sequence illustrating topics covered in CHEM 1B and CHEM 1C and important experimental techniques.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in CHEM 1B or CHEM 4A is required. Enrollment is restricted to sophomores, juniors, and seniors.

CHEM 1N - General Chemistry Laboratory (2)

Laboratory sequence illustrating topics covered in CHEM 1B and CHEM 1C, respectively, and important experimental techniques.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in CHEM 1C or CHEM 4B is required. Enrollment is restricted to sophomores, juniors, and seniors.

CHEM 3A - General Chemistry (5)

The first course in UCSC's three-quarter introductory chemistry series. Topics in this quarter include atomic theory and structure, the periodic table, chemical bonding, molecules and their structure, intramolecular forces, and chemical reactions and stoichiometry.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in MATH 2, or a mathematics placement (MP) score of 200 or higher.

CHEM 3B - General Chemistry (3)

The second course in UCSC's three-quarter introductory chemistry series. Topics in this quarter include chemical equilibrium, acids and bases, solution pH, buffers and chemical kinetics. Course consists of in-person lecture and a secondary active learning discussion section. In addition to the lecture, students are required to enroll and attend one discussion section.

Prerequisite: Prerequisite(s): CHEM 3A with grade of C or better, & previous or concurrent enrollment in CHEM 3BL (or CHEM 1M). Previous or concurrent enrollment in MATH 3 or placement score of 300+ required. Students cannot enroll in CHEM 3B after a 'C' or better in CHEM 1A. .

CHEM 3BL - General Chemistry Lab (2)

Focusing on science skills building with an emphasis on the general chemistry lab setting, course provides an introduction to important concepts and practices related to lab safety, fundamental experimental techniques, chemical handling, waste disposal, data collection/analysis, scientific writing/communication, and small-group collaboration. Coursework includes in-person experiments/lab time as well asynchronous work to be completed in Canvas and WebAssign.

Prerequisite: Prerequisite(s): CHEM 3A and previous or concurrent enrollment of CHEM 3B or CHEM 1A.

CHEM 3C - General Chemistry (3)

The third course in UCSC’s three-quarter introductory chemistry series. Topics in this quarter include the first and second laws of thermodynamics, redox reactions, electrochemistry, phase changes, and physical properties of solutions. Course consists of in-person lecture and a secondary active learning discussion section. In addition to the lecture, students are required to enroll and attend one discussion section.

Prerequisite: Prerequisite(s): CHEM 3B, and previous or concurrent enrollment in CHEM 3CL (or CHEM 1M).

CHEM 3CL - General Chemistry Lab (2)

The second in the general chemistry series, course focuses on science skills building with an emphasis on the general chemistry lab setting. Provides an introduction to important concepts and practices related to lab safety, fundamental experimental techniques, chemical handling, waste disposal, data collection/analysis, scientific writing/communication, and small-group collaboration. Coursework includes in-person lab experiments/work as well as asynchronous assignments to be completed in Canvas and Webassign.

Prerequisite: Prerequisite(s): completion of CHEM 3A and CHEM 3B; prior or concurrent enrollment in CHEM 3C.

CHEM 4AL - Advanced General Chemistry Lab (2)

Focuses on science skills building with an emphasis on the general chemistry lab setting. Provides an introduction to important concepts and practices related to lab safety,

fundamental experimental techniques, chemical handling, waste disposal, data collection/analysis, scientific writing/communication, and small-group collaboration. Course work includes in-person lab experiments/work as well as asynchronous work completed in Canvas and Webassign. This course taken with CHEM 4BL provides an advanced alternative to the CHEM 3BL/CHEM 3CL series.

Prerequisite: Prerequisite(s): prior or current enrollment in CHEM 4A.

CHEM 4B - Advanced General Chemistry: Molecular Structure and Reactivity (5)

The second course of the two-quarter accelerated general chemistry series. Coverage includes thermodynamics; kinetics, oxidation-reduction, and electrochemistry; liquids and solids; intermolecular forces and solutions, including colligative properties; and nuclear chemistry.

Prerequisite: Prerequisite: CHEM 4A. Concurrent enrollment in CHEM 4AL is required.

CHEM 4BL - Advanced General Chemistry Lab (2)

Focuses on science skills building with an emphasis on the general chemistry lab setting,. Provides an introduction to important concepts and practices related to lab safety, fundamental experimental techniques, chemical handling, waste disposal, data collection/analysis, scientific writing/communication, and small-group collaboration. Coursework includes in-person lab experiments/work as well as asynchronous work completed in Canvas and Webassign. This course taken with CHEM 4AL provides an advanced alternative to the CHEM 3BL/CHEM 3CL series.

Prerequisite: Prerequisite(s): Prior or concurrent enrollment in CHEM 4B.

CHEM 8A - Organic Chemistry (5)

Introduces organic chemistry, with an emphasis on bonding and reactivity of organic compounds.

Prerequisite: Prerequisite(s): CHEM 1B and CHEM 1C, or CHEM 3C, or CHEM 4B.

CHEM 8B - Organic Chemistry (5)

Introduction to organic chemistry, with an emphasis on reactivity and synthesis of organic compounds.

Prerequisite: Prerequisite(s): CHEM 8A.

CHEM 8L - Organic Chemistry Laboratory (2)

Laboratory experience in organic chemistry associated with CHEM 8A. Designed to introduce the student to the many techniques associated with organic chemistry while affording an opportunity to explore the concepts discussed in the lecture material. Laboratory: 4 hours, lecture: 1-1/4 hours.

Prerequisite: Prerequisite(s): CHEM 1C and CHEM 1N, or CHEM 3C and CHEM 3CL, or CHEM 4B and CHEM 4BL. Previous or concurrent enrollment in CHEM 8A is required.

CHEM 8M - Organic Chemistry Laboratory (2)

Laboratory experience in organic chemistry associated with course 8B. Designed to introduce the student to the many techniques associated with organic chemistry while affording an opportunity to explore the concepts discussed in the lecture material. Laboratory: 4 hours, lecture: 1-1/4 hours.

Prerequisite: Prerequisite(s): CHEM 8A and CHEM 8L and previous or concurrent enrollment in CHEM 8B is required.

CHEM 8N - Honors Organic Chemistry Lab (2)

Honors laboratory experience in organic chemistry associated with course CHEM 8B. Designed to introduce the exceptional student to many of the techniques associated with organic chemistry while taking part in an active organic chemistry research experience. Laboratory: 6 hours per week minimum. Prerequisite(s): CHEM 8A and CHEM 8L; concurrent enrollment in CHEM 8B is required. Enrollment is by permission of the instructor. Students must pass safety training to begin research. Students may only receive credit for one of the following: CHEM 8M or CHEM 8N. This class may only be taken as Pass/No Pass, which cannot be converted to a letter grade.

Prerequisite: Prerequisite(s): CHEM 8A and CHEM 8L concurrent enrollment in CHEM 8B is required.

CHEM 80H - Introduction to Wine Science and Chemistry (5)

A glimpse of the science and technology of wines through critical analysis. Students gain an appreciation of the scientific method and are be exposed to data from chemistry, biology, viticulture, and enology. This analysis is extended to examine commonly accepted practices used by scientists vs. non-scientist to assess and describe wine quality. (Formerly Introduction to Wines and Wine Chemistry.)

CHEM 99 - Tutorial (5)

Students submit petition to sponsoring agency.

CHEM 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

CHEM 103 - Biochemistry (5)

Introduction to biochemistry including biochemical molecules, protein structure and function, membranes, bioenergetics, and regulation of biosynthesis. Provides students with basic essentials of modern biochemistry. Students who plan to do advanced work in biochemistry and molecular biology should take the Biochemistry and Molecular Biology (BIOC) 100 series. Students cannot receive credit for this course after they have completed any two courses from the BIOC 100A, BIOC 100B, and BIOC 100C sequence.

Prerequisite: Prerequisite(s): CHEM 8B.

CHEM 109 - Intermediate Organic Chemistry and Applications

to Biology (3)

Integrated study of fundamental organic chemistry, with emphasis on materials especially relevant to biological sciences.

Prerequisite: Prerequisite(s): CHEM 8B or equivalent.

CHEM 110 - Intermediate Organic Chemistry with Emphasis on Synthesis and Analytical Methods (5)

An intermediate study of organic chemistry, including synthetic methods, reaction mechanisms, and application of synthetic chemistry techniques.

Prerequisite: Prerequisite(s): CHEM 8B. Enrollment is restricted to chemistry majors, minors and proposed majors.

CHEM 110L - Intermediate Organic Chemistry Laboratory (2)

Laboratory experience in organic chemistry and associated principles. Experiments involve the preparation, purification, characterization, and identification of organic compounds, and make use of modern as well as classical techniques.

Prerequisite: Prerequisite(s): CHEM 8M and previous or concurrent enrollment in CHEM 110.

CHEM 110N - Honors Organic Chemistry Lab (2)

Honors laboratory experience in organic chemistry associated with CHEM 109 or CHEM 110. Designed to introduce the exceptional student to many of the techniques associated with organic chemistry while taking part in an active organic chemistry research experience. Laboratory: 6 hours per week minimum. Prerequisite(s): CHEM 8A, CHEM 8B and CHEM 8L and either CHEM 8M or CHEM 8N and and previous or concurrent enrollment in CHEM 109 or CHEM 110 is required. Enrollment is by permission of the instructor. Students must pass safety training to begin research. Students may only receive credit for one of the following: CHEM 110L, or CHEM 110N. This class may only be taken as Pass/No Pass, which cannot be converted to a letter grade.

Prerequisite: Prerequisite(s): CHEM 8A, CHEM 8B and CHEM 8L and either CHEM 8M or CHEM 8N and CHEM 160; previous or concurrent enrollment in CHEM 109 or CHEM 110 is required.

CHEM 122 - Principles of Instrumental Analysis (5)

A laboratory course designed to develop familiarity with techniques and instrumentation used in analytical chemistry, emphasizing determination of trace inorganic species. Primary emphasis on applications utilizing the absorption or emission of electromagnetic radiation and on voltammetry. Topics include molecular UV-visible absorption and fluorescence spectrometry; atomic absorption, emission and fluorescence spectrometry; and various forms of voltammetry. Lecture: 2 hours; laboratory: 8 hours.

Prerequisite: Prerequisite(s): CHEM 110 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior chemistry (B.S.) majors.

CHEM 124 - Bioanalytical Chemistry (4)

Introduces modern measurement science for biomolecules. DNA, proteins, and specialized metabolites and the methodologies for measuring them, both qualitative and quantitative, are covered. Techniques are presented with the basic framework and concepts, and modern applications are covered in lecture followed by a hands-on lab component. Provides students with the necessary framework to design and execute their own research-based bioanalytical experiments. Group lab reports are prepared as a "Letter" to Analytical Chemistry to report the findings from the laboratory-based experiments. Tests cover the material from the lecture prior to the test day and are not cumulative in nature, however, concepts may build on one another.

Prerequisite: Prerequisite(s): CHEM 8B, and satisfaction of the Entry Level Writing and Composition requirements.

CHEM 139 - Chemical Problem Solving: Learning to Think Like a Scientist (5)

Students actively develop the skills and strategies required to become proficient problem solvers in both upper-division science classes and in scientific research. The focus is on systematic problem solving and scientific creativity. (Formerly CHEM 139A, Chemical Problem Solving I: Learning to Think Like a Scientist.)

Prerequisite: Prerequisite(s): CHEM 1C, CHEM 3C, or CHEM 4B; and MATH 11A or MATH 19A.

CHEM 143 - Organic Chemical Structure and Reactions (5)

Advanced topics such as the chemistry of terpenes, steroids, synthetic polymers, alkaloids, reactive intermediates, and reaction mechanisms are treated. Lecture: 4 hours.

Prerequisite: Prerequisite(s): CHEM 110.

CHEM 144 - Catalysis In Organic Synthesis Using Metals and Metalloids Based Reagents (5)

Designed to introduce Junior/Senior undergraduates to the field of catalysis in organic synthesis. Course acquaints students with the chemistry, with relevant techniques of metals and metalloid chemistry, and focuses on new advancements in organoborane field. Also provides knowledge of the methods to use chemistry to address synthetic challenges in organic chemistry. Students become familiar with the concepts and approaches in the current field of chemical biology.

Prerequisite: Prerequisite(s): CHEM 110.

CHEM 146A - Advanced Laboratory in Organic Chemistry (3)

Exposes students to advanced laboratory techniques in organic chemistry. Designed for students without previous research background in organic chemistry. Experiments carry a research-like format and cover the areas of natural products and reaction chemistry. Modern methods of organic analysis are emphasized including chromatographic methods and organic structure determination by spectroscopy. Laboratory: 8 hours.

Prerequisite: Prerequisite(s): CHEM 110 and CHEM 110L; satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to chemistry majors. Minors by permission of instructor.

CHEM 146B - Advanced Laboratory in Inorganic Chemistry (3)

Designed to expose students to advanced synthetic and spectroscopic techniques in inorganic chemistry. Examples include anaerobic manipulations, characterization of inorganic materials through spectral assignments and synthesis of coordination and organometallic complexes. Lecture: 1-1/4 hours; laboratory: 8 hours. Students billed a materials fee of $240.

Prerequisite: Prerequisite(s): CHEM 151A and CHEM 151L; CHEM 163A; satisfaction of Entry Level Writing and Composition requirements. Enrollment restricted to chemistry majors. Minors by permission of instructor.

CHEM 146C - Advanced Laboratory in Physical Chemistry (5)

Provides advanced laboratory experience in the areas of nanomaterial synthesis and characterization; spectroscopy; fabrication and measurements energy-conversion devices; and soft lithography techniques and instrumentation. Lecture: 1-1/4 hours; laboratory: 4 hours.

Prerequisite: Prerequisite(s): CHEM 163B and CHEM 164; satisfaction of Entry Level Writing and Composition requirements. Enrollment restricted to chemistry majors. Minors by permission of instructor.

CHEM 151A - Chemistry of Metals (5)

Fundamental topics of inorganic chemistry are presented at the level of the standard texts of field. Special emphasis is given to maintain breadth in the areas of metallic, nonmetallic, and biological aspects of inorganic chemistry. Lecture: 3-1/2 hours; discussion: 1-1/4 hours.

Prerequisite: Prerequisite(s): CHEM 8B and CHEM 8M and CHEM 163A. Concurrent enrollment in CHEM 151L is required.

CHEM 151B - Chemistry of the Main Group Elements (5)

Fundamental aspects of inorganic chemistry of main group elements are discussed. The emphasis is placed on the chemistry of nontransition elements including noble gases and halogens. In addition, students are exposed to the concepts of extended structures, new materials, and solid-state chemistry. Lecture: 3-3/4 hours.

Prerequisite: Prerequisite(s): CHEM 8B and CHEM 8M and CHEM 163A. Recommended for chemistry majors.

CHEM 151L - Inorganic Chemistry Laboratory (2)

Laboratory experience in inorganic chemistry. Experiments involve the preparation, purification, and characterization of inorganic compounds. In addition, experiments are designed to illustrate fundamental principles in inorganic chemistry and are coordinated with lectures in CHEM 151A. Laboratory: 4 hours per week. Laboratory lecture: 1 1/4 hours per week.

Prerequisite: Prerequisite(s):CHEM 8B and CHEM 8M and CHEM 163A. Concurrent enrollment in CHEM 151A is required.

CHEM 156C - Materials Chemistry (5)

Advanced topics in inorganic chemistry and an introduction to solid-state chemistry. Synthesis and structure of materials discussed as well as their influence on properties for modern devices and applications. Recent developments in area of material science also explored. Taught in conjunction with CHEM 256C.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in CHEM 151A. Enrollment is restricted to seniors.

CHEM 160J - Biochemistry Research Laboratory (5)

Introduction to hypothesis-driven laboratory research. Students collectively design and execute a novel research project that addresses a question about macromolecular structure, function, or regulation. Working individually and in small groups, students learn aspects of experimental design, literature and public data base research, data analysis and interpretation, and scientific collaboration. Learned laboratory techniques include molecular cloning, recombinant protein expression and purification, and biochemical assay implementation.

Prerequisite: Prerequisite(s): CHEM 8L and completion of or enrollment in BIOC 100A, BIOL 100, or CHEM 103.

CHEM 160K - Biochemistry Research Laboratory (5)

Introduction to hypothesis-driven laboratory research. Students collectively design and execute a novel research project that addresses a question about macromolecular structure, function, or regulation. Working individually and in small groups, students learn aspects of experimental design, literature and public data base research, data analysis and interpretation, and scientific collaboration. Learned laboratory techniques include molecular cloning, recombinant protein expression and purification, and biochemical assay implementation.

CHEM 160L - Biochemistry Research Laboratory (5)

Introduction to hypothesis-driven laboratory research. Students collectively design and execute a novel research project that addresses a question about macromolecular structure, function, or regulation. Working individually and in small groups, students learn aspects of experimental design, literature and public data base research, data analysis and interpretation, and scientific collaboration. Learned laboratory techniques include molecular cloning, recombinant protein expression and purification, and biochemical assay implementation.

Prerequisite: Prerequisite(s): CHEM 160K, satisfaction the Entry Level Writing and Composition requirements.

CHEM 161J - Chemical Biology Research Laboratory (5)

The first of a three-course research-based series for students in chemistry or biochemistry and molecular biology degree programs. This lab series introduces undergraduates to the emerging field of chemical biology. There is no laboratory guide with pre-designed experiments and results; instead, students develop a hypothesis and work toward understanding a novel system at the interface of multiple biological and chemical subdisciplines. Students gain technical skills related to these areas by designing experiments, researching primary literature, using public databases, and applying various software programs to aid in data analysis and interpretation.

Prerequisite: Prerequisites: successful completion of CHEM 8B and CHEM 8M; and previous or concurrent enrollment in BIOL 100, BIOC 100A, or CHEM 103. Enrollment is by permission of the instructor.

CHEM 161K - Chemical Biology Research Laboratory (5)

The second of a three-course research-based series for students in chemistry or biochemistry and molecular biology degree programs. Introduces undergraduates to the emerging field of chemical biology. There is no laboratory guide with pre-designed experiments and results; instead, students develop a hypothesis and work toward understanding a novel system at the interface of multiple biological and chemical subdisciplines. Students gain technical skills related to these areas by designing experiments, researching primary literature, using public databases, and applying various software programs to aid in data analysis and interpretation.

Prerequisite: Prerequisite(s): CHEM 161J.

CHEM 161L - Chemical Biology Research Laboratory (5)

The third of a three-course research-based series for students in chemistry or biochemistry and molecular biology degree programs. Introduces undergraduates to the emerging field of chemical biology. There is no laboratory guide with pre-designed experiments and results; instead, students develop a hypothesis and work toward understanding a novel system at the interface of multiple biological and chemical subdisciplines. Students gain technical skills related to these areas by designing experiments, researching primary literature, using public databases, and applying various software programs to aid in data analysis and interpretation.

Prerequisite: Prerequisite(s): CHEM 161K, and Entry Level Writing and Composition requirements.

CHEM 163A - Quantum Mechanics and Basic Spectroscopy (5)

A detailed introduction to quantum theory and the application of wave mechanics to problems of atomic structure, bonding in molecules, and fundamentals of spectroscopy. Students cannot receive credit for this course and BIOC 163A.

Prerequisite: Prerequisite(s): CHEM 3C or CHEM 4B or CHEM 1C; and PHYS 5B or PHYS 6B; and previous or concurrent enrollment in PHYS 5C or PHYS 6C; and MATH 22 or MATH 23. MATH 22 or MATH 23B is waived for declared Biochemistry & Molecular Biology students.

CHEM 163B - Chemical Thermodynamics (5)

Fundamentals of thermodynamics and applications to chemical and biochemical equilibria. Students cannot receive credit for this course and BIOC 163B.

Prerequisite: Prerequisite(s): CHEM 1C, CHEM 3C, or CHEM 4B; and PHYS 6A or PHYS 5A; and either MATH 22, MATH 23B, or AM 30.

CHEM 163C - Statistical Thermodynamics and Kinetics (5)

Statistical mechanics, kinetic theory, and reaction kinetics and topics in spectroscopy. (Formerly Kinetic Theory and Reaction Kinetics, Statistical Mechanics, Spectroscopic Applications.)

Prerequisite: Prerequisite(s): CHEM 163A and CHEM 163B, or BIOC 163A and BIOC 163B.

CHEM 164 - Physical Chemistry Laboratory (5)

Provides laboratory experience and data analysis in the areas of thermodynamics, kinetics, and spectroscopy. Lecture: 1.75 hours; experimental laboratory: 4 hours; computer laboratory: 2 hours.

Prerequisite: Prerequisite(s): CHEM 1C, CHEM 3C, or CHEM 4B; and PHYS 5A and PHYS 5B and PHYS 5C, or PHYS 6A and PHYS 6B and PHYS 6C; and either MATH 22, MATH 23B, or AM 30. CHEM 163A is recommended.

CHEM 169 - Chemistry and Biology of Drug Design and Discovery (5)

An overview of the central elements of drug discovery, including target selection and validation; computational or virtual screening; high-throughput screening; fragment-based methods; and pharmacokinetics.

Prerequisite: Prerequisite(s): CHEM 103 or BIOC 100A.

CHEM 171 - Chemical Biology (5)

Covers methods and techniques for the field of chemical biology. Brings together methods in chemistry, biochemistry, and genetics to study the interaction of small molecules with biological systems. Students cannot receive credit for this course and course CHEM 271.

Prerequisite: Prerequisites: CHEM 8B, and CHEM 103 or BIOC 100A or BIOL 100. Enrollment is restricted to senior chemistry, biochemistry or related life science majors and minors. BIOL 101 and CHEM 110 recommended but not required.

CHEM 186L - Research Communication and Practice (5)

Complements undergraduate research experience in chemistry and biochemistry with skill development in communicating science and discussion of the responsible practice of science. Students complete written summaries and presentations describing their original research. Additional topics include record keeping, research funding and grant writing, scientific publishing, and ethics and misconduct. Students must be sponsored by a research mentor. Prerequisite(s): CHEM 8M.

Students must have active mentorship from department faculty. Enrollment is by permission of the instructor.

CHEM 192 - Dir Stu Teach (5)

Dir Stu Teach

CHEM 194 - Senior Essay (5)

An individually supervised course with emphasis on reviewing the current scientific literature. Students are required to submit a summary and a critique of a scientific paper in the form of a senior essay. Students submit a petition to the sponsoring agency. This course may not be repeated for credit.

CHEM 195A - Thesis Research (5)

An individually supervised course with emphasis on independent research. Multiple-term course extending over two or three quarters; the grade and evaluation submitted for the final quarter apply to all previous quarters. Students submit petition to sponsoring agency; may not be repeated for credit. (Formerly offered as Senior Research.)

CHEM 195B - Thesis Research (5)

An individually supervised course with emphasis on independent research. Multiple-term course extending over two or three quarters; the grade and evaluation submitted for the final quarter apply to all previous quarters. Students submit petition to sponsoring agency; may not be repeated for credit. (Formerly offered as Senior Research.)

CHEM 195C - Thesis Research (5)

An individually supervised course with emphasis on independent research. Multiple-term course extending over two or three quarters; the grade and evaluation submitted for the final quarter apply to all previous quarters. Students submit petition to sponsoring agency; may not be repeated for credit. (Formerly offered as Senior Thesis.)

CHEM 199 - Independent Research (5)

Students submit petition to sponsoring agency. (Formerly offered as Tutorial.)

CHEM 199F - Independent Research (2)

Students submit petition to sponsoring agency. (Formerly offered as Tutorial.)

Graduate

CHEM 200A - Advanced Biochemistry: Biophysical Methods (5)

An introduction to the theory, principles, and practical application of biophysical methods to the study of biomolecules, especially proteins and nucleic acids. Emphasis on spectroscopic techniques. Topics include magnetic resonance, optical spectroscopy, fast reaction techniques, crystallography, and mass spectrometry.

CHEM 200B - Advanced Biochemistry: Macromolecular Structure and Function (5)

A detailed discussion of nucleic acid and protein chemistry, ranging from the structure, thermodynamics, and folding to the relationship between structure and function, and encompassing the methods used to determine such information.

CHEM 200C - Advanced Biochemistry: Enzyme Mechanisms and Kinetics (5)

A study of enzyme kinetics, mechanisms, and factors involved in enzymic catalysis. Lecture: 3-1/2 hours.

CHEM 222 - Career Success in Industrial Science/ Engineering (2)

Provides skills for the transition from academia into industrial research careers, addressing presentation skills, project prioritization, teamwork, salary-benefit expectations, intellectual property, performance reviews, Myers-Briggs profiles, and career planning. Participant teams will analyze the commercialization of a technical innovation.

Prerequisite: Enrollment is restricted to Physical and Biological Sciences and School of Engineering graduate students who have completed one consecutive year. Undergraduates may enroll on a space available basis by permission of instructor.

CHEM 230 - Grant Writing in Biomedical Research (5)

Introduces the fundamentals of grant writing in biomedical research, including best practices for presentation of data and communication of research findings. Students write and peer-edit most components of the NIH Ruth L. Kirschstein F31 predoctoral fellowship. Course is designed for students in their second year or later of graduate study.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 234 - Bioinorganic Chemistry (5)

The role played by transition metals in biological systems is discussed through application of the principles of coordination chemistry and inorganic spectroscopy. Topics include metalloproteins involved in oxygen binding, iron storage, biological redox reactions, and nitrogen fixation, as well as metal complexes of nucleic acids. Lecture: 4 hours.

Prerequisite: Prerequisite(s): CHEM 151A, CHEM 151L, CHEM 163A, and BIOC 100A; or graduate students.

CHEM 238 - Topics in Biophysical Chemistry (5)

A discussion of the application of selected topics in biophysical chemistry to contemporary problems in biochemistry and molecular biology. Lecture: 3-1/2 hours.

CHEM 242A - Modern Physical Organic Chemistry (5)

Covers molecular structure and bonding, strain, and non-covalent binding forces. Other topics include acid-base chemistry, kinetics, thermodynamics, catalysis, organic reactions and mechanism, and quantum mechanical approaches to the analysis of organic molecules.

Prerequisite: Enrollment is restricted to seniors who have taken CHEM 143, and graduate students.

CHEM 242B - Modern Synthetic Methods in Organic Chemistry (5)

Presents concepts in bond formation, conformation, selectivity, and stereocontrol in modern organic synthesis. Focuses on understanding reaction mechanisms. Culminates with strategy in designing multi-step synthesis of complex targets.

Prerequisite: Enrollment is restricted to seniors who have taken CHEM 143, and graduate students.

CHEM 242C - Spectroscopy and Applied Analytical Methods (5)

Presents strategies in organic structure elucidation, including nuclear magnetic resonance (NMR) and mass spectrometry. Provides theory and practical elements of structure elucidation and modern analytical methods for organic molecules.

Prerequisite: Enrollment is restricted to seniors who have taken CHEM 143, and graduate students.

CHEM 244 - Organic Free Radical Chemistry (5)

Explores organic free radicals. Fundamental principles in physical chemistry provide an understanding of free-radical transformations in organic synthesis, polymerization, and some examples of free radicals in biology. For students who have a firm grounding in organic chemistry.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 247 - Using DFT Computational Methods to Study Molecular Structure and Reactivity (5)

This course is fully hands-on, highly interactive, and project-based. Students receive extensive training on the DFT program Gaussian and are then offered the opportunity to deepen their knowledge, tailored to their specific research projects. Students have the option to bring in their own molecules of interest from their research laboratories.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 256A - Advanced Topics in Inorganic Chemistry (5)

Advanced topics in inorganic chemistry are presented. Topics covered vary from year to year, and are announced in advance. Possible topics include A) organometallic chemistry; B) structural methods in inorganic chemistry; C) solid-state chemistry.

Prerequisite: Enrollment is restricted to graduate students or previous enrollment in CHEM 151A, CHEM 151L, and CHEM 146B.

CHEM 256B - Advanced Topics in Inorganic Chemistry (5)

Advanced topics in inorganic chemistry are presented. Topics covered vary from year to year, and are announced in advance. Possible topics include A) organometallic chemistry; B) structural methods in inorganic chemistry; C) solid-state chemistry.

Prerequisite: Enrollment is restricted to graduate students or previous enrollment in CHEM 151A, CHEM 151L, and CHEM 146B.

CHEM 256C - Advanced Topics in Inorganic Chemistry (5)

Advanced topics in inorganic chemistry are presented. Topics covered vary from year to year, and are announced in advance. Possible topics include A) organometallic chemistry; B) structural methods in inorganic chemistry; C) solid-state chemistry.

Prerequisite: Enrollment is restricted to graduate students or previous enrollment in CHEM 151A, CHEM 151L, and CHEM 146B.

CHEM 256D - X-ray Crystallography (5)

Course in chemical crystallography focuses on the needs of small-molecule, single-crystal diffraction studies. Includes diffraction theory, space-group analysis, data collection, structure solution, and refinement. Practical component: use of diffraction equipment and solution/refinement software.

Prerequisite: Enrollment is restricted to graduate students and seniors who have taken CHEM 151A, CHEM 151L, and CHEM 163A.

CHEM 261 - Foundations of Spectroscopy (5)

The basic theory of time-dependent processes is covered at an advanced level. The interaction of electromagnetic radiation and matter is described using both semiclassical and quantum field formulations. A variety of modern spectroscopic techniques are discussed both in terms of the basic processes and their use in the elucidation of chemical structure and dynamics.

Prerequisite: Enrollment is restricted to chemistry graduate students or previous enrollment in CHEM 163A.

CHEM 262 - Statistical Mechanics (5)

Theory and concepts of statistical mechanics with applications to ideal gases, condensed systems, phase transition, and non-equilibrium thermodynamics. Lecture: 3-1/2 hours.

Prerequisite: Enrollment is restricted to chemistry graduate students or previous enrollment in CHEM 163A.

CHEM 263 - Quantum Mechanics (5)

A rigorous introductory course: the Schrödinger equation, operator formalism, matrix mechanics, angular momentum, and spin. Perturbation and other approximate methods. Applications to atomic and molecular problems. Lecture: 3-1/2 hours.

Prerequisite: Enrollment is restricted to chemistry graduate students or previous enrollment in CHEM 163A, PHYS 116A, and PHYS 116C.

CHEM 264 - Computational Materials (5)

Introduction of quantum mechanical simulations of materials at the atomistic level. This includes introduction of solid-state electronic structure formulated with density functional theory and plane-wave basis, calculations of spectroscopic and transport properties for solids and condensed phases from first-principles. Basic calculations of electronic structure, lattice dynamics with phonon dispersion and dielectric properties, treatment of electron correlation for open-shell systems with linear and non-linear magnetism. Advanced topics include calculations of excited-state spectroscopy with many-body interaction, ab-initio molecular dynamics, Wannier function and topological properties, and electron-phonon coupling for superconductivity and carrier transport.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students; undergraduates who have completed PHYS 102 or CHEM 163A may enroll.

CHEM 265 - Computer Simulation in Statistical Mechanics (5)

A detailed introduction of the use of computer simulation methods in physical and biophysical chemistry. Includes review of thermodynamics and statistical mechanics, molecular mechanics, molecular dynamics, and Monte-Carlo methods. Applications to liquid structure, reaction dynamics, and protein dynamics.

CHEM 268 - Solid State and Materials Chemistry (5)

Topics include synthesis of solid-state materials and their characterization using experimental techniques: XRD, TEM spectroscopy, NMR, and their applications in technologies. Emphasis on new materials, e.g., polymer, biopolymers, nanomaterials, organic/inorganic composites, ceramics, superconductors, electronic, magnetic, and opto-electronic materials.

Prerequisite: Enrollment is restricted to chemistry graduate students or students previously enrolled in CHEM 163A and CHEM 163B.

CHEM 269 - Electrochemistry (5)

Designed to introduce basic principles and applications of electrochemistry to students at upper undergraduate and lower graduate levels in various fields including analytical, physical, and materials chemistry.

Prerequisite: Enrollment is restricted to seniors and graduate students.

CHEM 271 - Chemical Biology (5)

Methods and techniques for the field of chemical biology. Brings together methods in chemistry, biochemistry, and genetics to study the interaction of small molecules with biological systems. Students cannot receive credit for this course and CHEM 171.

Prerequisite: Enrollment is restricted to chemistry graduate students.

CHEM 272 - Mass Spectrometry: Fundamentals and Applications (5)

Lecture and lab course introducing graduate students to mass spectrometry. Begins with the basic framework and concepts in mass spectrometry to break down modern instrumentation to build toward utilizing modern biomedical applications of the technology. Course focuses on biological molecules (amino acids to proteins). Interpretation of organic mass spectra is only be briefly covered. Provides students with the necessary framework to design and execute their own research-based mass spectrometry experiments. Two weeks are dedicated to hands-on experiments using modern mass spectrometers and preparing short technical notes based on the Journal of the American Society for Mass Spectrometry (JASMS) to report findings from laboratory base experiments.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 274 - Proseminar in Synthetic and Polymer Chemistry (5)

Weekly meetings devoted to study of synthetic organic chemistry and controlled polymer design for applications in nanotechnology. Topics drawn from current literature and research interests of participants.

CHEM 275 - Proseminar in Biological Inorganic Chemistry (5)

Weekly meetings devoted to biological inorganic chemistry and biochemistry. Topics are drawn from current literature. Papers and reviews are discussed, and participants give short seminars on their research interests.

CHEM 280 - Proseminar in Materials Chemistry (5)

Weekly meetings devoted to materials and inorganic research. Topics are drawn from current literature. Papers and reviews are discussed. Participants also give short seminars on topics of their research interests.

CHEM 282 - Proseminar: Synthetic Methods (5)

Weekly meetings devoted to the study of asymmetric and/or enantio-selective synthesis of optically active organic compounds of biological and medicinal significance. Topics drawn from the current literature and the research interests of the participants.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 284 - Proseminar in Synthetic Organic Chemistry (5)

Weekly meetings devoted to the study of synthetic organic chemistry. Topics drawn from the current literature and the research interests of the participants.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 285 - Proseminar: Photobiochemistry and Photobiology (5)

A detailed study of molecular mechanisms of light energy conversion and light-signal transduction processes in biological systems. Student participation in critical discussion of current literature examples are emphasized. Two-hour lecture and two-hour seminar weekly.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 286 - Proseminar in Natural Products Chemistry (5)

Weekly meetings devoted to the study of natural products. Topics drawn from the current literature and research interests of the participants.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 288 - Proseminar in Bioinorganic Chemistry (5)

Weekly meetings devoted to inorganic and bioinorganic research. Topics are drawn from current literature. Papers and reviews are discussed. Participants also give short seminars on topics of their research interests.

CHEM 291 - Chemistry and Biochemistry Research Seminar (2)

A weekly chemistry and biochemistry seminar series covering recent developments and current research, led by experts from other institutions, as well as local speakers. Open to chemistry and biochemistry graduate students.

Prerequisite: Enrollment is restricted to graduate students.

CHEM 292 - Seminar (2)

Prerequisite: Enrollment is restricted to graduate students or approval of the graduate adviser.

CHEM 296 - Teaching Chemistry (2)

University-level pedagogy in chemistry; examines the role of preparation, assessment, and feedback in teaching chemistry discussion and laboratory sections. Effective classroom techniques and organizational strategies discussed; oral presentations analyzed critically. Required of entering chemistry graduate students.

Prerequisite: Enrollment is restricted to chemistry graduate students.

CHEM 297A - Independent Study (5)

A topic will be studied with faculty tutorial assistance to satisfy a need for the student when a regular course is not available. Students submit petition to sponsoring agency.

CHEM 297B - Independent Study (10)

A topic will be studied with faculty tutorial assistance to satisfy a need for the student when a regular course is not available. Students submit petition to sponsoring agency.

CHEM 299A - Thesis Research (5)

Thesis Research

CHEM 299B - Thesis Research (10)

Thesis Research

CHEM 299C - Thesis Research (15)

Thesis Research

CHIN - CHINESE

Lower-Division

CHIN 1 - First-Year Chinese (5)

Instruction in elementary spoken and written Chinese (Mandarin), beginning with the sounds of Chinese and their representation in the pinyin romanization system. Conversation, structural analysis, and an introduction to character texts. The first-year sequence (1-2-3) begins only in the fall quarter. Students interested in learning Chinese who are uncertain about where they should enter the sequence should meet with the instructor prior to the first class meeting.

CHIN 2 - First-Year Chinese (5)

Continuation of Chinese 1, which assumes that students are familiar both with the pinyin romanization system and approximately 150 basic characters.

Prerequisite: Prerequisite(s): CHIN 1 or placement by assessment, orby consent of instructor.

CHIN 3 - First-Year Chinese (5)

Continuation of Chinese 2, which assumes that students are familiar both with the pinyin romanization system and approximately 300 basic characters.

Prerequisite: Prerequisite(s): CHIN 2 or placement by assessment, or by consent of instructor.

CHIN 4 - Second-Year Chinese (5)

Instruction in intermediate spoken and written Chinese (Mandarin). Conversation, composition, and the reading of modern texts. The second-year sequence (4-5-6) begins only in the fall quarter.

Prerequisite: Prerequisite(s): CHIN 3 or placement by assessment, or by consent of instructor.

CHIN 5 - Second-Year Chinese (5)

Continuation of Chinese 4. Conversation, composition, and the reading of modern texts.

Prerequisite: Prerequisite(s): CHIN 4 or CHIN 4H or placement by assessment, or by consent of instructor.

CHIN 6 - Second-Year Chinese (5)

Continuation of Chinese 5. Conversation, composition, and the reading of modern texts.

Prerequisite: Prerequisite(s): CHIN 5 or CHIN 5H or placement by assessment, or by consent of instructor.

CHIN 80 - Chinese for Traveling: Introduction to Spoken Chinese and the Cultures of the Chinese-Speaking World (5)

For individuals with little or no prior knowledge of Chinese culture and language. Taught primarily in English, the course introduces cultural and linguistic aspects of travel discourse in Mandarin-speaking regions (including Taiwan, Hong Kong,

and Singapore), presented in English. The target audience is students who plan to study abroad or are interested in Chinese culture knowledge and wish to learn a few phrases in Chinese Mandarin. The curriculum introduces a basic Chinese Alphabet spelling system (pinyin) and popular travel and social topics.

CHIN 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

CHIN 99 - Tutorial (5)

Students submit petition to sponsoring agency.

CHIN 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

CHIN 103 - Advanced Chinese: Language and Society (5)

Designed to enhance the students' ability to understand, analyze, and discuss authentic Chinese reading materials. Chinese linguistic and cultural aspects are introduced.

Prerequisite: Prerequisite(s): CHIN 6 or placement by assessment, or by consent of instructor.

CHIN 104 - Advanced Chinese: Readings in Literature (5)

Close readings in Chinese vernacular literature of recognized merit from contemporary and modern writers as wells as from models from the traditional period. Student are introduced to the basic critical issues, in Chinese, relating to narrative and drama, revealed by the works under discussion.

Prerequisite: Prerequisite(s): CHIN 103 or CHIN 105 or CHIN 107 or CHIN 108; or by consent of instructor.

CHIN 105 - Advanced Chinese: Readings in History (5)

Offers an appreciation of some of the central issues in Chinese history as defined by Chinese historians of the 20th century. Through readings of graduated difficulty, the vocabulary, style, and form of modern Chinese historical writing are introduced.

Prerequisite: Prerequisite(s): CHIN 103 or CHIN 104 or CHIN 107 or CHIN 108; or by consent of instructor.

CHIN 107 - Introduction to Classical Chinese Prose (5)

Introduces the grammar and lexicon of classical Chinese and the language of China's pre-modern canonical writings in philosophy, religion, history, music, visual art, and literature. Reading from the Han and pre-Han era is featured.

Prerequisite: Prerequisite(s): CHIN 103 or CHIN 104 or CHIN 105 or CHIN 108; or by consent of instructor.

CHIN 108 - Introduction to Classical Chinese Poetry (5)

Introduces the grammar and lexicon of classical Chinese and the language of China's pre-modern canonical writings in philosophy, religion, history, music, visual art, and literature. Classical poetry and lyrics are featured.

Prerequisite: Prerequisite(s): CHIN 103 or CHIN 104 or CHIN 105 or CHIN 107; or by consent of instructor.

CHIN 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

CHIN 199 - Tutorial (5)

Students submit petition to sponsoring agency.

CHIN 199F - Tutorial (2)

Students submit petition to sponsoring agency.

CLNI - COLLEGE NINE

Lower-Division

CLNI 1 - Academic Literacy and Ethos: International and Global Perspectives (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Addresses large-scale political, cultural, and economic issues to inform global citizenship.

Prerequisite: Enrollment is restricted to college members.

CLNI 1A - Introduction to University Life and Learning (1)

Orientation to and exploration of the nature of the liberal arts, and of learning at research universities. Topics include: academic planning for upper-division coursework; enrollment processes; and understanding pathways to degree completion; UCSC resources that support health and well-being strategies for academic success; the cultivation of just communities; the prevention of sexual harassment and violence; campus conduct policies; awareness of risks associated with drug and/or alcohol use; and an introduction to traditions of community-engaged learning, ground-breaking research, and interdisciplinary thinking that define a UC Santa Cruz degree. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year College Nine students.

CLNI 30 - (H)ACER Undergraduate Community Internship (2)

Student Internship through the Apprenticeship in Community Engaged Research (H)ACER Program at College Nine and John R. Lewis College. The (H)ACER Program joins community engagement with critical reflexive components of qualitative research to support transformative learning and strengthen community-university partnerships. Students will

be placed at a variety of internships and work with our community partners such as Calabasas Elementary School classroom teachers, Calabasas Elementary School After School Program, Calabasas Community Garden, and Watsonville High School classroom teachers. Students also may propose internships if they already have strong ties with a community partner and receive approval from the (H)ACER Director. Requires students to read selected readings on critical service learning, community learning, qualitative research methods and a variety of texts relevant to the history, context and activities at the sites where they will intern. Internships will take place primarily in Watsonville. Enrollment by permission of the instructor. (Formerly JRLC 30.)

CLNI 35 - Knowledge For Justice (5)

Introduction to the (H)ACER program at College Nine and John R Lewis College. (H)ACER trains students in participatory research methodologies and creates opportunities for students to work in real-world contexts addressing issues such as social, economic, educational, and environmental injustice. Students gain a foundation in understanding the context of the research university and developing critical research methods for working with communities. Students grapple with questions of how to conduct research in an ethical way and to build relationships that both recognize and are not foreclosed by histories of violence, with particular attention to race, class, gender, and nationality. (Formerly offered as JRLC 35.)

CLNI 45 - Undeclared Scholars Discovery Lab (2)

The Undeclared Scholars Discovery Lab offers a framework for personal and intellectual exploration to help guide thoughtful consideration of potential majors. Considers careers and jobs within the context of selecting a major and reflects on personal, cultural, and social ideas about the importance of work in giving life meaning. Through readings, exercises, advising activities, and guest visits, students focus on the question of what makes a life meaningful and how different majors—and the wide range of opportunities associated with them—resonate with our thinking. To support a capacious approach to major exploration, students also learn about habits of mind that encourage discovery as an ongoing, iterative process that sustains our lifelong development.

Prerequisite: Enrollment is restricted to College Nine and John R. Lewis College members.

CLNI 55 - Undeclared Scholars Program: Opportunities Lab (2)

The Undeclared Scholars Opportunity Lab is intended to offset obstacles to student engagement opportunities by providing a framework to help students understand common obstacles, develop skills and strategies for overcoming them, and learn about many of the research and extracurricular opportunities available at UCSC. Students have a structured way of learning about and "sampling" a range of opportunities while also developing a tool box of professional skills.

CLNI 65 - Learning to DJ (2)

Introduces students to the art of DJing. Becoming a skilled DJ requires many things: a deep love of music, the ability to read one's audience, technical skill, and knowledge of DJ cultures and their histories. Students learn to DJ using both vinyl and digital formats, as well as how to organize events centered around dance music.

CLNI 70 - College Nine and John R. Lewis College Community Garden (2)

Students in this course design and build a new community garden at Colleges Nine and Ten. Students engage in a collaborative design process with campus stakeholders; learn hands-on skills and community gardening best practices; and build regenerative social and ecological systems. (Formerly Colleges Nine and Ten Community Garden)

CLNI 80 - International Feminist Perspectives (2)

Offers perspectives on feminist movements, both historical and contemporary, across Asia, Africa, Europe, and the Americas. Students explore the values of specific movements from around the world that align with larger international trends, as well as the culturally unique tenets and organizing structures of the movements. Assignments encourage students to critically analyze the motivating factors in the creation of feminist movements and the complications in transnational feminist spaces.

CLNI 85 - Global Action (2)

Workshop facilitated by peer instructors. Students learn about current international and global issues through interactive exercises, small-group discussions, and faculty presentations. Students develop an action plan to raise awareness about one or more of these concerns and take practical steps to create positive change in the world.

CLNI 90 - Intercultural Understanding (2)

Provides an opportunity to enhance the intercultural experience, increase cultural competency, promote further understanding, and examine the various trends facing a uniquely diverse community. Geared toward U.S. and international students affiliated with the International Living Center. Enrollment by instructor permission.

CLNI 92 - Breaking Stereotypes (5)

Supports the development of cross-cultural understanding and media literacy to navigate diverse perspectives, examining how U.S. media portrays Muslim, Arab, North African, and Middle Eastern identities, analyzing the construction, reinforcement, and challenge of stereotypes across film, news, television, and social media.

Upper-Division

CLNI 110 - Storytelling for Social Impact (5)

Stories are fundamental to what it means to be human. This course introduces students to the history, social context and techniques of storytelling and takes students through the

research, writing and performing process of storytelling from the personal to the communal, with an emphasis on social impact storytelling, purposeful stories that drive action on social issues. Students engage with the model of “The Moth” radio hour and podcast by listening to and analyzing a wide array of stories told before a live audience, as well as writing and performing three stories during the quarter, using techniques learned in class and from skilled storytellers and theater faculty.

CLNI 120 - Practical Activism Conference Planning and Development (2)

Offers an applied experience of collaborative planning, production, and leadership. Students plan workshops and other event components; conduct outreach and publicity; and address all aspects of educational event planning. Enrollment restricted to members of the spring volunteer Practical Activism planning group. Enrollment by permission of the instructor.

CLNI 191 - Teaching Global Action (5)

Undergraduates at upper-division level participate in teaching discussion groups for CLNI 85 (W). Prerequisite(s): permission of instructor: essay describing interest in becoming course assistant, copies of evaluations, and letter of recommendation from faculty member and/or college staff member. Enrollment is restricted to College Nine juniors and seniors.

CLNI 199 - Tutorial (5)

Individual directed study for upper-division college members with college-affiliated faculty. Students must submit petition with one of the college academic advisers with accompanying letter from faculty adviser. Approval of provost required. Enrollment is restricted to upper-division College Nine members.

CLNI 199F - Tutorial (2)

Individual directed study for upper-division college members with college-affiliated faculty. Students must submit petition with one of the college academic advisers with accompanying letter from faculty adviser. Approval of provost required. Enrollment is restricted to upper-division College Nine members.

CLST - CLASSICAL STUDIES

Lower-Division

Upper-Division

CMMU - COMMUNITY STUDIES

Lower-Division

CMMU 10 - Introduction to Community Activism (5)

Surveys different strategies of community activism including charity, volunteering, labor and community organizing, and recently emerging global activism with goal of demonstrating how certain strategies challenge existing social relations and arrangements while others typically (and often by design) reproduce them.

CMMU 12 - Field Study Placement (1)

The heart of the community studies major is the field study experience. Through this series of courses, students prepare for, complete and reflect on six months of immersive, full-time experiential learning with a community-based or social change organization. This process culminates in the production of original qualitative research that builds new knowledge about the processes and conditions that facilitate social change. In this 1-credit preparatory course, students develop and articulate their intellectual, professional, and personal goals for field study. They research and communicate with potential field study sites, and locate organizations with which they can complete it.

Prerequisite: Prerequisite(s): CMMU 10. Enrollment is restricted to sophomore, junior, and senior community studies majors and proposed majors. .

CMMU 20 - Media and Social Movements (5)

From #BlackLivesMatter to #MeToo, from the Women's March on Washington to the March for Our Lives following the Stoneman Douglas High School shooting, a new generation of activists is using media to advance social justice goals. From the perspectives of sociology, psychology, and political science, course explores how contemporary activists harness a diverse range of media tools and platforms for social change and how contemporary strategies are rooted in and/or diverge from historical practices of using media to effect social and political change. Defines "media" broadly to include social media and legacy media forms, such as radio, television, and print journalism.

CMMU 30 - Numbers and Social Justice (5)

Relates simple lessons of quantitative thinking to topical materials that are accessible and relevant to working for justice and social change. Students learn practical techniques to distinguish credible statistical evidence from misleading statistical claims.

CMMU 93 - Field Study (5)

Supervised work in a community-based setting conducted under the guidance of a faculty member. Students submit petition to sponsoring agency.

CMMU 93F - Field Study (2)

Supervised work in a community-based setting conducted under the guidance of a faculty member. Students submit petition to sponsoring agency.

CMMU 93G - Field Study (3)

Supervised work in a community-based setting conducted under the guidance of a faculty member. Students submit petition to sponsoring agency.

CMMU 99 - Tutorial (5)

Individual directed study for lower-division undergraduates.

CMMU 99F - Tutorial (2)

Individual directed study for lower-division undergraduates.

Upper-Division

CMMU 101 - Communities, Social Movements, and the Third Sector (5)

Engages with crosscutting ideas and concepts central to the major including constructions of community in social-change efforts and the institutionalization of social movements in third-sector organizations. Deepens students' understanding of the opportunities and obstacles embedded in various avenues of social action.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior community studies majors and proposed majors.

CMMU 100 - Preparation for Field Studies (5)

A praxis-based practicum that prepares students for both the professional and research aspects of their six-month field study. Prerequisite(s): CMMU 10; or concurrent enrollment in CMMU 20C; satisfaction of the Entry Level Writing and Composition requirements; Enrollment is restricted to proposed and declared community studies majors. (Formerly CMMU 102.)

CMMU 103 - Field Study Practicum (2)

A practicum in social change work in which the students works for a social change organization on a part-time basis. Concurrent enrollment in CMMU 102 is required.

CMMU 105A - Field Study (5)

Full-time independent field study in an approved off-campus setting with onsite supervision by the sponsoring organization and regular distanced supervision by campus faculty. Enrollment is restricted to community studies majors upon completion of the required preparatory coursework. Prerequisite(s): CMMU 102. (Formerly CMMU 198, Independent Field Study.)

CMMU 105B - Field Study (5)

Full-time independent field study in an approved off-campus setting with onsite supervision by the sponsoring organization and regular distanced supervision by campus faculty. Enrollment is restricted to community studies majors upon completion of the required preparatory coursework. Prerequisite(s): CMMU 102. (Formerly CMMU 198, Independent Field Study.)

CMMU 105C - Field Study (5)

Full-time independent field study in an approved off-campus setting with onsite supervision by the sponsoring organization and regular distanced supervision by campus faculty. Enrollment is restricted to community studies majors upon completion of the required preparatory coursework. Prerequisite(s): CMMU 102. (Formerly CMMU 198, Independent Field Study.)

CMMU 107 - Analysis of Field Materials (5)

A seminar for students who have completed a full-time field study. Devoted to the systematic analysis of field materials, integrating appropriate concepts and relevant literature, as well as utilizing the experience of other students.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, CMMU 198. Enrollment is restricted to community studies majors.

CMMU 130 - Community Organizing Principles and Practice (5)

Community organizing brings people together in pursuit of self-determination in one or several realms of their lives. This course explores the history, philosophy, goals and accomplishments of community organizing and introduces students to practical community organizing skills.

CMMU 132 - American Cities and Social Change (5)

Examines the historical development of and contemporary conditions within U.S. cities by focusing on social and economic restructurings of cities, cultural and political transformations, and spatial reorganizations of the urban landscape. Goal is understanding the changing nature of urban experience.

CMMU 133 - Making California: Landscapes, People, Politics, Economy (5)

Examines key moments in the development of California to provide understanding of the challenges and opportunities facing California today. Particular focus is given to abiding tensions around wealth and poverty, opportunity and exclusion, and progressive and conservative politics.

CMMU 134 - No Place Like Home (5)

Examines the class and race dynamics of the housing market and public policy, asking what kinds of housing get built, where it gets built, and for whom it is (or is not) built--and, crucially, why. Questions how homelessness became normalized in contemporary society.

CMMU 137 - Communities and Climate Change (5)

For many communities the impacts of global warming, rising sea levels and environmental degradation compound already existing systemic racial, class, and gender inequalities. How do we understand the relationships between people and the environment? How are movements for social and ecological justice (dis)connected? This class considers how and why communities, activists and organizations press for alternatives through case studies from the U.S. environmental justice movement and related local and global struggles for food sovereignty, Indigenous rights and climate justice.

CMMU 141 - Economic Justice in Theory and Practice (5)

Examines how markets operate within the political economy of contemporary capitalism to generate myriad and often

chronic forms of economic and social inequality in the United States. Explores different approaches to addressing inequality within the multi-faceted economic justice movement. (Formerly Political Justice in Theory and Practice.)

Prerequisite: Enrollment is restricted to community studies majors and proposed majors during First Pass enrollment.

CMMU 143 - Wal-Mart Nation (5)

Examines origins and growth of Wal-Mart stores as powerful guides to understanding dynamics of contemporary global political economy and, relatedly, the changing fortunes of global social classes.

CMMU 145 - Global Capitalism: a History of the Present (5)

Provides an overview of the history of capitalism in order to understand current crises within the global political economy. Gives particular attention to the origin, character, and consequences of neoliberalism. (Formerly Globalization and Its Discontents.)

CMMU 148 - The Problem with Solutions (5)

"Solutionism" encourages college students to tackle the world "grand challenges" in areas such energy and resources, food and agriculture, education and literacy, or global health, with "innovative" technologies or program design. Rarely, however, are they encouraged to learn more about the problems they are trying to solve. Course examines contemporary solutionism, with a specific focus on agriculture and food, in order to recognize and understand its contexts, cultures, and consequences for social and ecological justice.

CMMU 149 - Political Economy of Food and Agriculture (5)

Examines key concepts in agrarian political economy; the historical development of the world food system; and a selection of contemporary issues related to food production, consumption, distribution, and regulation.

CMMU 151 - Sex, Race, and Globalization (5)

Examines globalization by attending to shaping forces of sexuality, gender, and race. Foregrounds Third World feminist theories, social movements. Topics include sexual and racial dynamics of free trade and labor fragmentation; global sex trades; HIV/AIDS politics in the South and North; transnational LGBT/queer politics.

CMMU 156 - Politics of Food and Health (5)

Critically examines contemporary debates about market and policy approaches to improve nutrition and dietary health and to address issues, such as food insecurity, obesity, and malnutrition.

CMMU 157 - Ageism and Activism (5)

Introduces students to gerontology, the study of aging. Taking a multidisciplinary approach, critically examines the theories, stereotypes, and realities of worldwide demographic transition and considers the many interesting implications for organizing social and personal life.

CMMU 160 - Public Health (5)

Examination of community activism to address health issues: examples are drawn from a range of concerns, e.g., environmental racism, prison conditions, feminist health matters, the AIDS epidemic, violence, and alcoholism. Special attention is given to the social frameworks of health and to the utilization of social and political strategies for improving community well-being.

CMMU 161 - Gender Health and Justice (5)

Critically examines concrete aspects of health in U.S. social and political contexts, emphasizing how gendered interpretations and practices construct and affect health equity and the practices of health care.

CMMU 162 - Community Gardens and Social Change (5)

Examines history, theory, and practice of community gardening, emphasizing contemporary garden projects using the transformative power of direct contact with nature to effect social change. Aims include understanding the nonprofit sector's response to social problems with novel programs and practices.

CMMU 163 - Health Care Inequalities (5)

Examines system and non-system that is American health care with special attention to inequalities in access, financing, and quality of care. Covers concepts such as equality, fairness, and need as well as community organizing and community building for health.

CMMU 164 - Health Justice in Conflict (5)

Explores three case studies to address critical themes of healthcare inequalities in the context of conflict: the legal battle of Ecuadorians against Texaco/Chevron; the struggle of comfort women during World War II; and chemical saturation in Iraq.

CMMU 165 - Community Analysis for Global Health (5)

Practical, skill-building course that starts from the premise that while all communities value health, different communities develop distinctive understandings of what health means to them and how best to achieve it given their specific environments and economies. Course focuses on health justice from a political economy perspective, analyzing how health is shaped by the interaction of multiple societal forces, including who holds power and what steps marginalized groups have taken to achieve more just distributions of resources. By studying community health, across multiple communities in a variety of locations, students learn how to be effective agents of global health equity.

CMMU 167 - Special Topics in Health Equity (5)

Special topics course in the field of health equity that offers focused content and/or perspectives within a field of study already central to the community studies curriculum, in this case public health and health equity. Specific course content varies with instructor.

CMMU 186 - Food and Agriculture Social Movements (5)

Examines the primary ways in which activists are attempting to resist, provide alternatives to, and/or transform aspects of the food system using social and environmental justice frameworks to evaluate such activism. Topics explored include organic farming, food charity, fair trade, relocalization, and farmworker organizing.

CMMU 189 - Mentoring in Community Studies (5)

Each student serves as a facilitator for small discussion groups in connection with core community studies courses. Facilitators complete course readings and meet with instructor as a group to discuss the teaching process. May not be counted toward upper-division major requirements. Prerequisite(s): prior course work in the major.

CMMU 191 - Student Volunteer Internship (3)

Course bridges Santa Cruz and university communities through students organizing volunteer opportunities and charitable events. Students contribute 10 hours per week on and off campus, including outreach, event-planning, and database maintenance; supplemented by reading and biweekly discussions. Enrollment is by permission of instructor after application and interview.

CMMU 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar, course 42, under faculty supervision. Students submit petition to sponsoring agency. Approval by the Committee on Educational Policy the prior quarter.

CMMU 193 - Field Study (5)

Supervised work in a community-based setting conducted under the guidance of a faculty member. Students submit petition to sponsoring agency.

CMMU 193F - Field Study (2)

Supervised work in a community-based setting conducted under the guidance of a faculty member. Students submit petition to sponsoring agency.

CMMU 193G - Field Study (3)

Supervised work in a community-based setting conducted under the guidance of a faculty member. Students submit petition to sponsoring agency.

CMMU 195A - Senior Thesis (5)

Individual study with a faculty member to complete the senior thesis.

CMMU 195B - Senior Thesis (5)

Individual study with a faculty member to complete the senior thesis.

CMMU 195C - Senior Thesis (5)

Individual study with a faculty member to complete the senior thesis.

CMMU 199 - Tutorial (5)

Advanced directed reading and research for the serious student.

CMMU 199F - Tutorial (2)

Advanced directed reading and research for the serious student.

Graduate

CMMU 297 - Independent Study (5)

Either study related to a course being taken or a totally independent study. Designed for graduate students. Students submit petition to sponsoring agency.

CMPM - COMPUTATIONAL MEDIA

To view planned offerings for the current academic year, please visit this page.

Lower-Division

CMPM 15 - Research Explorations (1)

Students explore ideas with like-minded peers and position themselves to join research labs. They read, present, and discuss research ideas in low time-commitment reading groups related to an active research area of UCSC faculty, diving into the creative, societally impactful, and cutting-edge aspects of technology. Course is designed for students of all backgrounds and majors, those just starting undergraduate work, about to graduate, considering research, or simply curious. To browse themes, visit the Exploratory Reading Groups website (see Class Notes in the Schedule of Classes).

CMPM 17 - Design Build Experience (3)

Introduction to design thinking and the engineering design cycle via a design-build-evaluate-iterate process, resulting in a functional artifact. Students work in groups while learning discipline-specific standards of good engineering practice. Specific project details and disciplines explored vary with instructor. No prerequisites or prior learning required.

Prerequisite: Enrollment is restricted to sophomores and frosh. Seniors and juniors may enroll by permission of the instructor.

CMPM 20 - Climate Resilience, Health, and Wellbeing (5)

We live in a rapidly changing world with the climate crisis and interrelated global crises (“the polycrisis”). Students gain invaluable personal and social resilience skills including mindfulness and collaborative high-impact projects to navigate and build a meaningful future. To help students build transformational resilience, students learn through both educational content as online video lectures and reading, and experiential classroom sessions. (Formerly Psychosocial and Planetary Resilience in the Age of the Climate Crisis.)

CMPM 25 - Introduction to 3D Modeling (5)

Introduces theory and techniques of 3D computer graphics. Topics include: capabilities of modern graphics hardware; 3D coordinate spaces; modeling with polygons; NURBS and subdivision surfaces; applying textures and materials; lighting; and simple effects. Students develop proficiency in 3D modeling via lectures and assignments focused on the use of a 3D modeling tool.

CMPM 26 - Introduction to 3D Animation (5)

Introduces theories and techniques of 3D computer animation. Topics include: character animation; rigging; simulation of cloth, liquids, and fire; motion capture; rendering; and editing animated scenes. Students develop proficiency in 3D animation via lectures and assignments focused on the use of a 3D animation tool and use of motion-capture software.

Prerequisite: Prerequisite(s): CMPM 25.

CMPM 27 - Fundamentals of Substance Designer and Painter (5)

Introduction to the development of physically based materials in Substance Designer and Substance Painter. These are then applied to a range of character and machine models within either the Blender or Maya 3D modeling applications.

Prerequisite: Prerequisite(s): CMPM 25 or by permission of the instructor.

CMPM 35 - Data Structures for Interactive Media (5)

Introduction to common data structures, algorithms that operate on them, and techniques for implementation. Uses digital authoring of interactive media as a frame to motivate asymptotic (big-O) analysis of design scalability. Students will program in a strongly typed language.

Prerequisite: Prerequisite(s): CSE 30.

CMPM 80A - Accessible Games (5)

Overview of the physical, psychological, cultural, and psychosocial aspects of disability and how they impact game play. Discusses implications for universal and accessible game design.

CMPM 80H - Human-Centered AI (5)

As AI technologies start to integrate and permeate our everyday lives, we become aware of how they impact our lives and the biases inherent in these systems. Course introduces Human-Centered AI, investigating humanistic values and issues of a variety of current AI systems, including those in your car, on your phone (e.g., Siri), on public streets (delivery robots), and at different vendors. Introduces various societal, economic, and humanistic issues such as bias, trust, and accountability, and delves into methods that can be used to design more human-centered AI systems.

CMPM 80I - Introduction to Human Computer Interaction (5)

Introduces students to Human Computer Interaction (HCI) as a field, using their everyday experience with technology as a starting point. Students learn key HCI concepts and concerns in lectures, and try out HCI design techniques in sections.

CMPM 80J - Games as Technical Culture (5)

Examines games as technical and cultural artifacts—shaped by society and, in turn, shaping it. Core topics are traced over time, including social, technical, and artistic topics (for example: conceptions of war, platform affordances, and genre evolution).

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements.

CMPM 80K - Foundations of Video Game Design (5)

Explores how video games (and games broadly) shape experiences and express ideas. Students develop novel games, interpret games, and survey related topics. No programming experience is required. All offerings support students with required synchronous section meetings and optional synchronous events.

CMPM 80L - Entrepreneurial Organization and Leadership (5)

Provides a framework for leadership in entrepreneurial organizations. Topics include leading with authenticity, motivation and personality, storytelling, teamwork and management, organizational culture and processes. Learning is integrated with practice through deep engagement with entrepreneurial leaders and a time-intensive entrepreneurial project. (Formerly Technology and Information Management 80L.)

CMPM 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit a petition to the sponsoring agency.

CMPM 94F - Group Tutorial (2)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit a petition to the sponsoring agency.

Upper-Division

CMPM 110 - Writing for Game Technologies (5)

Game writers create worlds, characters, and stories—and also craft computational systems so players can experience these fictions interactively. This course covers the fundamentals of authoring fictions and systems that work together toward powerful player experiences. All offerings support students with required synchronous section meetings.

Prerequisite: Prerequisite(s): CMPM 120, or by permission of the instructor.

CMPM 115 - Lead by Design: Experiential Learning

Collaborative (5)

Students work in teams to develop a template for a 10-week-long engineering design project. Teaches teamwork, leadership skills, inclusive team practices, Agile process, engineering ethics, and identity formation in engineers.

Prerequisite: Enrollment is restricted to juniors and seniors.

CMPM 115A - Lead by Design: Design-Build Collaborative (2)

Students work in teams to develop a template for a significant engineering project and document their collaborative process. Over the course of 10 weeks, students work together to design, develop, and iterate on the proposed prototype to showcase specified technical and professional engineering skills. In parallel, teams experientially learn and practice teamwork, project management, and professional communication skills. Project topics are based on approval through application only. Enrollment is restricted to juniors and seniors, and by permission of the instructor only.

CMPM 115B - Lead by Design: Experiential Curriculum Development (3)

Student-leaders work in teams to develop experiential learning content for a 3-credit design-build experience, a skill-building course where learners are set up to complete a significant engineering artifact. Student-leaders practice active learning that facilitates learners in traversing the engineering design cycle with room for iteration and to learn and recover from failure. CMPM 115B employs professional skills learned in CMPM 115A: teamwork, leadership, inclusive practices, Agile processes, and engineering ethics. Topics developed are accepted by proposal from the student-leaders.

CMPM 118 - Collaborative Research Experience in Engineering (5)

Guides small student teams through the performance of a quarter-long research project. Provides an overview of the process of performing research, research communities, and processes for finding and presenting research results.

CMPM 120 - Game Development Experience (5)

Teaches the concrete programming and collaboration skills associated with making a digital game from start to finish, including but not limited to: establishing a team, concepting, storyboarding, prototyping, producing, and testing a game for release. Students are organized into groups and work together to create and produce a playable game.

Prerequisite: Prerequisite(s): CMPM 80K; and FILM 80V; and CSE 15 and CSE 15L or CSE 30 or CMPM 35; and ARTG 80G or ARTG 80H or ARTG 80I; and concurrent enrollment in ARTG 120. Enrollment is restricted to juniors and seniors or by permission of the instructor.

CMPM 121 - Game Development Patterns (5)

Advanced game programming focused on software design patterns and refactoring. Introduces classic software design patterns, as well as game programming patterns. Introduces software refactoring, including code smells and widely used refactoring patterns.

Prerequisite: Prerequisite(s): CMPM 120.

CMPM 122 - Business of Games (5)

Ten-week course to provide instruction on important business topics for videogame creators—many related to the games themselves and others for pursuing success in bringing the games to customers: publishing, distribution, marketing, funding, operations, and more.

CMPM 123 - Advanced Programming (5)

Course introduces students to current and emerging advanced programming methods used in building complex, high-performance, and networked interactive media systems. Students use tools like debuggers and profiles to inspect and resolve software performance bottlenecks in a compiled language.

Prerequisite: Prerequisites: CSE 101 or CMPM 35.

CMPM 125 - Game Technologies (5)

Introduction to construction of games using game engine technology, using a specific game engine as a focus. Covers major game engine features: input, collision, animation, model import, lighting, camera, rendering, textures, particle systems. Introduction to a specific game scripting language, custom game logic, game programming patterns. (Formerly offered as CMPM 121.)

Prerequisite: Prerequisite(s): CMPM 120.

CMPM 130 - User Interface and User Experience Design (5)

Students develop skills and interactive prototypes for addressing three communication challenges: first, software itself communicating with interactors; second, developers of software communicating about the design of the software's interactions and users' experiences; and third, communicating results of design processes.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to computer science: computer game design majors.

CMPM 131 - User Experience for Interactive Media (5)

Theories and practices for approaching the design problems of interactive media holistically, beyond usability and accessibility. Includes hands-on learning, application of human-centered design and evaluation skills in group projects, and peer critique. This class is asynchronous online, with secondary sections offered as in-person meetings.

Prerequisite: Enrollment is restricted to juniors, seniors, and graduate students.

CMPM 132 - Interaction Design Studio (5)

Practice-based interaction design studio course. Students learn about design-led approaches to Human-Computer Interaction through participating in group projects. Course offers

introductions to design methods and actionable strategies to do interaction design work and design-led technology research.

Prerequisite: Enrollment is restricted to juniors, seniors, and graduate students.

CMPM 146 - Game AI (5)

Examines the use of artificial intelligence (AI) in games. Covers core AI technologies for search, control, and learning, and the application of AI to improve game design, development, and game play. Examines the AI content in multiple commercial games. This is an online class; most lectures are asynchronous. The weekly lab is synchronous, focused on Q&A and group discussion of work in progress.

Prerequisite: Prerequisite(s): CSE 101 or equivalent; familiarity with python a plus, though not required. Enrollment is restricted to sophomores, juniors, seniors, and graduate students.

CMPM 147 - Generative Design (5)

Introduces generative methods for design. Uses algorithmic techniques to generate and evaluate game content (images, sounds, map designs) along with mechanics and progression systems. Search-based and learning-based techniques with connections to artificial intelligence are also covered.

Prerequisite: Prerequisite(s): CMPM 120.

CMPM 148 - Interactive Storytelling (5)

Covers a range of design approaches and technologies including storytelling in games, interactive fiction, interactive drama, and artificial intelligence-based story generation. Through a mixture of readings, assignments, and project work, students explore the theoretical positions, debates, and technical and design issues arising from these approaches.

Prerequisite: Prerequisite(s): CSE 101 or CMPM 35. Enrollment is restricted to juniors and seniors.

CMPM 150 - Creating Digital Audio (5)

Introduces digital sound recording and editing technologies, sound synthesis, and concepts in sound design for media production. Covers the basics of sound capture, microphones, audio manipulation and editing, effects, sound formats, mixing and dynamics, synthesizers, audio software, and game audio.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

CMPM 151 - Algorithmic Music for Games (5)

Introduces compositional techniques and procedural audio as exhibited in the sound and music of video games. Surveys different styles of music implemented in video games and associated compositional approaches. Students develop skill in procedural audio via a series of workshops and assignments.

CMPM 152 - Musical Data (5)

Surveys the relationship between music and data as exhibited in industry and research implementations of sonification and music information retrieval. Students introduced to various styles and algorithms of sound analysis and modeling and develop skills to program unique approaches in this area.

Prerequisite: Prerequisites: CMPM 35 or CMPM 120 or CMPM 150 or CMPM 151 or by permission of instructor. Enrollment is restricted to juniors, seniors, and graduate students.

CMPM 163 - Game Graphics and Real-Time Rendering (5)

Introduces real-time, hardware-accelerated graphics programming suitable for game development, visual effects, and interactive multimedia projects. Emphasizes contemporary shader-programming techniques and developing custom effects using game engines and multimedia software.

Prerequisite: Prerequisite(s): CMPM 120 (exceptions granted in special cases with permission of the instructor).

CMPM 164 - Game Engines (5)

Covers the graphic elements in computer games. Topics include modifying, optimizing, adding components, and building a game engine. Course evaluation based on exams and several programming projects, including a game built using the student's game engine.

Prerequisite: Prerequisite(s): CMPM 163 or CSE 160. Concurrent enrollment in CMPM 164L is required.

CMPM 164L - Game Engines Lab (2)

Provides hands-on experience in using, designing, and building game engines. Students also explore different special effects, such as particle systems, spring systems, and game physics.

Prerequisite: Prerequisite(s): CMPM 163 or CSE 160. Concurrent enrollment in CMPM 164 is required.

CMPM 169 - Creative Coding (5)

Surveys seminal and contemporary artworks and interactive installations that utilize and critically analyze new media, new technologies, and new algorithms. Students introduced to creative coding practices and encouraged to emulate existing digital arts techniques and to develop their own computational arts projects.

Prerequisite: Prerequisites: CMPM 35 or CMPM 120 or CMPM 163 or by permission of instructor. Enrollment is restricted to juniors, seniors, and graduate students.

CMPM 170 - Rapid Prototyping (5)

Working in multiple small teams, students practice multiple cycles of the interactive media design process. Cycles involve ideation, research, prototyping, release, and reflection. Students will understand how to follow the design process as a way to build knowledge, understanding, and empathy for a

system's users rather than just as a means to produce those systems. The course draws on design philosophies from inside and outside of the computer games industry. (Formerly Game Design Studio I.)

Prerequisite: Prerequisite(s): CMPM 120 and CMPM 121 (Game Development Patterns, if taken Fall 2023 or later). Enrollment is restricted to senior computer science: computer game design majors or by permission of the instructor.

CMPM 171 - Game Design Studio (7)

Students work in teams to create a fully-functional subset ("vertical slice") of an interactive, playable software system. Focus is on experience design, systems design, integrating assets (visual, auditory, and written), testing, and project management. May be repeated for credit. (Formerly offered as Game Design Studio II.)

Prerequisite: Prerequisites: CMPM 121 (Game Development Patterns, if taken Fall 2023 or later) and CMPM 130 and CMPM 170 and CMPM 176.

CMPM 172 - Game Production Studio (7)

Students work in teams to produce fully functional games based on previously developed game subsets. Focus on production including scaling, long-term player experience, teaching mechanics through interaction, developing multi-stage narratives/scenarios, and varying gameplay as players develop new understandings and abilities. Prerequisite(s): CMPM 171, or by instructor permission. Enrollment is by permission of the instructor. Formerly offered as Game Design Studio III.

CMPM 176 - Game Systems (5)

Presents game design as the interplay of multiple interacting game systems. Surveys various game systems: movement, combat, reward, economic, logistics, quest, information visibility, narrative. Students explore systems via study, design, and play of board, card, and computer games.

Prerequisite: Prerequisite(s): CMPM 80K.

CMPM 177 - Creative Strategies for Designing Interactive Media (5)

Surveys tactical, structural, contextual, and other methods to enhance creativity and innovation in the design of games and other interactive media. Investigates strategies for creativity and innovation drawn from diverse fields, including interactive affordances, narrative and poetics, biology, contextual inquiry, and design research. To innovate in a field of fixed genres is challenging: the allure of modeling exemplars is strong. Although imitation can be successful in the marketplace, the most creative action occurs on the leading edge of change. Innovation benefits from strategies and methods that are directly aimed at exploring new perspectives and structures to learn through the process of discovery.

Prerequisite: Enrollment is restricted to juniors and seniors.

CMPM 178 - Human-Centered Design Research (5)

Students move through a rigorous design-research process involving skills and principles in human-centered design research as well as selected formal research methods. They learn to use tools for ideation, human-centered qualitative research, domestic probes, mock-ups, and prototypes.

Prerequisite: Enrollment is restricted to juniors, seniors, and graduate students.

CMPM 179 - Game Design Practicum (5)

Provides the opportunity to practice the creation of novel computer games. Students learn a new game-making technology, then create three games using this technology.

Prerequisite: Prerequisite(s): CMPM 120 and CMPM 80K.

CMPM 180 - Topics in Computational Media (5)

Allows students to explore topics in the computational media field and practice design in a wide variety of applications and areas, including but not limited to interactive computational experiences, AI and poetry, smart cities and game design, ethics and computational media, and computational media culture. Course presentation and assessment will vary by topic and instructor.

CMPM 181 - Games for Impact Studio I (5)

Students work in teams to develop serious games. Course involves multiple aspects of game development, with an emphasis on identifying the topic and goal for the game, initiating research on the topic, and developing an initial concept design. The concept design phase will include several iterations and experimentation with various techniques and game elements toward addressing the goal established. The process also involves identifying assessment and efficacy measures given the goal identified. These measures are theory-based and will be developed based on the initial research conducted. The outcome should be a concept design and prototype. Taught in conjunction with CMPM 255. Students cannot receive credit for this course and CMPM 255.

CMPM 182 - Games for Impact Studio II (5)

Students work in teams to polish and assess their games. This is a continuation of the Games for Impact Studio series from Studio I. The course will involve aspects of (I) game production, with an emphasis on tuning the design and polishing it, and (II) assessment, where students develop their methods for assessment, which include usability testing, as well as goal assessment based on metrics development, data collection, and analysis. The outcomes are: the game is polished and tested, as well as a report on the evaluation of the game. Taught in conjunction with CMPM 256. Students cannot receive credit for this course and CMPM 256.

Prerequisite: Prerequisite(s): CMPM 181.

CMPM 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit a petition to the sponsoring agency.

CMPM 194F - Group Tutorial (2)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit a petition to the sponsoring agency.

CMPM 195 - Senior Thesis Research (5)

Students submit a petition to the sponsoring agency.

CMPM 195F - Senior Thesis Research (2)

Intended for majors. Students submit a petition to the sponsoring agency.

CMPM 198 - Individual Study or Research (5)

Students submit petition to sponsoring agency.

CMPM 198F - Individual Study or Research (2)

Intended for majors. Students submit petition to sponsoring agency.

CMPM 199 - Tutorial (5)

For fourth-year students majoring in computational media. Students submit a petition to the sponsoring agency.

CMPM 199F - Tutorial (2)

For fourth-year students majoring in computational media. Students submit a petition to the sponsoring agency.

Graduate

CMPM 201 - Introduction to Computational Media (5)

Provides a broad foundation in the history, theory, and contemporary practice of computational media, examining its roots in a variety of fields and current structures of participation. Also covers a selection of key critical lenses for understanding computational media.

Prerequisite: Enrollment is restricted to computational media graduate students, or by permission of the instructor.

CMPM 202 - Computation Media Research (5)

Overview of computational media research strategies. Includes case studies of how particular projects were defined and completed and how interdisciplinary concerns have been successfully integrated. Considers the expressive and authorial affordances of different system architecture approaches.

Prerequisite: Prerequisite(s): CMPM 201, or by permission of the instructor. Enrollment is restricted to graduate students.

CMPM 203 - Computational Media Methods (5)

Overview of major methods in computational media research. Includes non-numerical methods such as playtesting, arts critique, ethnographic observation, and humanistic interpretation. Also includes numerically oriented methods such as survey instruments, data mining, user experiments, and characterizing expressive/generative spaces.

Prerequisite: Enrollment is restricted to Computational Media graduate students.

CMPM 204 - Computational Media Project Definition (5)

Students define the topic, approach, and scope for an M.S. thesis or project. Includes discussion of successful past projects and theses, visits from faculty presenting open problems, reviews of related literature, topic and timeline presentations, and critiques.

Prerequisite: Enrollment is restricted to computational media graduate students, or by permission of the instructor.

CMPM 205 - Bridging the Disciplines: Writing and Synthesis for Computational Media (5)

Focuses on developing students' abilities to do research across multiple disciplines. Discusses multidisciplinary epistemologies and methodologies toward developing research voice and ability across the disciplines. Students engage with diverse sources and media, analyzing how information from computer science, media studies, design, and social sciences can converge in computational contexts. Students are encouraged to integrate and synthesize knowledge from multiple fields and develop a structured argument, building their view within computational media.

Prerequisite: Enrollment is restricted to Ph.D. students in computational media.

CMPM 206 - Computational Media Research Preparation (5)

Covers skills for finding relevant literature for a novel research topic, integrating that literature, and communicating the results. Also covers how to select work for a research portfolio, present that work, and describe contributions. Enrollment is by permission of the instructor. Prerequisite(s): CMPM 201, CMPM 202, and CMPM 203 for an understanding of media creation and computer programming; good standing in the Ph.D. program. Enrollment is restricted to graduate students.

CMPM 230 - Data Science in Computational Experiences (5)

Introduces the topic of data science in computational experiences such as games, digital apps, and social media. Students develop methods to model behavioral patterns using data with the goal of supporting user research goals and/or improving the user experience. Covers the tools, methods, and principles of data science, including knowledge discovery, data collection, feature extraction and selection, pattern recognition, visualization, and reporting. Also covers analytics across computational media forms, e.g., games, digital apps, and social media. Enrollment is restricted to graduate students in Computational Media, and by permission

of the instructor. Students must have a computational background to enroll. Enrollment is by permission of the instructor. (Formerly Game Data Science.)

CMPM 232 - Psychology of Play (5)

Psychology plays an important aspect in users' engagement and understanding psychological aspects that can affect users as they interact with technology. This course discusses theories of motivation, perception, emotions, personality, and preferences. Also discusses how such theories affect users' interaction with technologies, such as games, social media, mobile application, and other common technologies used today. Also reviews new papers and results showing the types of models affecting users engagement and their influence and use in the different phases of design or development.

Prerequisite: Enrollment is restricted to graduate students in games and playable media, serious games, human computer interaction, and computational media programs, or by permission of the instructor.

CMPM 235 - User Evaluation of Technology (5)

Presents a variety of evaluation methodologies to assess usability, acceptance, and effectiveness of technology with the intended users. Combines lectures and exercises for students to gain firsthand experiences of these methodologies with real users.

Prerequisite: Enrollment is restricted to graduate students. Seniors may enroll with completion of CSE 165.

CMPM 237 - Advanced Topics in Human-Robot Interaction (5)

Study of current topics in human-robot interaction design and research. Topics vary, but are expected to include how people think, act, and behave around robotic agents; telepresence and teleoperated robotics; applications of human-robot systems; collaborative robotics; and social robotics.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 243 - Social Computing Research: Design, Algorithms, and Incentives (5)

Provides an interdisciplinary view of computational systems and human interaction, with an emphasis on human-computer interaction and algorithmic economics. Students learn about seminal and cutting-edge research contributions and methodologies, and carry out a quarter-long research project. (Formerly Technology and Information Management 243.)

Prerequisite: Prerequisite(s): A background in either mathematical proofs or user-centered design and programming. Enrollment is restricted to graduate students; undergraduates may enroll by permission.of the instructor.

CMPM 244 - Artificial Intelligence in Games (5)

The use of AI techniques to enable new player interactions, game mechanics, and genres. Combines elements from academic AI and machine learning with industry game AI techniques. Includes lecture and paper discussions as well as AI programming exercises and projects.

Prerequisite: Enrollment is restricted to graduate students; others by permission.

CMPM 248 - Interactive Storytelling (5)

Covers wide range of practices including hypertext, interactive fiction, embedded narratives in games, interactive drama, and artificial intelligence-based story generation. Through a mixture of readings, assignments, and project work, explores the theoretical positions, debates, and technical and design issues arising from these different approaches.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 255 - Games for Impact Studio I (5)

Students work in teams to develop serious games. Course involves multiple aspects of game development, with an emphasis on identifying the topic and goal for the game, initiating research on the topic, and developing an initial concept design. The concept design phase will include several iterations and experimentation with various techniques and game elements toward addressing the goal established. The process also involves identifying assessment and efficacy measures given the goal identified. These measures are theory-based and will be developed based on the initial research conducted. The outcome should be a concept design and prototype. Taught in conjunction with CMPM 181.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students in computational media.

CMPM 256 - Games for Impact Studio II (5)

Students work in teams to polish and assess their games. This is a continuation of the Games for Impact Studio series from Studio I. The course involves aspects of (I) game production, with an emphasis on tuning the design and polishing it; and (II) assessment, where students develop their methods for assessment, which include usability testing, as well as goal assessment based on metrics development, data collection, and analysis. The outcomes are: the game is polished and tested, as well as a report on the evaluation of the game. Taught in conjunction with CMPM 182. Students cannot receive credit for this course and CMPM 182.

Prerequisite: Prerequisite(s): CMPM 255. Enrollment is restricted to graduate students in computational media.

CMPM 265 - Generative Methods (5)

In-depth exploration of algorithms for the automated generation of 2D and 3D models and content. Covers multiple approaches, including noise, grammars, genetic algorithms and programming, parametric design, and answer-set programming. Includes application of techniques to computer-game content and level design.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 268 - Immersive Analytics (5)

Investigates how new immersive display technologies and interaction techniques can support analytical reasoning and decision making in a variety of contexts.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 269 - Machine Learning for Creativity and Design (5)

Introduces contemporary techniques in deep learning focusing on the application of these techniques to a range of tasks related to art and design outputs.

Prerequisite: Prerequisites: CMPM 202 or by permission of the instructor. Enrollment is restricted to graduate students.

CMPM 280C - Computational Media Seminar (2)

Graduate seminar with speakers from academia and industry. Covers state of the art research and industry trends in Computational Media and related areas.

Prerequisite: Enrollment is restricted to computationalmedia and games and playable media graduate students.

CMPM 280F -
Seminar in Creative Coding and Computational Media (2)

Covers advanced topics and current research in creative coding as it intersects computational media. Focuses on student presentations and seminar participation. Enrollment is restricted to graduate students and by permission of instructor. This class can be taken for Satisfactory/Unsatisfactory credit only.

CMPM 280G - Seminar in Generative Methods (2)

Weekly seminar covering advanced topics and current research in generative methods--the field focused on algorithms for creation of 2D and 3D models and content.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 280H - Seminar in Human-Computer Interaction and Computational Media (2)

Covers advanced topics and current research in human-computer interaction as it intersects computational media. Focuses on student presentations and seminar participation. Enrollment restricted to graduate students and by permission of the instructor.

CMPM 280I - Human Computer Interaction Seminar (2)

Ongoing participatory seminar toward staying informed about the current state of the art in Human Computer Research, both within the Computational Media department, as well as in the broader field. Course consists of weekly lectures and discussion. Graduate students will take part in giving presentations.

Prerequisite: Enrollment restricted to computational media and games and playable media graduate students.

CMPM 280K - Seminar in Interactive Systems for Individuals with Special Needs (2)

Covers advanced topics and current research in interactive systems for individuals who have special needs. Focuses on student presentations and seminar participation.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 280P - Seminar in Player Experience and Modeling (2)

Covers advanced topics and current research in player experience and modeling. Delves into topics related to: artificial intelligence, psychology, data science, as well as computer human interaction as they intersect with games and player experience. Course is conducted as a studio/seminar, where students read and analyze previous research within this area. Students are asked to present and discuss current state of the art of research in the area of player experience and modeling and then develop their own research within this area. Through interaction with the instructor and other colleagues within the class, students work toward refining their research. This course can be taken for Satisfactory/Unsatisfactory credit only.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 280R - Topics in Human-Robot Interaction (2)

Focuses on human-centered design and research approaches to the development of robotic technologies. Students read primary research papers, examine prototype robotic systems, and build upon those materials to lead group discussions, propose research projects, and conduct HRI research.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 280S - Seminar Topics (2)

Weekly seminar series of current research on a special topic in information systems and technology management. The theme of research presented throughout the course selected by the instructor. Topics may include, but are not limited to, knowledge planning, new product development and management of technology. Enrollment with permission of instructor. (Formerly Technology and Information Management 280S.)

CMPM 280W - Seminar in Digital Media (2)

Covers advanced topics and current research in digital media—the interdisciplinary field at the intersection of computer science, media authoring, and models of interpretation from the humanities and social sciences. Focuses on student presentations and seminar participation.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 280X - Expressive AI (2)

Weekly seminar covering topics of current research in artificial intelligence applied to interactive art and entertainment, including computer games. Enrollment by permission of instructor. Enrollment restricted to graduate students.

CMPM 290A - Topics in Computational Media (5)

Students learn about a current research area in computational media and make a contribution. Each course offering focuses on a different aspect of technical, creative, and/or interpretive work in the field.

Prerequisite: Enrollment is restricted to computational media and human computer interaction graduate students.

CMPM 290J - Playable Media (5)

Focuses on media, such as computer games, that invite and structure play. Work includes building and critiquing a series of prototypes; studying major examples in the field; and discussing both theoretical and practice-oriented texts. Enrollment by permission of instructor. Enrollment restricted to graduate students.

CMPM 290K - Social and Emotional Approaches to Human Computer Interaction (5)

Focuses on enhancing social and emotional capabilities and qualities in interactive systems. Students read research, look at sample systems, and engage in evaluation, design, and prototyping exercises. A research project and helping to lead class discussions are also required.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 290P - Topics in Computational Cinematography (5)

Focuses on discussion of recent advances in visual storytelling in graphical environments. Major topics covered are: intelligent camera control, shot-compositions, lighting design, interactive storytelling, and computational techniques associated with these applications. Class consists of in-class discussions and student presentations of research papers and a final student project.

Prerequisite: Enrollment is restricted to graduate students.

CMPM 296 - Masters Project (5)

Students work on their master's project with a faculty supervisor. Students submit petition to sponsoring agency. Assessment is done based on project goals and the ability of the student to apply his/her knowledge and skills accumulated through the master's classes into the project.

CMPM 297A - Independent Study or Research (5)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

CMPM 297B - Independent Study or Research (10)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

CMPM 297C - Independent Study or Research (15)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

CMPM 297F - Independent Study or Research (2)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

CMPM 297G - Independent Study or Research (1)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

CMPM 299A - Thesis Research (5)

Thesis research conducted under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

CMPM 299B - Thesis Research (10)

Thesis research conducted under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

CMPM 299C - Thesis Research (15)

Thesis research conducted under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements. Students submit petition to sponsoring agency.

COWL - COWELL COLLEGE

Lower-Division

COWL 1 - Academic Literacy and Ethos: Imagining Justice (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Examines the emergence and development of key concepts of justice including procedures, rights, and reparation.

Prerequisite: Enrollment is restricted to college members.

COWL 1A - Introduction to University Life and Learning (1)

Orientation to and exploration of the nature of the liberal arts, and of learning at research universities. Topics include: academic planning for upper-division coursework; enrollment processes; and understanding pathways to degree completion; UCSC resources that support health and well-being strategies for academic success; the cultivation of just communities; the prevention of sexual harassment and violence; campus

conduct policies; awareness of risks associated with drug and/or alcohol use; and an introduction to traditions of community-engaged learning, ground-breaking research, and interdisciplinary thinking that define a UC Santa Cruz degree. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Cowell College students.

COWL 80 - Dungeons & Dragons &...Yokai!? Global Transformations of Japanese Fantasy (5)

Explores adaptations of Japanese fantasy across media forms and national boundaries. Argues that the genre of Japanese fantasy emerged through a network of trans-cultural and trans-media adaptations which inform each other to shape understandings of the genre today. Exploration of the fantasy genre includes the transnational circulation of folklore, historical romance, high fantasy, dark fantasy, sword and sorcery, cosmic horror, and secondary world fantasy. The learning objectives of this course are obtained through group projects, theorizing collaboration, and tabletop role-playing games, including Dungeons & Dragons and The Call of Cthulhu.

COWL 88 - Preparing for Historical Fieldwork on the Shikoku Pilgrimage (2)

Preparation for those students who have successfully applied to join the Shikoku Pilgrimage super class in the fall of 2025. The Shikoku Pilgrimage is a physically and mentally challenging 1200 km trek through mountainous terrain. While doing that difficult task, students will be doing 20 credits of academic fieldwork in a very different cultural and linguistic setting as well. This 2-credit summer course is designed to prepare students for this difficult but hugely rewarding experience, laying the foundation for deep learning about Japanese society and about their own selves. Enrollment is restricted to sophomores, juniors, and seniors. Enrollment is by instructor permission. Students must successfully apply in a written application and an interview with the instructor.

COWL 10 - How to Win at College (5)

This is a course about the modern college classroom. Specifically, this is a course about finding your place in the classroom, about honing skills that can help you be the most successful student you can be. Using concrete tools and techniques, students tackle everything from managing email inboxes to effectively communicating with professors. Includes time exploring larger, more philosophical topics in education. What does it mean to be a student at this moment in time? What are mentors and how do you find them? How do you meet your goals while still remaining compassionate to yourself? (Formerly Becoming a Successful Student.)

Prerequisite: Enrollment is restricted to first-year students, sophomores and juniors.

COWL 11A - Leading from Within (2)

First in a three-part sequence that builds the foundation for aspiring leaders, although anyone can join the sequence at any time. Students explore personal leadership through self-awareness, emotional intelligence, and values-driven activities, build key leadership theories, reflect and assess their strengths and opportunities for growth, and develop a leadership mindset. Through interactive experiential learning activities such as self-assessments, reflective journaling, and case studies, students use new ways of thinking as leadership principles are applied to real-world scenarios. (Formerly Experiential Leadership Program Core Course: Tools for Leadership and Conflict Resolution.)

COWL 11B - Leading and Empowering Others (2)

The second in a three-part sequence that builds the foundation for aspiring leaders, although anyone can join the sequence at any time. This part sets the foundation to learn how to lead teams, groups, and committees. Students gain experience and confidence working with others in an effective way, and using their leadership mindset to grow so they can serve others and be a change agent and catalyst in our community. (Formerly ELP Core Course: Leadership From the Inside Out, Networking and Professionalism.)

COWL 11C - Leading with Intention: From Influence to Impact (2)

The third course in a three-part collaborative leadership sequence that builds the foundation for aspiring leaders, although anyone can join the sequence at any time. Focuses on leading with intention to make a meaningful impact in the communities and systems. Students learn how to lead with clarity, communicate your vision, and influence change within complex systems. By engaging in real-world application and reflective practice, students strengthen their ability to lead with purpose and be a catalyst in our community. (Formerly ELP Core Course: Tone-Setting and Leading with Cultural/Emotional Intelligence.)

COWL 11D - ELP Elective Course: Risk Management and Social Justice Through the Lens of Outdoor Leadership (2)

Although applicable to any setting, this Experiential Leadership Program (ELP) course explores topics of risk management and social justice through the lens of outdoor leadership. Students gain tools and insights to cultivate a safe and inclusive environment. Includes a weekend backpack trip (funding dependent). No experience necessary.

COWL 11E - Leadership Spring Break Intensive: Backpacking the Canyons of Southern Utah (2)

Experiential Leadership Program course focusing on tools to build a high functioning team that has the confidence and skill to work together, solve complex problems, and navigate challenges to achieve a shared goal. Includes a 10-day wilderness expedition as a testing ground to practice and apply new team skills. Includes leadership development, and learning about good expedition and team behavior. Enrollment is by instructor permission. (Formerly offered as STEV 13.)

COWL 11F - Slug Ambassador (3)

Develop the leadership and professional skills and confidence that will enable you to make a difference in your personal,

academic, and professional life. Course offers students the opportunity to give back by sharing their stories and successes, engaging in networking events, and serving as role models for fellow students. Course limited to students participating in the Slug Ambassador program. Enrollment is by permission of the instructor.

COWL 12 - Public Speaking (5)

This introductory level seminar is designed to reduce anxiety and increase competence and confidence in a variety of public speaking situations. While providing some theory, this seminar emphasizes the practice of composing and delivering speeches, including formal, informal, and extemporaneous occasions.

Prerequisite: Enrollment is restricted to college members during priority enrollment.

COWL 50 - Library Skills for the Digital Age (2)

Intended to enhance students' skills in using the most powerful learning tool in any university: the library. Topics: organization of the library; how to begin researching; search engine and database use; judging the quality of sources; using sources responsibly. Disciplinary focus changes from quarter to quarter.

Prerequisite: Enrollment is restricted to first-year and sophomore college members, or by permission of instructor.

COWL 52 - Personal Finance and Investing (5)

Overview of the financial responsibilities that young adults take on after college. Topics include: taxes, budgeting, student loans, credit, and investing in the stock market. Ubiquitous terms, such as 401(k), are defined, and financial principles are used to develop a framework for personal financial decision-making.

COWL 64 - Social Justice: Issues and Debates (2)

Focused followup on social justice topics and readings introduced in the Cowell core course. Allows first-year students to pursue social justice themes in greater depth. Students must have previously taken a Cowell core course (or equivalent).

Prerequisite: Enrollment is restricted to first-year students.

COWL 66 - Introduction to Systems Theory (5)

Multidisciplinary overview of the problem-solving methodology known as Systems Theory. The word “system” is used every day, but few people understand what a system really is. What do different systems—from a digestive system to a legal system to a solar system—have in common? What are the laws that govern how systems operate, and how do problems arise? Our goal is to appreciate the fundamental roles that systems play in making daily life functional, in order to diagnose problems better and to generate novel and functional solutions.

COWL 65 - Meaning, Paradox, and Love (5)

Mary Holmes--legendary founding faculty member of UCSC, keen observer, painter of mythic images, and profound thinker--had a visionary's insight into the mysteries of love, paradox, and meaning. This course explores her art, teaching, and wisdom.

COWL 70A - Introduction to Book Arts (5)

Students learn techniques of bookbinding, construction, and design, and fundamentals of letterpress printing. Enrollment is by permission of instructor.

COWL 70B - Intermediate Book Arts (5)

Learn fundamental skills in fine letterpress printing, including hand typesetting and instruction in the operation of printing presses. Basic typography explored as students design and print a small edition of a selected text.

Prerequisite: Prerequisite(s): COWL 70A or by permission of instructor.

COWL 70C - Advanced Book Arts (5)

Students learn fundamental skills in fine letterpress printing, including hand typesetting and instruction in the operation of printing presses. Basic typography explored as students design and print a small edition of a selected text.

Prerequisite: Prerequisite(s): COWL 70B or by instructor permission.

COWL 86 - Leading Social Change (2)

Offers students the knowledge and skills required to lead diverse teams. Topics include the social-change model of leadership and principles of collaboration. Geared toward Cowell and Stevenson Residential Assistants, but students interested in the topics may take the course with permission from the instructor.

COWL 89 - Faculty Research Colloquium (2)

Introduction of UCSC as a research university, our notable researchers, and their work. Weekly discussions with UCSC faculty from a variety of disciplines.

Prerequisite: Enrollment is restricted to participants in the first-year scholars program.

COWL 93 - Field Study (5)

Various topics to be arranged. Students submit petition to sponsoring agency.

COWL 93F - Field Study (2)

Various topics to be arranged. Students submit petition to sponsoring agency.

COWL 94 - Group Tutorial (5)

A program of independent study arranged between a group of students and a faculty instructor. Students submit petition to sponsoring agency.

COWL 94F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty instructor. Students submit petition to sponsoring agency.

COWL 99 - Tutorial (5)

Various topics to be arranged. Students submit petition to sponsoring agency.

COWL 99F - Tutorial (2)

Various topics to be arranged. Students submit petition to sponsoring agency.

Upper-Division

COWL 111 - Mock Trial Workshop (2)

Offers opportunities to improve students' public speaking and communication skills through weekly exercises which challenge a student's ability to think quickly, organize information effectively and speak persuasively. Students also learn and practice courtroom procedures and legal argument styles. Each week students learn about a facet of mock trial. Students focus on different speaking skills weekly. Speakers of all skill levels are welcome and receive constructive criticism both from peers and the teachers and participate in debates within a small team.

COWL 118B - Words & Music: Poetry, Musical Theater, Opera (5)

Study of significant texts enhanced by music for performance. Topics vary annually. Course compares original texts in English translation with their adaptation to musical theater (My Fair Lady, Oklahoma, etc.) and opera (Carmen, etc.)

COWL 122 - United Nations Contemporary Issues (2)

Introduces the Model United Nations through discussion of contemporary issues. Students learn parliamentary procedures and U.N. protocols, as well as how to work collaboratively to research and to present position papers. Students learn resolution writing, alliance building, and persuasive speech.

COWL 130 - Living Harmoniously: Philosophy for Healing (5)

Many religious, philosophical, and cultural traditions emphasize diverse paths and understandings to the strikingly similar goal for humans to live harmoniously amongst each other in society and in the natural world. This seminar focuses on exploring and examining such ideas across history from around the world with a particular focus on ideas that offer paths to healing for readers and practitioners. The course doesn't presume to heal students, but rather to point out the tools provided by the philosophical process toward this individual end, as well as equipping students for interpersonal and community efforts at collective, cooperative healing.

COWL 132 - Hope (5)

Interdisciplinary examination of the concept of hope, with particular emphasis on philosophical, psychological, and artistic approaches to the concept. Students consider viewpoints for and against hope as a human strength, and a variety of accounts of what constitutes hope.

COWL 135 - The Path of Forgiveness (5)

Explores forgiveness as both interpersonal relationships and political questions in a broader historical context. The thesis of the course is that forgiveness is a radical act and a major theme in philosophy and religion where it serves as a necessary step toward social solidarity in our contemporary moment of hyperpolarization. Explores how forgiveness can heal social divisions such as those constructed around religion, political affiliation, and identity. The course closes with historical examples of forgiveness in action, such as reparations and prison abolitionist movements.

COWL 138A - The Place of Higher Education in a Democratic Society (5)

Centers around interviews of alumni and involves a reflective term paper on a specific topic having to do with the role of higher education in a democratic society. Teaches students how to conduct interviews.

Prerequisite: Prerequisite(s): COWL 80A or COWL 80B.

COWL 140 - Designing Your Life (5)

Do you ever think, "I want to make a difference!" but don't know where to start? In this class, students learn design thinking theory and methods and apply them to their lives, specifically to the question of what to do after college. Students build deeper awareness of their values and goals, define areas of life and work they want to grow in, ideate multiple life paths, prototype elements of careers of interest, and take small steps to try these out. This is an experiential class that asks students to try new ways of thinking and step outside comfort zones as they learn a creative problem-solving approach applicable in many contexts. (Formerly offered as CLNI 140.)

Prerequisite: Enrollment is restricted to juniors and seniors.

COWL 140A - Designing Your Life with the Cowell Alumni (2)

How does one make decisions about those "big life" questions? From deciding "what the right thing to do to" is to how to have a career that enriches your life, how does one choose what to do? In this course, Cowell Alumni discuss how they made those "big life" decisions in the hopes that it can guide others. Course is designed to expand on the topics covered in COWL 140, Designing Your Life.

Prerequisite: Previous or concurrent enrollment in COWL 140 is required.

COWL 156M - Medical Ethics (5)

How do we understand pain? How do we make ethical decisions on topics like organ transplantation and reproduction? What is the role of genetic technology in the future of medicine? What are the ethics of healthcare? What does climate change have to do with bioethics? In this interdisciplinary course, students delve into the morality and

ethics of medicine, using bioethical frameworks to take on important scientific and human questions. This course is suitable for everyone, but in particular those interested in medical anthropology, pre-med, environmental studies, sociology, history of science, and philosophy. (Formerly Medical Ethics and Justice in Literature and Film.)

COWL 158A - Special Topics: Oral History (5)

Introduction to the theory, practice, technology, and ethics of conducting oral history. Readings and expert guest speakers offer both theoretical and practical insights. Students plan and implement oral history projects in accordance with professional standards.

Prerequisite: Enrollment restricted to sophomores, juniors, and seniors.

COWL 161G - Delicious: The Cookbook as Literature (5)

Proposes an aesthetic approach to the cookbook. Students read from a series of cookbooks, and prepare a series of meals described in or inspired by the cookbooks read. Our interdisciplinary approach to food will allow us to interpret and analyze food as cultural storytelling, while also cultivating the spirit of hospitality through shared meals.

COWL 165 - Fundraising Practicum (3)

Covers the fundamental skills, ethics, and practices of crowd-sourced fundraising in the liberal arts. Students build a project portfolio that includes mission statement, donor-cultivation tools, and action reports. Enrollment is by permission of the instructor. Meet with the instructor to verify enrollment in a Giving Day campaign with liberal arts focus.

COWL 168 - Social Change (2)

How do you change the world, working alone and in concert with others? To find out students spend the quarter learning about how one non-profit organization of their choosing creates change in their community. Students research an agency, focusing on who is served, how funding works and how real change is created.

Prerequisite: Enrollment is restricted to college members.

COWL 174 - Global Leadership (3)

Students learn about leadership styles, how leaders work with constituent groups, build cooperation, and develop implementation plans. Students learn to consider how decision making is done, and what is best practice for best working in a variety of communities and cultures. Enrollment is restricted to those participating in Virtual Global Internships.

COWL 184A - Leadership and Institution Building (2)

Through lectures by senior administrators and student consensus-and-recommendation teams, students learn how leaders work with constituent groups, build cooperation, and develop implementation plans in an institution such as the University of California, specifically, UC Santa Cruz. Enrollment is restricted to undergraduates accepted in the Chancellor's Undergraduate Internship Program. Students submit applications winter quarter for the following academic year.

COWL 184B - Leadership and Institution Building (2)

Through lectures by senior administrators and student consensus-and-recommendation teams, students learn how leaders work with constituent groups, build cooperation, and develop implementation plans in an institution such as the University of California, specifically, UC Santa Cruz. Enrollment is restricted to undergraduates accepted in the Chancellor's Undergraduate Internship Program. Students submit applications winter quarter for the following academic year.

COWL 184C - Leadership and Institution Building (2)

Through lectures by senior administrators and student consensus-and-recommendation teams, students learn how leaders work with constituent groups, build cooperation, and develop implementation plans in an institution such as the University of California, specifically, UC Santa Cruz. Enrollment is restricted to undergraduates accepted in the Chancellor's Undergraduate Internship Program. Students submit applications winter quarter for the following academic year.

COWL 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision. (See COWL 42.) Upper-division standing required and a proposal supported by a faculty member willing to supervise.

COWL 193 - Field Study (5)

Program of study arranged between a group of students and an instructor, which may involve work with an off-campus or non-departmental agency (e.g., internship or field work). Interview only; prior arrangement with instructor. Enrollment is restricted to juniors and seniors.

COWL 193F - Field Study (2)

Program of study arranged between a group of students and an instructor, which may involve work with an off-campus or non-departmental agency (e.g., internship or field work). Interview only; prior arrangement with instructor. Enrollment is restricted to juniors and seniors.

COWL 194 - Group Tutorial (5)

A program of independent study arranged between a group of students and an instructor. Students submit petition to sponsoring agency.

COWL 194F - Group Tutorial (2)

A program of independent study arranged between a group of students and an instructor. Students submit petition to sponsoring agency. Enrollment is restricted to juniors and seniors.

COWL 195 - Senior Thesis (5)

Students submit petition to sponsoring agency.

COWL 198 - Independent Field Study (5)

Provides for college-sponsored individual study programs off campus, for which faculty supervision is not in person (e.g., supervision is by correspondence.) Up to three such courses may be taken for credit in any one quarter. Approval of student's adviser, certification of adequate preparation, and approval by provost required.

COWL 199 - Tutorial (5)

Various topics to be arranged. Students submit petition to sponsoring agency.

COWL 199F - Tutorial (2)

Various topics to be arranged. Students submit petition to sponsoring agency.

CRES - CRITICAL RACE AND ETHNIC STUDIES

To view planned offerings for the current academic year, please visit this link.

Lower-Division

CRES 10 - Critical Race and Ethnic Studies: An Introduction (5)

Examines the concept of race, followed by an investigation of colorblindness, multiculturalism, and post-racialism. Race and ethnicity are examined as historically formulated in relationship to the concepts of gender, sexuality, class, nationalism, indigeneity, citizenship, immigration, and inequality.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing requirement.

CRES 12 - Science and Justice: Critical Intro (5)

Students learn to critically analyze the entanglements of technoscience with systemic injustice. Our collective task is to creatively imagine and practically enact new ways of producing knowledge—including new approaches to science and technology—that support the mutual flourishing of the broadest possible range of lives. Course asks: What is the relationship between science, technology, and social justice? What power structures and systems of inequality do science and technology produce and uphold?

CRES 14 - Center for Racial Justice Service Learning (5)

Supplemented by invited guest speakers and field activities, this Center for Racial Justice-sponsored course is facilitated by an activist-in-residence. Through critical readings, discussions, and situated learning, students take part in an experiential learning project and contribute service hours to a community-based organization.

CRES 15 - Resource Centers Service Learning Course (5)

This service learning course offers students of all majors the opportunity to intern at UCSC Resource Centers. Students organize educational community-oriented programs and projects to address retention and equity issues in higher education. Through this course, students develop critical thinking, problem-solving, project planning, and writing skills by combining theoretical concepts and experiential learning experience. Students explore texts that highlight resiliency of minoritized communities through the study of trans, queer, Asian American/Pacific Islander, Black, American Indian, Chicanx/Latinx, undocumented, and feminist political thought.

CRES 25 - Race / Land / Property (5)

Provides a long historical account of the accumulation of land through logics of dispossession within the system of racial capitalism. Students explore the historical methods of claiming private property as a racialised project. Questions of settler-colonialism, imperialism, indigeneity, place and placelessness as well as claims to land and sovereignty are key to our inquiry. Focus is on the legacies of the transatlantic slave trade, specifically through examples in England, the Caribbean and North America.

CRES 45 - Pilipinx Historical Dialogue (5)

Examines the history, politics, and cultural expressions of the Pilipinx community, in the Philippines and the diaspora, with an emphasis on Pilipinx and Pilipinx-American activism.

CRES 60E - Blackness and Indigeneity in Europe (5)

What are the contours of Black Europe? This course emphasizes a range of disciplinary approaches to the concepts of blackness and indigeneity, introducing and questioning Black Europe as a field, a culture, and a set of ideologies.

CRES 68 - Approaches to Black Studies (5)

Provides a diasporic approach to the field of Black Studies in the modern era, with a focus on histories of dispossession and resistance.

CRES 70B - Black Radical University? (5)

Course emerges from a collaboration with the Black Student Union around Black student organizing and Black liberationist pedagogies. Students explore and archive histories of Black student organizing on the UC Santa Cruz campus and beyond (locally, nationally, and globally), as well as Black liberationist pedagogy (e.g., decolonial thought in the Third World, freedom schools in the U.S. South, Black Panther Party liberation schools, Black feminist pedagogies). Course is offered for pass/no pass grading only.

CRES 70S - Introduction to the Sikhs (2)

Introduces the Sikh community, including its origins, history, belief system and contemporary challenges. Other topics include Sikh music, art, literature, and aspects of Sikh society. Specific attention is paid to the Sikh diaspora community in the United States, and in California in particular, including

comparative perspectives with respect to other minority communities.

CRES 70U - (Un)docu Studies (5)

Deconstructs the common perception of immigration as strictly a Latinx issue in order to develop solidarity among different groups of students and to explore a range of narratives surrounding undocumented status and migration with the aim of empowering us as agents of transformative social change. Legal papers, as a violent affirmation of settler sovereignty, do not capture the complexities of who we are, much less all our relations—to each other, to place, to life worlds. By exploring those complexities, we strive to create a communal space where we courageously articulate self, community, and relationality in ways that state documents must disavow. Course is offered for Pass/No Pass grading only.

CRES 94 - Group Tutorial (5)

A lower-division group tutorial, led by a faculty member, that focuses on various problems within critical race and ethnic studies. Topics to be chosen by the instructor and undergraduate student participants. Enrollment is restricted to critical race and ethnic studies majors.

CRES 94F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty instructor. Students submit petition to sponsoring agency. Enrollment is restricted to critical race and ethnic studies majors.

CRES 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

CRES 100 - Comparative Theories of Race and Ethnicity (5)

Examines race and ethnicity as categories of lived identity intersecting with gender, sexuality, class, and culture; historical discourses of difference underwriting social inequalities and movements to redress those inequalities; and concepts critical to the understanding and reshaping of power and privilege.

Prerequisite: Prerequisite(s): CRES 10 and satisfaction of the Entry Level and Composition requirements.

CRES 101 - Research Methods and Writing in Critical Race and Ethnic Studies (5)

Introduces students to tools, conceptual frameworks, keywords, and methods for research and writing in critical race and ethnic studies. Drawing from ethnic studies, Asian American studies, Arab American studies, Black studies, Indigenous studies, Latinx studies, feminist studies, and queer studies, students analyze how scholars do the work of studying the effects of and resistance to U.S. colonialism, capitalism, empire, war, globalization, and migration. Examines questions of settler colonial state practice, dispossession, diaspora, incarceration, and the ethics of research methods. Students practice the craft of writing about race, colonialism, state violence, and the manifold movements that imagine alternative, decolonized futures.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to sophomores, juniors, and seniors.

CRES 112 - AsianAm Enviro Justice (5)

Explores the concept of environmental racism in a transnational framework, focusing on the shaping of Asian American and Pacific Islander communities in the United States and in the current and former territories of U.S. empire in the Pacific. Students explore environmental racism within the historical contexts of U.S. militarism and imperial warfare, empire and settler colonialism, disasters and disaster aid, and climate change refugeehood.

CRES 113 - Music and Performance (5)

Considers issues of race, place, gender, power, and identities through the converging fields of Black studies and performance studies. Emphasizes global diasporic histories of broad music production and performance from the 14th century onward with an emphasis on the making and performance of global Black social life. Primarily creative in nature, the course allows students to practice creative processes and allows opportunities to produce music and generate performance art.

CRES 115 - Frantz Fanon: Resistance, Revolution, and Decolonization (5)

Students immerse themselves in the intellectual, political, and critical thought of 20th-century Martiniquan psychoanalyst, writer, and revolutionary Frantz Fanon. Students closely read several of Fanon’s most noted works, including Black Skin, White Masks, A Dying Colonialism, and The Wretched of the Earth, as well as thinkers Fanon studied and engaged in these works. Class also engages contemporary interpretations of Fanon’s transnational, emancipatory thought and practice from scholarly, aesthetic, and political organizing perspectives.

CRES 118 - Abolitionist Futures (5)

Grounded in local, national, and global prison abolition movements, this course explores through feminist political frameworks creative strategies that imagine and work to end all systems of domination and exploitation. Looks at California's prisoner organizing and abolition movements, along with other historic and contemporary social movements which deepen our understandings of the ways in which carceral systems are shaped by and through capitalist formations of race, gender, sexuality, and disability. Also examines strategies such as disability justice and transformative justice which demonstrate expansive and liberatory visions of abolition, extending far beyond the prison system itself.

CRES 120 - Third World Feminisms (5)

Places the thought and praxis developed and pursued by Third Worldist women, queer, and gender nonconforming peoples at the center of a conversation on the conditions of coloniality and pursuits of liberation from the entwined tyrannies of imperial, racial, and gendered oppressions. Course asks how African, Asian, Caribbean, and other Third Worldist women activists, artists, and scholars imagined and defined what liberation might have looked like in the 20th century, and what it might mean today.

CRES 121 - The Struggle for K-12 Ethnic Studies (5)

Critical analysis of the movement for K-12 ethnic studies in historical and contemporary time periods with a particular focus on the Liberated Ethnic Studies Model Curriculum. Students read, discuss, and analyze past and present K-12 ethnic studies research, policy, and practice to deepen their knowledge and strengthen their ability to critique issues in K-12 ethnic studies education while reflecting on how the concepts and questions that arise relate to their own educational experiences and lives.

CRES 122 - Decolonial Intersectionality: Gender, Race, Indigeneity (5)

Applies the concept of intersectionality within feminist thinking to an exploration of the limits and possibilities of decolonization and the ways in which gender, race, and indigeneity inform both colonial domination and resistance.

CRES 123 - Introduction to Native American & Indigenous Studies (5)

Explores the emergence of Native American and Indigenous Studies as well as the theories, methods, and contemporary issues that inform the field. Centers key concepts and central themes from over the last half century of academic scholarship, and activist organizing, for Indigenous peoples and the decolonization of settler occupied lands.

CRES 127 - Indigenous Environmentalisms From Oceania to Native California (5)

Examines Indigenous environmentalist struggles and contemporary movements to protect land and water in California and in Oceania. Course examines three Indigenous women-led movements to protect land and water: Run4Salmon, Sogorea Te Land Trust, and Protect Mauna Kea. Also examines their transnational collaborations with Aotearoa/New Zealand and West Papua.

CRES 129 - Black Marxism (5)

Marxism has been a foundational framework for the Black radical tradition. This course offers a theoretical framework to key texts in Marxism, and an overview to the problems, insights, contexts, and interventions that Black intellectuals have deployed in conversation with it.

CRES 131 - Black Freedom Movements (5)

Examines the development of Black freedom movements ranging from resistance to slavery to contemporary movements for Black power in Jackson, Mississippi. Interdisciplinary in scope, course examines a variety of materials ranging from novels, to autobiographies, to political manifestos in order to understand fully the broad scope of Black freedom movements.

CRES 132 - Black Speculations (5)

Traces the heterogenous historic, material, and ephemeral manifestations of Blackness and the Black radical imaginary in science fiction, fantasy, horror, and visionary literary, sonic, and visual cultural forms. Identifies how Black speculative aesthetic, cultural, and political practices reorients understanding of the past, recalibrates elation to the present, remaps assumptive notions of space and time, and allows us to reimagine our futures. Class collectively identifies, interprets, and puts into conversation the meaning-making speculative practices of Black diasporic writers, musicians, artists, filmmakers, abolitionists, even in genres and traditions seldom thought of as speculative. Class pays particular attention to Black diasporic/international contributions to these genres.

CRES 134 - The Black "Middle East" (5)

This course accounts for the racial heterogeneity of the “Middle East.” Ranging from the Maghreb, the Levant, and Gulf, the Middle East is also a political construct of myriad histories and processes of enslavement, displacement, racialization, domination, and resistance. Many of these processes precede European colonization, merged with imported Euro-American racial ideologies, and continue to reverberate in the region. This class focuses specifically on how blackness as a racial, cultural, and political identity is forged, understood, and contested along this vast terrain, attending to how articulations of Black being and blackness continue to be translated and lived to this day.

CRES 140 - Latina/o/x Geographies (5)

Explores questions like: Who is Latinx? What communities does this include/exclude? How extensive of a geography does Latinidad cover? What is the political usefulness of Latinidad in the face of overwhelming heterogeneity? How does Latinx Geographies reckon with or overcome the anti-Black and de-Indigenizing nationalist projects of Latinidad in Latin America and in the U.S.? Students learn how to define Latinx geographies and evaluate its disciplinary boundaries and assess the work of Latinx geographers and their ability to negotiate historic tensions within academia and Latinx studies.

Prerequisite: Prerequisite(s): CRES 10.

CRES 144 - Introduction to Black Poetry (5)

Introduction to the literary, social, activist, and experimental traditions of Black Poetry from the 18th century through the present. With an emphasis on poets of the Americas and the Caribbean, course explores a range of lyrical works by poets of the African Diaspora whose poetry expresses the enduring mental, emotional, and physical consequences of slavery.

CRES 150 - Race, Gender and Algorithms (5)

Algorithms shape race and gender today, yet algorithms are older than digital media and can be understood as recipes or rituals. Course engages with the emerging field of trans of color poetics by studying readings in women of color feminism, transgender studies, and decolonial theory. Digital media art grounds the discussion, including works from queer and trans artists of color working in digital games, anti-surveillance fashion and performance art. Students create digital media projects in response to the ideas of the course, in the medium or platform of their choice, including video prototypes, web sites, Scalar books, Twine games, podcasts and/or video channels, the technical aspects of which will be covered in class.

CRES 151 - After Man: Race, Gender and Technology (5)

As Sylvia Wynter and many of the other authors to be read this quarter point out, the definition of the human has historically excluded racialized peoples, gender non-conforming people, indigenous people, disabled people, and even at times cisgender women. This class examines the intersection of science and justice to understand how the border of the human is used to reinforce anti-blackness, xenophobia, transphobia and many other forms of social oppression.

CRES 153 - A Radical History of the Korean War (5)

Against dominant framings of the Korean War, which left 4 million Koreans dead, as the freeing of the Korean people by the United States from the forces of global communism, this course reconsiders the war, which has never formally ended, from below and to the left, namely, through the lenses of multigenerational people's struggles against fascism and imperialism. Through collaborative, participatory research, students materialize from the ashbin of history what might be called a people's archive of the Korean War.

CRES 159 - Latinxs and the History of U.S. Policing (5)

How does the criminal justice system make itself felt in the everyday lives of Latinxs? From border enforcement, to stop and frisk, to the phenomenon of mass incarceration, many Latinxs find themselves and their communities enmeshed within a dense web of surveillance, punishment, and detention. This interdisciplinary course examines the historical, political, economic, and social factors that have, in many ways, criminalized Latinidad and rendered Latinxs illegal.

CRES 160 - Latina/o/x Geographies (5)

Explores questions like: Who is Latinx? What communities does this include/exclude? How extensive of a geography does Latinidad cover? What is the political usefulness of Latinidad in the face of overwhelming heterogeneity? How does Latinx Geographies reckon with or overcome the anti-Black and de-Indigenizing nationalist projects of Latinidad in Latin America and in the U.S.? Students learn how to define Latinx geographies and evaluate its disciplinary boundaries and assess the work of Latinx geographers and their ability to negotiate historic tensions within academia and Latinx studies.

Prerequisite: Prerequisite(s): CRES 10.

CRES 161 - The Racial and Gendered Economies of Housing (5)

Explores the political and libidinal economic dimensions of the housing market and their relation as analytics to explain the development of the housing market over the 20th and 21st centuries. Explores the interdependence of political and libidinal factors in influencing the operation and management of housing markets from public and private entities. Course pays special attention to the role of race (in addition to other determinants of difference: gender, class, etc.) in structuring housing’s libidinal and political economies. Students cannot receive credit for this course and CRES 261.

Prerequisite: Prerequisite(s): CRES 10, and satisfaction of the Entry Level Writing and Composition requirements.

CRES 170 - Intro to Arab American Communities (5)

Situates Arab American studies and the study of Arab and Muslim diasporic communities originating from the region within a broader global racial order and through an intersectional approach. This course can be used to satisfy the CRES Transnational or Social Movement requirement if completed with a C/P or better. (Formerly Arab Diasporic Communities.)

CRES 171 - Arab Feminist Visions (5)

Examines how global and historical factors contribute to the manufacturing of gender as a social construction of power in the Arab World. Draws on lived experiences of Arab/Muslim women and illuminates the ways in which they articulate gender and feminism, providing a community-centered alternative narrative on such questions. This course can be used to satisfy the CRES Transnational requirement if completed with a C/P or better.

CRES 172 - Arab Uprising: Movements, Revolutions, and Praxis (5)

Situates the historical and present conditions, through a multiplicity of local, regional, and global configurations of power, that work to repress and mobilize the Arab masses. Course centers 20th- and 21st-century movements and revolutions with the aim of understanding these uprisings in their given contexts and analyzing what we can learn about praxis through them. This course can be used to satisfy the CRES Transnational or Social Movement Requirement if completed with a C/P or better.

CRES 173 - Palestine: A History from Below (5)

Offers a chronological trajectory of more than 100 years of Palestinian history from the diverse perspectives of Palestinians as knowledge producers in transnational community.

CRES 174 - Palestine Through Ethnic Studies Lens (5)

This course offers Palestinian perspectives and contexts for themes in ethnic studies. Analyzes Palestinian subjectivity by drawing on ethnic studies frameworks of colonialism, carcerality, borders, race and more.

CRES 179A - Critical Filipinx Poetics: A Workshop for Reading and Writing Poetry (5)

Writing workshop exploring the aesthetic and critical engagements of Filipina/o/x poets. Students analyze authors' prosody and craft, and explore thematization of migration, family, violence, culture, history, and agency. How do Filipinx poets address racialization, gendering, sexuality, class, and citizenship? What are their commitments to place, the divine, multilingualism, and the natural world? Students also write and workshop poems. Assignments: portfolio of three poems, in-class writing exercises, revised poem drafts, peer review comments, and performance of poems in class and at one public reading.

CRES 179C - Artivist Creative Nonfiction Workshop (5)

Students create compelling nonfiction essays combining personal experience, research, and narrative craft. How do we address settler occupation, colonial extraction, carceral violence, migrant dehumanization, climate crisis, misogynist assaults, and anti-trans and anti-queer hatred, while also celebrating solidarity, culture, and connection? Course examines creative nonfiction forms such as the flash essay, memoir, braided essay, reported essay, and hybrid essay. Assignments include in-class writing exercises, a text presentation, annotated bibliography, initial and revised essay drafts, and peer feedback.

CRES 183 - A Black Lyric (5)

In-depth study of literary, social, activist, and experimental Black Poetry of the Americas, the Caribbean, and the African Diaspora. Focuses on either a single era (i.e., specific time period), a social movement (i.e., Black Arts Movement), an aesthetic style (i.e., experimental poetry), or a combination of these areas from the 18th century through the present.

CRES 185 - Race, Gender, and Science (5)

What does science say about who we are? How does it script what bodies can mean? Can scientific knowledge be produced under occupation? How has science featured in struggles for racial and sexual liberation? This course investigates the relationship between scientific discourse and global ideas of race and gender. Students build literacy in different ways of scientific knowing, while reflecting on their social, political, and ethical ramifications. Also inquires into ongoing efforts to decolonize science. No prior science experience is required.

CRES 188A - Topics in Transnational Asian American and Pacific Islander Studies (5)

Focuses on a particular topic in Asian American and Pacific Islander studies. Topics vary with each offering but might include approaching racial and ethnic formations through a range of disciplinary and interdisciplinary perspectives, with a focus on a transnational critique of intellectual histories, political movements, cultural expressions, lived experiences and critical theories of Asian Americans and Pacific Islanders.

CRES 188B - Topics in Black Studies (5)

Focuses on a particular topic in black studies. Topics vary with each offering but might include approaching racial and ethnic formations through a range of disciplinary and interdisciplinary perspectives, with a focus on the intellectual histories, political movements, cultural expressions, lived experiences, and critical theories of peoples throughout the Black diaspora and Africa.

CRES 188M - Topics in Critical Migration Studies (5)

Focuses on a particular topic in migrant and migration studies. Topics vary with each offering but might include examining the intersections of race, gender, and citizenship through a variety of disciplinary and interdisciplinary perspectives, intellectual histories, and political movements as they relate to labor and capital, imperialism and neoliberalism, the racialized criminalization of movement, detention and deportation, and violence against migrant workers.

CRES 188S - Topics in Settler Colonial Critique (5)

Focuses on a particular topic in settler and colonial studies. Topics vary with each offering but might include examining the intersections of race and racism through a variety of disciplinary and interdisciplinary perspectives, intellectual histories, and political movements as they relate to empire, racial capitalization, colonial occupation and dispossession, mass incarceration and concepts of property and accumulation.

CRES 188T - Topics in Race, Science and Technology (5)

Focuses on a particular topic in race and science/technology. Topics vary, but focus on the history and politics of scientific inquiry and technological development within legacies and realities of racism and colonialism, including in the areas of public health, migration, labor, and reproductive rights.

CRES 188X - Topics in Critical Race and Ethnic Studies (5)

Focuses on a particular topic in critical race and ethnic studies. Topics vary with each offering but might include approaching racial and ethnic formations through a range of disciplinary and interdisciplinary perspectives, including indigenous studies, Black studies, Latinx studies, Asian American studies, queer critique, gender studies, transgender studies, performance studies, human rights studies, mixed race studies, legal studies, critical area studies, war and empire studies, environmental studies, science studies, and critical university studies.

CRES 190A - Critical Race Feminisms (5)

Focuses on key learning outcomes of humanistic research and writing: developing a method for critical race feminist analysis, identifying objects and fields of study, formulating an appropriately narrow topic and thesis, identifying and critiquing sources, and completing well-structured written argumentation. Readings offer key theoretical models in

critical race and ethnic studies, feminist studies, and queer theory.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190B - Critical Migration Studies (5)

Focuses on critically analyzing public representations of migration. Exploring key scholarship in migration and diaspora studies, including recent writings on "border crises," students develop an individual research project exploring a controversy, archive, cultural text, or historical debate in research on a specific migrant or diasporic group. The focus is on key learning outcomes of humanistic research and writing: developing a method for studying migration attentive to critical race analysis; identifying objects and fields of study, formulating research questions, organizing an appropriately narrow thesis, identifying and critiquing sources, and completing well-structured written argumentation.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190C - The Black Transnational (5)

Senior seminar focusing on the transnational circulation of Black political and cultural thought and practice in the 20th century. Explores the dynamics of Black transnational circulations beyond (and often in spite of) imposed national and international borders that have historically and continue presently to dictate, criminalize, or otherwise obstruct or limit the free movement of Black peoples. Aims to permit students to trace the multidirectional, radical imaginary of such Black diasporic circulations, cataloguing the possibilities that Black transnational political and cultural thought and practice engendered alongside the differences and contestations these formations might reveal.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to critical race and ethnic studies majors.

CRES 190D - Black Geographies and the Imperative of Abolition (5)

Far from a recent development, abolitionist demands to defund the police are actually central to a 400-year legacy of Black struggle. In the wake of the 2020 Black Lives Matter uprisings that erupted in response to several high-profile police murders, this senior seminar takes an interdisciplinary look at the burgeoning field of Black geographies to help us understand the renewed urgency of these calls in our current moment by engaging with works of activism, speculative fiction, and multimedia, including videos, podcasts, music, websites, and graphics.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190E - Thinking Through Palestine (5)

This senior seminar centers concepts, theories, and frameworks central to the field of ethnic studies that are advanced by examining the Palestinian context. (Formerly Thinking Palestine.)

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190F - Black Queer Film (5)

Students critically examine public representations of Black queer and trans communities. Work is grounded in analysis of Black feminist, Black queer, and Black trans thought in relation to critical media studies.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190L - Comparative Settler Colonial Studies (5)

Discusses the characteristics of settler colonialism and the politics of comparison in the study of global settler colonialism. Looks at settler colonial state practice across multiple different sites, including Santa Cruz, as students craft their own research projects. (Formerly offered as HIS 194C.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Crosslisted as: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

CRES 190N - Science/Fiction and the Possible (5)

Where are the limits of our imaginations around science and technology? How does existing science fiction reimagine the same old kinds of science, technology, and social and political relations between people? How do they wildly reimagine all these categories? This senior seminar analyzes and creates short pieces of speculative fiction that imagine new political configurations capable of giving rise to different forms of science and technology than those currently on offer. Class collates these into an anthology, and culminate the course with a public reading of our work.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190P - Trans of Color Performance and Media (5)

Trans of color poetics is a decolonial method of study and creation that decenters Western conceptions of gender, race, and identity. Students study trans of color performance and media art, and create performance art in response. Trans of

color poetics is an emerging field that is in dialog with queer of color theory and women of color feminism. Students also read trans of color theory and learn about these genealogies, and read performance studies and watch performance artworks to understand the genres of performance and media art as artistic movements where artists make art with bodies in time and space. Assignments include performances on video and photo, as well as writing assignments.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190S - From Slavery to Precarity: Race, Logistics and Globalization (5)

Over the past half-century, there has been a profound transformation in the way that goods are produced and moved about the world resulting in what has been referred to as the "logistics revolution". Course examines the ways in which this "revolution" in mass circulation of goods necessitates a radical thinking of race and racial politics in the context of contemporary capitalist globalization.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190T - The War on Terror: Imperialism Past and Present (5)

Senior seminar focusing on the theoretical underpinnings of U.S. imperialism from a global perspective, from the annexation of the Philippines in 1898 to the current War on Terror. Drawing on the history of U.S. settler-colonialism and liberal empire as racial projects, the course investigates contemporary forms of racialization surrounding the Muslim as figure for foreign enemy. Utilizing a diverse range of media, course considers various theoretical texts in critical race and ethnic studies, visual studies, gender and queer studies, history, and literature.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 190X - Racial Capitalism (5)

Overview of the history and conceptualization of racial capitalism. Students study recent works in critical race and ethnic studies that analyze capitalism as a specifically racial phenomenon, and evaluate their contribution in a historical lens.

CRES 190Y - Solidarity (5)

Considers different moments in movement work—for example, solidarity with Palestine, #NODAPL, Mauna Kea, Black freedom struggles, ACT UP, trans liberation, and beyond—and explores the failures and liberatory potential of solidarity. Students read theoretical meditations on solidarity, thinking through what it means to study solidarity, and also consider how solidarity can require risk, danger, and loss. Most importantly, course studies what it means to craft horizontal networks of care in the face of the ceaseless demands to (re)produce hierarchical ones.

Prerequisite: Prerequisite(s): CRES 10, CRES 100, and CRES 101; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior critical race and ethnic studies majors.

CRES 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar by an upper-division student under faculty supervision. (See CRES 42.)

CRES 194 - Group Tutorial (5)

Group tutorial, led by a faculty member, that focuses on various problems within critical race and ethnic studies. Topics to be chosen by the instructor and undergraduate student participants. Enrollment restricted to critical race and ethnic studies majors.

CRES 199 - Tutorial (5)

Students submit a petition to the sponsoring agency.

CRES 199F - Tutorial (2)

Individual study in areas approved by sponsoring instructors. May not be counted toward upper-division major requirements. Student submits petition to sponsoring agency. Enrollment is restricted to critical race and ethnic studies majors.

Graduate

CRES 124 - Demilitarizing the University (5)

With a principal focus on the Cold War and post-9/11 U.S. research university as the object of our collective study, studentrs inquire into its lethal centrality to the military/security-industrial complex, from the development of the atomic bomb to the present day. Course also examines insurgent efforts, including mass student mobilizations, to demilitarize the university.

CRES 200 - Black Studies Methods (5)

Exploration of interdisciplinary research methodology—a broader set of scientific beliefs, approaches, inquiries, theories, and analytics—relevant to the study of Black communities. Students read, explore, and engage in particular methods—approaches to data collection and analyses—emphasizing various forms of ethnographic research. Course also examines other approaches to the study of Blackness, such as historical/archival, cultural studies and discursive analyses, and mixed methods.

Prerequisite: Enrollment is restricted to graduate students.

CRES 201 - Exile & Diaspora (5)

Explores "subaltern" narratives of diaspora exile in order to interrogate the condition of exile and its interwoven, often contradictory relations to many diasporic formations that endure in the 20th and 21st centuries. Students explore the various origins of diaspora and forms of exile emergent from chattel slavery, colonialism, war, racism, xenophobia, political dissidence, and dispossession, informing an understanding of these broader global machinations, and the experiences of those exiled and in diaspora themselves.

Prerequisite: Enrollment is restricted to graduate students.

CRES 202 - Ecopoetics and Ecoaesthetics (5)

Considers theories of race, place, gender, and climate through the overlapping burgeoning fields of ecopoetics and ecoaesthetics. Reflects on how the environment, climate crises, and various ecologies inform contemporary experimental poetry, film, music, dance, visual art, performance, and community activism of the 20th and 21st centuries.

Prerequisite: Enrollment is restricted to graduate students.

CRES 203 - Black Studies Theories

Exploration of interdisciplinary research and theoretical frameworks relevant to the study of the global black communities. Examines multiple theoretical approaches to the study of Blackness, drawing from a wide array of ethnographic, historical/archival, cultural studies and discursive analyses. Designed to help students develop a research tool kit, one that is rigorous, flexible, practical, ethical, grounded, and self-reflexive.

CRES 204 - Decolonial Futures (5)

Critical examination of anti-colonial social movements, Indigenous thought and praxis, and the possibilities and limits of the concept of decolonization.

CRES 205 - Critical Indigenous Studies (5)

Examines a variety of theories and methods relevant to Indigenous studies through a sustained critical engagement with key concepts and salient themes and by tending to questions of power and resistance in the context of anti-colonial struggle and Indigenous resilience as exercised among communities across Turtle Island and Oceania, but also beyond.

CRES 206 - Studying with Ancestors (5)

This seminar is an experiment in reclaiming a small patch of the university as a space for studying with ancestors. Reflects on how practices of ancestral relation have informed anti-colonial rebellions and subsequent struggles against racial capitalism. Also investigates how European colonial modernity reproduces itself through the brutal regulation of ancestral knowledge. A transnational archive of art, seed, film, and social theory guides students in thinking collectively about their own practices of study—and how they might channel or divert the currents of the past.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students.

CRES 217 - Indigenous Politics (5)

Examines key questions in Indigenous studies through a variety of methods, theories, histories, and issues regarding Indigenous peoples and a critical study of power in the context of anti-colonial struggle across Turtle Island and Oceania, but also beyond.

CRES 222 - Experimental Language Poetry (5)

In-depth study of 20th- and 21st-century poetry emerging in and expanding from experimental movements of the 1960s-1970s and onward. Focuses on works by clusters of poets (i.e. press mates, regional, literary movements), on a particular theme (i.e. ecological, racial, sexual), using a particular poetic practice (i.e. ritual, transmission, divination), or a combination of these areas. The course involves reading poetry, talking about poetry, writing poetry, and discussing your own original poetry with peers in generative writing workshops.

Prerequisite: Enrollment is restricted to graduate students.

CRES 227 - From Oceania to Native California: Indigenous Environmentalisms (5)

Examines Indigenous environmentalist struggles and contemporary movements to protect land and water here in California and in Oceania. We look at three Indigenous-women-led movements to protect land and water: Run4Salmon, Sogorea Te Land Trust, and Protect Mauna Kea.

Prerequisite: Enrollment is restricted to graduate students.

CRES 261 - The Racial and Gendered Economies of Housing (5)

Explores the political and libidinal economic dimensions of the housing market and their relation as analytics to explain the development of the housing market over the 20th and 21st centuries. Explores the interdependence of political and libidinal factors in influencing the operation and management of housing markets from public and private entities. Course pays special attention to the role of race (in addition to other determinants of difference: gender, class, etc.) in structuring housing’s libidinal and political economies. Students cannot receive credit for this course and CRES 161.

Prerequisite: Enrollment is restricted to graduate students.

CRES 297A - Independent Study (5)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

CRSN - CARSON COLLEGE

Lower-Division

CRSN 1 - Academic Literacy and Ethos: Environment and

Society (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Engages students in Rachel Carson's intellectual tradition of investigating relationships between environment and society.

Prerequisite: Enrollment is restricted to college members.

CRSN 1A - Introduction to University Life and Learning (1)

Orientation to and exploration of the nature of the liberal arts, and of learning at research universities. Topics include: academic planning for upper-division coursework; enrollment processes; and understanding pathways to degree completion; UCSC resources that support health and well-being strategies for academic success; the cultivation of just communities; the prevention of sexual harassment and violence; campus conduct policies; awareness of risks associated with drug and/or alcohol use; and an introduction to traditions of community-engaged learning, ground-breaking research, and interdisciplinary thinking that define a UC Santa Cruz degree. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Rachel Carson College students.

CRSN 10 - Academic Success (2)

An interactive course providing students with the opportunity to assess and revise methods of and purposes in studying. Critical, effective approaches to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources are all explored. Enrollment by permission of college adviser.

CRSN 15 - Strategies to Jump Start Your STEM Learning (2)

Introduces tips and techniques to supplement and expand a student's existing repertoire of science/mathematics problem-solving skills for science, technology, engineering, and mathematics (STEM) classes. The material covered is intended to aid development as a confident learner and future expert in the student's major.

Prerequisite: Enrollment is restricted to first-year through third-year students. Others may enroll with instructor permission.

CRSN 15A - STEM Essentials (2)

Introduces tips and techniques to supplement and expand a student's existing repertoire of science/mathematics problem-solving skills for science, technology, engineering, and mathematics (STEM) classes. The material covered is intended to aid development as a confident learner and future expert in the student's major.

CRSN 20C - The Water Environment: Literature of the Sea (2)

Students consider the representation of the sea in selected texts, noting how it becomes the focal point for the fears, hopes, and prejudices of Western civilization. Students write critical papers and their own narratives.

Prerequisite: Enrollment restricted to first-year and sophomore college members.

CRSN 20D - College Students' Lives (2)

Students understand their peers and themselves better through an exploration of issues that affect the daily life of college students. Topics include campus/student cultures, the academic system, and other critical issues. Overview of campus resources also provided.

Prerequisite: Enrollment restricted to first-year and sophomore College members.

CRSN 20F - Justice on Earth (3)

Examines issues of oppression, privilege, and social justice within a global and environmental context through self-reflective and group work. May include an optional service-learning component requiring travel during spring break.

CRSN 20G - Peregrine Falcons Return (2)

A case study of the 1970s-1990s UC Santa Cruz effort to restore a nearly extinct peregrine falcon population including reviews of the Endangered Species Act, falcon physiology, and the innovative conservation biology techniques that led to success.

CRSN 28 - Peer Leadership in Higher Education (3)

Overview of theories of student development, critical student issues, and skills needed for appropriate peer leadership interventions. Utilizes a variety of learning modes including readings, discussions, case studies, lectures, and group projects. Interview only: approval of instructor; Resident Assistant (RA) pre-employment training course.

CRSN 55 - Rachel Carson College: Service Learning Practicum (2)

Introduces service-learning theory and practice for students engaging in service-learning work in the college, college-related projects, community service organizations, or public agencies.

Prerequisite: Enrollment restricted to college members until after priority enrollment.

CRSN 56 - Media Internships for Sustainability (2)

Students develop and work on media projects related to the college theme of Environment and Society in film, on television, in print, and on the Internet. Students work in groups with specific instructors and project leaders. Enrollment by application and instructor consent.

CRSN 61 - Education for Sustainable Living Program (2)

Analyzes sustainability and its application in daily life and on campus, involving collaboration between students, faculty, staff, administration, and the community. Guest lecturers, discussions, an optional UC-wide retreat, and essays allow

engagement with aspects of ecological and social sustainability.

CRSN 81C - Designing a Sustainable Future (5)

Introduces key technological solutions to environmental problems; discusses their underlying principles; and examines their societal dimensions. Topics include: conventional and renewable energy; emerging technologies for transportation, energy efficiency clean water; planetary engineering; and lean manufacturing.

Prerequisite: Prerequisite(s): CRSN 80A or CRSN 80B. Enrollment restricted to first-year and sophomore college members.

CRSN 82 - Environment and Society in Film (2)

Students write about and discuss a variety of films and articles about environment and society. Topics may include water, food systems, wilderness, wildlife, pollution, global warming, nuclear energy, conservation, and environmental activism.

Prerequisite: Enrollment restricted to college members.

CRSN 90 - Cultivating Food Justice and Sustainability (1)

Learn sustainable, ecologically sound horticulture, permaculture, and small-scale organic agricultural practices through hands-on gardening experience. This outdoor interdisciplinary course operates within a food justice framework. (Formerly Rachel Carson College Garden Internship.)

Prerequisite: Enrollment restricted to college members. Other students by permission of the instructor.

CRSN 93 - Field Study (5)

CRSN 99F - Tutorial (2)

Individual study for lower-division students directed by a faculty member affiliated with the college. Students submit petition to sponsoring agency.

Upper-Division

CRSN 128 - Advanced Peer Leadership Practicum (3)

Advanced practicum for the application of skills and theoretical knowledge studied in course 28. Uses many learning modes including readings, discussions, case studies, lectures, and group projects. Prerequisite(s): CRSN 28. Enrollment by permission of instructor.

CRSN 151A - Sustainability Praxis in the Natural and Built Environment (5)

Introduces the concepts, methods, practices, and tools of the trade for conceptualizing and conducting research in sustainability praxis in the built and natural environment, and the quantitative and analytical tools required to conduct such analysis and research.

CRSN 151B - Innovation and Professionalization for Sustainability Designers, Engineers, and Entrepreneurs (5)

Teaches how to become innovators and entrepreneurs, develop projects and enterprises, and adopt professional practices. Focuses on sustainability for students in Sustainability Studies, especially in connection with students' research and interests.

CRSN 151C - Sustainability Laboratory Tools, Techniques, and Applications (3)

Introduces the concepts, skills, and strategies fundamental to the successful development of sustainability-related projects appropriate to the Sustainability Lab. Provides access to functional and living laboratory space, equipment, professional development, and technical training.

CRSN 151S - Sustainability Field Laboratory Tools, Techniques, and Applications (5)

Introduces the concepts, skills, and strategies fundamental to the successful development of sustainability-related projects in the field, for community and ecosystem development. Provides technical and professional training in quantitative and qualitative methods for data accumulation using laboratory and field equipment for resource assessment, data analysis, and efficiency in water and energy systems.

CRSN 152 - IDEASS Laboratory Practicum (3)

Laboratory designed to advance sustainability education with real-world impact. Enables students to develop as change agents and to make valued contributions to sustainable-design projects that advance new technologies or strategies and bring about societal and environmental change.

Prerequisite: Enrollment is restricted to sophomores, juniors, seniors and graduate students.

CRSN 155 - Rachel Carson College Sustainability Internship (2)

For students undertaking sustainability-oriented service-learning work in the college (college-related projects, community service organizations, or public agencies). Students are supervised by the instructor and project supervisor, and determine the content of their internship with the instructor and supervisor.

Prerequisite: Enrollment restricted to college members or by permission of instructor.

CRSN 155S - Innovation & Sustainability for Global Impact Practicum (3)

Centered around an internship, students learn how to use design thinking and lean innovation tools to research global sustainability problems, design innovative solutions, prototype and test them, and launch them in the real world. These tools will help students initiate and develop sustainability innovation projects in companies, non-profit organizations, startups, government, and more, with the intention to make a positive impact on people and the environment. This course fulfills a requirement for the

sustainability minor, and is also open to any students from other minors and majors.

CRSN 160 - Developing Leadership to Facilitate Environmental Education (5)

Prepares students to facilitate working groups for Sustainable Living (courses 61/161) during the spring quarter. The skills acquired during this course include: facilitation skills; problem-solving; syllabus planning; curriculum building; experiential learning techniques; leadership skills; cultural competence; and non-violent communication training. Enrollment by interview only. Enrollment restricted to sophomores, juniors, and seniors.

CRSN 161 - Education for Sustainable Living Program (5)

Analyzes sustainability and its application in daily life and on campus, involving collaboration between students, faculty, staff, administration, and the community. Guest lecturers, discussions, an optional UC-wide retreat, and essays allow engagement with aspects of ecological and social sustainability.

CRSN 162 - Sustainability Internship Practicum (5)

Introduces students to sustainable practices and state, local, and UC-wide policies through projects. Matches students with UCSC staff partners to work collaboratively on projects that integrate sustainability into aspects of campus operations. Supports students to develop the competencies necessary to become effective environmental professionals through learning models including hands-on work experience; professional skills training; guest lectures; reading, and discussion; and peer-to-peer advising. In addition to project deliverables, students complete and present a portfolio of their work upon completion of their project. Enrollment limited to Sustainability Office Interns and by instructor permission; an interview, resume, and cover letter are required.

CRSN 193 - Field Study (5)

CRSN 193F - Field Study (2)

Provides for individual programs of study sponsored by the college and performed off campus. Must be sponsored by college faculty. Approval of the student's adviser and the academic preceptor is needed to enroll. May be repeated three times for credit. Students submit petition to sponsoring agency.

CRSN 195 - Senior Thesis (5)

CRSN 198 - Independent Field Study (5)

CRSN 199 - Tutorial (5)

CRSN 199F - Tutorial (2)

Individual study for upper-division students directed by a faculty member affiliated with the college. Students submit petition to sponsoring agency.

CT - CREATIVE TECHNOLOGIES

Lower-Division

CT 1 - Creative Interventions: A Colloquium in Contemporary Media (2)

Online community colloquium on topics in contemporary creativity and creative practices. How does creative work address its most challenging problems, both in the arts and in broader social and professional contexts? How does creative labor intersect with other forms of labor to address power and inequity in society? Guest lecturers address the critical contexts—including racism, ableism, patriarchy, and other structures of power—for cultural work, and how those contexts, which are inseparable from the discipline of art-making and curation in 21st-century technological contexts, can be transformed. (Formerly CT 1B, Imagination and Intervention: a Creative Technologies Colloquium.)

Prerequisite: Enrollment is restricted to junior and senior creative technologies majors.

CT 10 - Understanding Digital Design (5)

Introduction to digital design practices. How do contemporary design technologies and applications shape creative practice and expressive work? Students explore digital design tools and working methods, across a range of formats and mediums, through a project-centered framework. Technologies and projects are presented in conversation with visual design fundamentals, and a wide variety of historical and contemporary art and design works. Digital technologies for publishing and exhibiting work online are also introduced.

Prerequisite: Enrollment is restricted to junior and senior creative technologies majors.

CT 11 - Digital Media Perspectives (5)

The proliferation of digital media since the early 2000s has shaped the way that we engage with every aspect of society. New social, political, economic, and creative forms have emerged, and so have our ways of relating to technology and each other. This course surveys a variety of digital media works, learning to analyze the expressive potential of a wide range of creative technologies. By the end of this course, students will have gained a deep understanding of the digital media landscape and its capacities (and limitations) toward creativity and social impact. (Formerly Issues in Digital Expression.)

Prerequisite: Enrollment is restricted to junior and senior creative technologies majors.

CT 20 - Introduction to Creative Coding (5)

Introduction to basic programming skills, including computer language tools and visual-interface programming tools for creative expression. Introduction to web authoring, image creation and editing, sound editing, and user experience design fundamentals, through skills acquisition-focused approach to individual and/or collaborative creative project(s). The final project is a work of playable media art/design,

documentary media, interactive journalism/pedagogy/curation, or multi-media art/performance. Languages and applications will vary by instructor.

Prerequisite: Prerequisite(s): CT 10. Enrollment is restricted to junior and senior creative technologies majors.

Upper-Division

CT 100 - Digital Platforms: Observations and Practices (5)

Explore media technologies by directly engaging digital platforms, transmission, and storage, as direct rather than indirect practices. Topics covered, through lenses of both theory and practice, include global circulation of media—emphasizing the contemporary digital image, relations between sound and mobile-technology media and the environment, and the technical infrastructure of digital interfaces and data visualization. Critiquing data collection, representation, and curation, student projects build a vocabulary for critical engagement with cultural production and conditions.

Prerequisite: Prerequisites: CT 10, 11, and 20. Enrollment is restricted to junior and senior creative technologies majors. Crosslisted as: Enrollment is restricted to proposed and declared art majors.

CT 101 - Persuasion and Resistance: Power in Contemporary Digital Media (5)

The study of power in contemporary media environments. How do audience, genre, medium, and other contexts impact our reception of a message? Explores contemporary theory and practice of media, applied to commercial and institutional promotion, advertising, and activism. Enables critical views of media in social, cultural, and political contexts. Projects combine scholarship and creative work to invite students' imagination of a media world in which learning, dialogue, contemplation, fun, and play can help enable flourishing and just communities.

Prerequisite: Prerequisite(s): CT 11, CT 20, and CT 100; and satisfaction of the Entry Level Writing and Composition requirements, Enrollment is restricted to junior and senior creative technologies majors.

CT 110 - Sensors, Signals, and Interaction (5)

Introduction to computing for physical and sensory interaction, including machine-based sensors for audio, vision, and motion, and their uses in designed participatory experiences. How do sense-like functions in hardware and software compare and relate to the physiology of sensation and perception on which they are modeled? What are the implications of sensory interaction, ableism, disability, and accessibility? Student projects explore collaborative approaches to the production of interactive digital art and design.

CT 120 - Intermediate Creative Coding (5)

Project-driven practicum in arts and design applications of computer languages. Students apply new approaches to ongoing individual and collaborative projects. Students learn to code "from scratch," rather than through the modification of prototype examples. Explore how programming languages function not only as tools but as institutional frameworks, sometimes invisibly shaping social norms and contemporary art and design practices; learn conscientious uses of code that can contribute to accessible technology and the empowerment of audiences, users, and media consumers.

CT 125 - Collaborative Production Practicum (5)

Project-driven practicum in technology-engaged creative collaboration in a range of hardware, software, and media contexts. Students develop a project while reimagining and questioning assumed relationships between technology and application. Course materials traverse creative collaboration comprehensively: from envisioning a project scope, to grant-writing and other fundraising. Students may use their final project in this course as a basis for their “capstone” project in the Senior Studio Production course.

CT 161 - Narration and Participation: Modes of Representation in Media (5)

Story-building, participatory creativity, and performance in a wide range of time-based arts and design. Models for storytelling are drawn from film, television, music, theater, gaming, and other media, including collective improvisatory practices, mixed transmission environments from game-based narration to hip-hop. Special emphasis is placed on activist, experimental, and counter-hegemonic narration, Black, Indigenous, feminist, and queer contributions to contemporary arts, design, and performance practices.

CT 163 - Queer Art (5)

Explores the state’s vital queer art communities as a cultural phenomena, primarily through one-on-one interviews with contemporary queer artists in California. In the face of rising homophobia and transphobia in many parts of the country, this course centers and makes visible the work of BIPOC LGBTQIE+ artists, including those with disabilities, and many others. Course develops literacy and comprehension of queer artists and their artworks. Through a combination of lectures, visual presentations, films, readings, short quizzes and discussion boards, students gain the skills and knowledge to become conversant in queer art. For their final project, students conduct their own interview with a queer artist of their choosing, collectively developing their own queer art archive.

CT 195 - Creative Technologies Senior Studio (5)

Students culminate the creative technologies degree by assembling artist/designer statements, curating their portfolio, learning a range of professional practices in the presentation of a body of work. Prepares graduating seniors to share creative findings, voice, and vision, commencing public life as artists, designers, and curators who take leadership in the

complex communities and information landscapes of the 21st-century.

CRWN - CROWN COLLEGE

Lower-Division

CRWN 1 - Academic Literacy and Ethos: Ethical and Societal Implications of Emerging Technologies (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Examines how technological revolutions happen, how they transform societies, and how these changes generate new ideological narratives.

Prerequisite: Enrollment is restricted to college members.

CRWN 1A - Introduction to University Life and Learning (1)

CRWN 1A explores opportunities, expectations, and responsibilities in university life. Topics include: academic planning; general education requirements; majors and minors; campus policy; and preparation for CRWN 1A: Power & Representation. Students gain familiarity with resources for health, well-being, time management, academic success, cultivating just communities, sexual harassment and violence prevention, reflection on UCSC's principles of community, and an introduction to the living and learning tradition of Crown College. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Crown College students.

CRWN 28 - Crown Student Leadership Development Seminar (2)

Explore leadership as it relates to student development at Crown College. Examine how values, ethics, involvement, identity, and theory affect leadership in a variety of content areas. Evaluate student's leadership strengths to determine objectives for improvement.

CRWN 31 - Crown College Student Leadership in Action Seminar (2)

Focuses on developing and establishing leadership skills and styles for new leaders at Crown College. Explores communication styles, group dynamics, community development, programming, moral development and conflict resolution concepts and strategies. Applies theory to action. Enrollment limited to college members and by permission of instructor.

CRWN 60 - The Environment on Film: Rhetoric of Ecocriticism (5)

Examines the overt as well as the subtle cinematic elements that depict, ponder, and persuade concerning issues of the environment and the role of humans regarding nature, animals, and the human-made landscape.

Prerequisite: Enrollment is restricted to college members.

CRWN 70 - Introduction to Broadcast Media: Radio (3)

Comprehensive history of noncommercial radio as a mass-communication medium. Course also serves as an introduction to UCSC's radio station KZSC-FM and broadcasting. Through lectures, hands-on instruction, and written assignments, students learn the fundamentals of program presentation and audio production. Enrollment is by permission of the instructor. Concurrent enrollment in CRWN 70L is required.

CRWN 70B - Introduction to Broadcast Media and Podcasting (5)

Teaches creative audio storytelling and journalism through the collaborative production of podcasts to be published online. Students explore the many potential stories in and around Santa Cruz such as notable local persons in academia, politics, or the arts, or local topics of general interest. This course prepares students to represent their interests through audio within various UCSC media outlets and professional opportunities within the fields of podcasting, journalism, and radio. This class has no prerequisites, will be taught synchronously online (remotely), and fulfills the Image and Interpretive Media (IM) general education credit.

CRWN 70L - Broadcast Production: Radio (2)

Practical application of technical and creative skills in the KZSC studios. Production of audio content and promotional materials for broadcast. Critical evaluation in a workshop setting. Assignments require original research, professional writing, and the operation of complex technology. Enrollment is by permission of the instructor. Concurrent enrollment in CRWN 70 is required; students who have taken CRWN 70B are exempt from CRWN 70 co-enrollment.

CRWN 77 - Rebels on the Rise: How to Revolutionize the Future (4)

Focuses on cultivating and understanding innovation, possibly the most valuable asset in the 21st century. It is based on interviewing a lineup of thought leaders who have successfully implemented groundbreaking ideas by setting them in motion and achieving stunning impact. The course delves into the genesis of these ideas, exploring how they were conceived and what propelled them to gain significant traction. This class also encourages students to tap into their creative potential and provides them with the tools to think, create, and act in ways that can shape the future.

CRWN 79 - Introduction to Social and Ethical Implications of Emerging Technologies (2)

An introduction to the theme of Crown College, "Social and Ethical Implications of Emerging Technologies". Taught in a small class format and articulated around a group project, both of which help generate sense of belonging, and is the key to the success of our transfer students. The group project will be used to introduce academic research and also strategies for effective work in groups, which is an essential skill in most fields, and of particular relevance to STEM disciplines.

CRWN 80F - Science Fictions (5)

D. Farquhar

Examines how science fictions have imagined better and worse worlds, social relations, and identities by using science and technology. Students read novels and short stories from the 19th Century to the present and discuss and debate questions of justice, freedom, difference, and identity.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing requirement.

CRWN 80J - Cyborg Society: Myths, Realities, Choices (5)

Examines content and methodologies of the emerging field of cyborgology. Includes social studies of science, anthropology, sociology, philosophy, politics, art, biology, and informatics.

CRWN 80L - Food Safety and Environmental Quality: The Complexities of a Safe Salad (5)

In recent years, outbreaks of food-borne illness have alarmed farmers and consumers alike. This course examines the complexities of ensuring food safety in the complex natural, economic, and social settings that characterize U.S. food-production systems.

CRWN 80S - Undergraduate Seminar in Science, Technology, and Society (5)

An honors seminar for first year students on selected topics that examine the relationship between science, technology, and society. Precise focus of each seminar varies and is announced by the college.

Prerequisite: Preference given to Crown College students. Enrollment is restricted to first-year and sophomore students.

CRWN 81 - Theory and Practices for a Purposeful Life (3)

Goal is to understand our ability to impact the world around us and recognize that while we cannot control it, we are able to control the ways in which we respond to the various situations that life brings us. The class discusses each of our seven intelligences, the ways in which we intake, process, and put out information and how we gain, use, and lose our internal resources in our everyday exchanges. Includes lectures and active engagement with texts and videos, shared experiences, physical exercises, and games. Also includes a customized App to support follow-through and engagement, and journaling to support self-awareness and reflection.

CRWN 85 - Mathematical Problems in Data Science (5)

Provides students with exposure to some of the most relevant mathematical concepts appearing in data science. Applications of linear algebra, optimization, graph theory, and topology are explored. No prior mathematical requirements are expected and this course will introduce the necessary theory needed. The intention is to focus on the theoretical aspects of the mathematical problems arising in data science and to provide exposure to mathematical proofs. No coding experience is required nor will it be used.

Prerequisite: Enrollment is restricted to College Scholars Program students.

CRWN 86 - Storytelling in a Digital Age (5)

Explores theories and practices of narrative form, subjectivity, political and social engagement, and identity. Students engage with a variety of methods and approaches to communicating effectively and reaching audiences in the modern digital arena. Students develop, produce, and share several digital stories using film, photo, audio, and mixed media methods. (Formerly offered as Professional Communication in a Digital Age.)

Prerequisite: Enrollment is restricted to College Scholars Students.

CRWN 87 - Understanding and Communicating the Science Behind Global Warming (5)

Provides tools to critically assess the current debate on the implications of global warming and to communicate the issues to the public effectively. Examines how questions are framed and addressed by scientists in general and how they are framed and addressed given our current understanding of the problem of global warming based on basic physics and statistical analyses of climate data. Includes practical assignments and guest lectures by local UCSC experts.

Prerequisite: Prerequisite(s): Enrollment in the College Scholars Program.

CRWN 88 - Computational Futurology:Use of Data Analysis for Predicting Human Behavior and Activity (5)

P. Rothman

Investigates statistical and computational methods for the prediction of human activity, both at the individual and at the collective level. Students learn to evaluate and critique famous predictions, and consider the ethical and social implications of predictive technologies. Articulated around a creative group project to integrate concepts learned in the course.

Prerequisite: Enrollment is restricted to College Scholar Students.

CRWN 89 - Workshop in Computational Biology (5)

Designed to engage students with training in areas related to computational biology. Covers basic biological, statistical, and computational concepts needed for hands-on research; training students to read primary literature and do collaborative work in an interdisciplinary setting. Enrollment restricted to students with some background in programming, math or biology and by permission of instructor.

CRWN 90 - Start-up Entrepreneurship Academy (5)

Introduction to the basics of setting up a start-up company using the Lean Launchpad/NSF I-Corps model of instruction. Students learn principles of data collection, marketing processes, and resources needed for new companies. The class is articulated around the design of a business plan, in groups

of 4-5 students coached by a successful entrepreneur, and culminates in a presentation. The market research for the project involves talking to at least 5 potential customers, partners, channels and/or related experts each week.

CRWN 91 - Creative AI and Marketing (5)

Five-credit online course to introduce students to the world of marketing design or other creative occupations. This is an online project-based class where students are trained in the marketing fundamentals needed to succeed in today's dynamic marketing industry. This includes branding, project management, and website creation. In addition, this class incorporates hands-on experience with AI software tools for the generation of text, image, and video content while introducing important ethical issues raised by the use of AI such as data privacy, algorithmic bias, and the responsible use of AI. (Formerly Marketing for Good.)

CRWN 92 - Social and Creative Entrepreneurship (5)

Helps students discover and develop their own business idea that does the world good. Examines leadership and provides tools to research community issues and to develop sustainable business models. Guest lecturers and project mentors introduce students to business and civil leaders.

CRWN 92G - Social Entrepreneurship in Costa Rica (5)

Introduction to social entrepreneurship abroad. This is a highly interactive class that focuses on learning leadership and collaboration principles while solving community issues in the context of a global seminar. Covers how to research community needs and how to build sustainable businesses using lean startup business development models. Concurrent with CRWN 94G (Eco-Entrepreneurship), which provides real-world case studies of a variety of eco-entrepreneurship businesses. CRWN 94 encourages studies to apply the social entrepreneurship skills learned in CRWN 92G to create innovative solutions or to optimize the local case studies reviewed in the class.

Prerequisite: Prerequisite(s): concurrent enrollment in CRWN 94.

CRWN 93 - Field Study (5)

Provides for individual programs of study sponsored by the college and performed off campus. Students should review plans with an appropriate fellow of the college. A proposal should be presented to the college academic preceptor no later than the seventh week of the preceding quarter. Credit is granted by the sponsor upon approval of the work performed. Students submit petition to sponsoring agency.

CRWN 93F - Field Study (2)

Provides for individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. Students submit petition to sponsoring agency.

CRWN 94 - Eco-Entrepreneurship in Costa Rica (5)

Introduction to eco entrepreneurship abroad. Examines real-world case studies of a variety of businesses in the area of eco-entrepreneurship in the context of a global seminar. Students get to know their owners and deconstruct the business mechanics and plans of these companies. Students are then encouraged to apply this knowledge to create innovative solutions and sustainable ventures or to discover areas of inefficiency. The basics of entrepreneurship is delivered through a concurrently taught course, CRWN 92G, which shows how to conduct market research, how to define a value proposition, and how to determine the costs and establish a revenue model.

Prerequisite: Prerequisite(s): CRWN 92.

CRWN 95B - Introduction to 'GetVirtual' Business Assistance Internship (3)

Provides a blend of traditional business skills and modern technology to prepare students to launch, effectively manage, and grow a freelancing business. Students explore a range of critical topics including customer discovery, crafting effective business plans, proposal writing and execution, and developing websites for personal branding. Students also learn essential project management skills such as professional communication, scope of work, scheduling, cost estimating, and invoicing. In addition, this course integrates cutting-edge AI tools to assist in creating content for website development, personal branding, and business modeling, equipping students with the technological competencies needed for success in the digital age.

CRWN 96 - Digital Theater Workshop: Theorizing Culture and the Future (5)

Teaches different interpretation tools to be applied to a selection of dramatic literature in discussions. Students integrate these skills and develop their creativity through mounting a production of a play which addresses the impact of technology in society.

CRWN 97A - Foundations of Applied Ethics and Values of Emerging Technologies (2)

Provides the foundational skills for actively participating in ethical discussions on the impact of emerging technologies and opportunities. Also designed to help develop the necessary skills for hands-on skills in teamwork, problem-solving, and communication. The course will consist of readings, lectures and presentations, participation in the discussion forum, a set of written assignments, and a group project. CRWN97A coordinates with CRWN97B, an internship at CAEVET, Crown Center for Applied Ethics and Values of Emerging Technologies.

CRWN 97B - Center for Applied Ethics and Values of Emerging Technologies (CAEVET) Internship (2)

Focuses on developing students' leadership skills that builds on Crown 97A, an introductory class to applied ethics. Interns choose from a list of showcase themes and developing activities to deepen their understanding of the selected topic and reflect on how they can help enact change. These include current events discussions, the generation of content for the center's website, interviewing leaders/influencers, and proposing an action-oriented activity or program to further the

mission of the center. Crown 97 provides an intellectual community to support and provide feedback for each intern. Prerequisite(s): CRWN 97A. Enrollment is by interview and permission of the instructor.

CRWN 98 - Podcasting: Digital Storytelling (2)

Course walks students through the process of creating a podcast from concept to broadcast. Students' podcasts can be based on any research project or subject that they want. Class provides students with working knowledge of current trends in audio production and includes lessons on sound gathering using professional sound gear as well as cell phones, interviewing, script writing, audio editing and developing a "radio voice." Students watch each other's progress, learning to collaborate, problem-solve and take risks together. Finally, the class also examines the media and trains students to think critically about stories they consume.

Prerequisite: Prerequisite(s): CRWN 1 or by permission of the instructor.

CRWN 98B - Podcasting: Digital Storytelling in Ireland (5)

Class taught in Ireland together with WRIT 2. Students immerse themselves in Irish culture and history and learn from local guest speakers. CRWN 98B builds an in-depth understanding of the artistic medium of podcasting. Students learn to analyze the means through which podcasting encodes and conveys information and the influential role it has come to play in contemporary social discourse. Students also develop practical skills, such as storytelling, sound gathering, interviewing, scriptwriting, and audio editing and demonstrate the development of a “radio voice” by rendering a research project from the concurrent WRIT 2 course into the audio medium.

Prerequisite: Prerequisite(s): concurrent enrollment in WRIT 2.

CRWN 99F - Tutorial (2)

Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

Upper-Division

CRWN 100 - Building and Scaling Ventures (5)

Touches on the main operational facets of starting and scaling an organization. Students from all disciplines are welcome and encouraged to approach this class within the framework of their own career and business goals. For those who wish to start and scale companies, or those who desire to work in fast-paced and high-growth industries, this course covers the fundamental systems and practices that underpin the creation of new organizations, products and services. It is designed to satisfy one of the requirements of the planned Innovation and Entrepreneurship Certificate. (Formerly Fundamentals of Starting and Scaling an Organization.)

CRWN 102 - Corporate Innovation Laboratory (5)

Class designed to ensure that students gain practical experience that bridges classroom learning with industry expectations. Students develop essential skills for driving corporate innovation, working on real-world problems provided by a partner organization. An example are problems in the area of spatial computing shared by the Overture Maps Foundation. To allow for completion of complex projects, this class may be taken for credit across multiple quarters. Prerequisite(s): CSE 13S, and one of the following: CSE 115A, CSE 20, CSE 140, CSE 143, and CSE 144. Eligible students should be familiar with Introductory Computer Science, Data Science Fundamentals, and basic use of LLM’s. Knowledge in full stack web development is a bonus. Enrollment is by permission of the instructor. An interview is required to ensure that the students have the skills and commitment to contribute to the projects.

CRWN 123 - Examining Our Life Through Writing (5)

Writing-intensive seminar. Based on course readings and discussions, students write reflective response papers at the end of each class and weekly papers on their own lives and what they care most about. Intense class discussions, often started by students sharing their essays. Prerequisite(s): satisfaction of the Composition 1 requirement. Admission by permission of instructor after student reads lengthy syllabus, writes application, and interviews with instructor during faculty office hours.

CRWN 152 - Startup Deal Sourcing and Investing (5)

Trains students to identify investment opportunities in startup companies, using a combination of case studies and real-world ventures. Students learn to perform diligence, write an investment memo, and practice pitching to a mock investment committee. In addition, this class covers the structure of a venture capital firm, how and why limited partners invest into venture funds, their relationship to general partners, and how these factors influence deal decisions by venture firms. Class provides a solid foundation for aspiring venture capitalists, private equity professionals, or startup founders looking to understand how venture investors make informed decisions.

CRWN 155 - Methods in Data Science (5)

Explores methods used in Data Science (DS), assuming a strong foundation mathematical and analytical methods relevant to DS. To gain a deeper understanding of the complexities and limitations of these methods, this class focuses on real-life datasets and on challenging assumptions. Students work on practical projects that require creative problem-solving and critical thinking skills. Class provides a valuable opportunity to bridge the gap between theoretical knowledge and real-world applications in the field of Data Science. Topics covered include exploratory data analysis, linear regression, support vector machine, cluster analysis, principal components analysis, and neural networks.

Prerequisite: Prerequisite(s): CRWN 85 and STAT 131, and CSE 30 or STAT 266A.

CRWN 181 - Theories and Practices for a Purposeful World (5)

Interdisciplinary course covering sociological, psychological, and political theories for leadership and change. Building on concepts and practices acquired in CRWN 81, students

acquire a deep understanding of the nine types of intelligences of Inner Economy. Students also explore the impact and contribution of these intelligences on the world around them; additionally, they examine and are educated to act on issues at the local, national, and/or international levels.

Prerequisite: Prerequisite(s): CRWN 81.

CRWN 194 - Eco-Entrepreneurship in the World (5)

Examines real-world case studies of eco-entrepreneurship across various sectors through the lens of the Lean Startup method. Topics include market research, value propositions, cost structures, and revenue models, equipping students with the tools to create and improve sustainable business practices. Students analyze business strategies, engage with owners, and explore sustainable practices. Building on these foundations, students are encouraged to develop innovative solutions, propose new ventures, or identify opportunities for optimization.

CRWN 195 - GetVirtual Business Assistance Internship (5)

Community service-oriented class that provides a supervised learning experience for students to help increase local business client acquisition, integrating academic coursework with community involvement. Students gain valuable practical skills as consultants. They are trained to do interviews, write proposals, project-manage, design websites, and marketing campaigns. No prerequisites are required but CRWN 90 or CRWN 92 are highly recommended to acquire familiarity with the lean startup method, the business model canvas, and customer discovery. May be repeated for credit. (Formerly CRWN 95, GetVirtual Business Assistance.)

CRWN 185 - Career and Internship Preparation (2)

For students preparing for an internship experience or career position. Students undertake career development as a continuous lifelong process: learn techniques for an effective job search, such as preparing a resume and cover letter, interviewing and networking skills; and learn how to more clearly articulate their future educational and professional goals.

CRWN 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar by an upper-division student under faculty supervision. (See CRWN 42.)

CRWN 198 - Independent Field Study (5)

Provides for college-sponsored individual study programs off campus. Approval of student's faculty sponsor and college academic provost required.

CRWN 199 - Tutorial (5)

Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

CRWN 199F - Tutorial (2)

Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

Graduate

CRWN 290 - Startup Entrepreneurship Academy (5)

Eight-week program offered over UC Santa Cruz's summer session. Graduate students bring an idea for a prototype (typically related to their graduate work) and are assigned to mentors with startup experience to provide feedback and help develop their business models. Students learn who their core and tertiary customers are, the marketing processes required for initial adoption and downstream sustainability, the data that will be required by future partnerships and users, and core project management, financial, legal, and marketing resources needed for new companies. Students also learn to assess intellectual property and risk and to identify financing and other key resources early.

CSE - COMPUTER SCIENCE AND ENGINEERING

To view planned offerings for the current academic year, please visit this page.

Lower-Division

CSE 3 - Computing Technology in a Changing Society (5)

Introduction to computer hardware, software, and networking, with an emphasis on how these technologies impact society. Students learn key technical concepts and terminology and learn to modify and create programming code through making webpages and simple games. Students also gain hands-on experience using emerging technological tools such as 3D printing, laser-cutting, or 3D modeling software in virtual reality headsets. Course covers the history of computing, the early days of the internet, hardware fundamentals, accessibility tools, professional programming practices, open-source software, intellectual property concerns, networking, digital privacy, and cybersecurity. Designed for students with only basic, user-level computer experience. (Formerly offered as Personal Computer Concepts: Software and Hardware.)

CSE 5J - Introduction to Programming in Java (5)

Introduces programming in Java for students who have no prior programming experience. Students learn programming and documentation skills, as well as algorithmic problem-solving, and programming methodologies. Introduces computers, compilers, and editors. Students write small to medium-sized programs. This course and CSE 5C and CSE 5P cover similar concepts, but use different programming languages. Because CSE 5J followed by CSE 11 is a two-quarter alternative to the accelerated course CSE 12A and CSE 12L, engineering majors and students planning on continuing the programming sequence are encouraged to take CSE 5J rather than CSE 5C or CSE 5P. Students may not receive credit for CSE 5J taken concurrently or subsequently to CSE 12A, CSE 12B, or Computer Engineering 13. (Formerly CMPS 5J.)

CSE 10 - Introduction to Computer Science (5)

An overview of the theory, foundations, and practice of computer science with emphasis on what computers can and cannot do, now and in the future. Topics include algorithms and data, correctness and efficiency of algorithms, hardware, programming languages, limitations of computation, applications, and social issues. No programming skills are required as a prerequisite. Major concepts and open problems in computer science are presented without reliance on sophisticated mathematical tools. Students cannot receive credit for this course after completing CSE 15. (Formerly CMPS 10.)

CSE 12 - Computer Systems and Assembly Language and Lab (7)

Introduction to computer systems and assembly language and how computers compute in hardware and software. Topics include digital logic, number systems, data structures, compiling/assembly process, basics of the system software, and computer architecture. Course is 7 credits with integrated laboratories illustrating concepts covered in lecture. Note that CSE 12 assumes some programming experience. Students can show programming experience by taking one of the courses listed in the prerequisite list below or by taking the CSE python Test-out Exam: https://undergrad.soe.ucsc.edu/cse-20-testout-exam (Formerly CSE 12 and CSE 12L)

Prerequisite: Prerequisite(s): CSE 5J, or CSE 20, or CSE 30, or BME 160, or equivalent.

CSE 13S - Computer Systems and C Programming (7)

Focuses on C programming, command line, shell programming, editors, debuggers, source code control, and other tools. Examines basic computer systems, algorithm design, and development, data types, and program structures. Develops understanding of process model, compile-link-execute build cycle, language-machine interface, memory, and data representation. Students cannot receive credit for both CSE 13S and CSE 13E. Course is 7 credits with integrated laboratory.

Prerequisite: Prerequisite(s): CSE 12 or BME 160.

CSE 16 - Applied Discrete Mathematics (5)

Introduction to applications of discrete mathematical systems. Topics include sets, functions, relations, graphs, predicate calculus, mathematical proof methods (induction, contraposition, contradiction), counting methods (permutations, combinations), and recurrences. Examples are drawn from computer science and computer engineering. Knowledge of computer programming is useful before taking this course. Students who do not have prior programming experience are strongly recommended to take CSE 20 or CSE 30 before taking this course.

Prerequisite: Prerequisite(s): MATH 19A or MATH 20A or MATH 19B or MATH 20B or MATH 11B or AM 11B or AM 15B or ECON 11B.

CSE 20 - Beginning Programming in Python (5)

Provides students with Python programming skills and the ability to design programs and read Python code. Topics include data types, control flow, methods and advanced functions, built-in data structures, and introduction to OOP. No prior programming experience is required. Students may not receive credit for CSE 20 after receiving credit for CSE 30. Students with prior programming experience (especially in Python) are encouraged to take CSE Testout Exam to be evaluated for their readiness to take CSE 30 directly: https://undergrad.soe.ucsc.edu/cse-20-testout-exam.

CSE 30 - Programming Abstractions: Python (7)

Introduction to software development in Python focusing on structuring software in terms of objects endowed with primitive operations. Introduces concepts and techniques via a sequence of concrete case studies. Coursework consists of programming assignments and a final examination. Note that CSE 30 assumes some Python experience, students trained in a different language should self-study Python to prepare for CSE 30. See CSE Testout Exam for resources and further information.

Prerequisite: Prerequisite(s): CSE 20 or BME 160; and MATH 3 or MATH 11A or MATH 19A or AM 3 or AM 11A or ECON 11A, or a score of 400 or higher on the mathematics placement examination (MPE).

CSE 30 - Programming Abstractions: Python (7)

Introduction to software development in Python focusing on structuring software in terms of objects endowed with primitive operations. Introduces concepts and techniques via a sequence of concrete case studies. Coursework consists of programming assignments and a final examination. Note that CSE 30 assumes some Python experience, students trained in a different language should self-study Python to prepare for CSE 30. See CSE Testout Exam for resources and further information.

Prerequisite: Prerequisite(s): CSE 20 or BME 160; and MATH 3 or MATH 11A or MATH 19A or MATH 20A or AM 3 or AM 11A or ECON 11A, or a score of 400 or higher on the mathematics placement examination (MPE).

CSE 40 - Machine Learning Basics: Data Analysis and Empirical Methods (5)

Introduction to the basic mathematical concepts and programming abstractions required for modern machine learning, data science, and empirical science. The mathematical foundations include basic probability, linear algebra, and optimization. The programming abstractions include data manipulation and visualization. The principles of empirical analysis, evaluation, critique and reproducibility are emphasized. Mathematical and programming abstractions are grounded in empirical studies including data-driven evidential reasoning, predictive modeling, and causal analysis.

Prerequisite: Prerequisite(s): MATH 19B or MATH 20B, and CSE 30.

CSE 80A - Universal Access: Disability, Technology, and

Society (5)

Overview of human-centered technology and of its potential for increasing the quality of life and independence of disabled individuals. A substantial portion of the course is devoted to studying physical, psychological, and psychosocial aspects of disability. Topics include: diversity and integration, legislation, accessibility, and universal design. (Formerly Computer Engineering 80A.)

CSE 80L - Social Data Analytics and Visualization (5)

Course examines: social data analytics--veracity, consistency, uncertainty, volume; statistical computation--misuse, bias, dispersion, correlation, regressions, differential scales, normal distributions, factor and cluster analysis, extrapolation, inference, simple programming; visual representations--communication, critique and design of infographics; applications--environment, energy, economics, education, empowerment. (Formerly Computer Science 80L.)

CSE 80N - Introduction to Networking and the Internet (5)

Introduction to the evolution, technological basis, and services of the Internet, with descriptions of its underlying communications structure, routing algorithms, peer-to-peer hierarchy, reliability, and packet switching. Network security, mail, multimedia and data compression issues, HTML, and digital images. Students who have completed CSE 150 cannot receive credit for this course. (Formerly Computer Engineering 80N.)

CSE 80S - Social Networks (5)

Introduction to social networks and game theory. Topics include the structure of social networks; the world wide web; the flow of information and behavior through networks; and the principles behind modern web search and search-ad placement. (Formerly Computer Science 17.)

Prerequisite: Prerequisite(s): MATH 3 or MATH 11A; or AM 3 or AM 6 or AM 11A or AM 15A; or ECON 11A; or score on math placement exam of 300 or higher.

CSE 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

CSE 94F - Group Tutorial (2)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

CSE 99 - Tutorial (5)

Students submit petition to sponsoring agency.

CSE 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

CSE 100 - Logic Design (5)

Boolean algebra, logic minimization, finite-state machine design, sequential circuits, common logic elements, programmable logic devices, and an introduction to system level design. The electrical behavior of circuits including three state outputs, propagation delay, logic levels, and fanout.

Prerequisite: Prerequisite(s): CSE 12; previous or concurrent enrollment in CSE 100L is required.

CSE 100L - Logic Design Laboratory (2)

Laboratory sequence illustrating topics covered in course 100. Two 2-hour laboratory sessions per week. Weekly laboratory assignments which require the use of the oscilloscopes, TTL circuits, computer-aided design and simulation tools, and programmable logic.

Prerequisite: Prerequisite(s): CSE 12; previous or concurrent enrollment in CSE 100 is required.

CSE 101 - Introduction to Data Structures and Algorithms (5)

Introduction to abstract data types and basics of algorithms. Linked lists, stacks, queues, hash tables, trees, heaps, and graphs will be covered. Students will also be taught how to derive big-Oh analysis of simple algorithms. All assignments will be in C/C++. (Formerly Computer Science 101 Algorithms and Abstract Data Types.)

Prerequisite: Prerequisite(s): CSE 12 or BME 160; CSE 13E or ECE 13 or CSE 13S; and CSE 16; and CSE 30; and MATH 11B or MATH 19B or MATH 20B or AM 11B or ECON 11B.

CSE 101M - Mathematical Thinking for Computer Science (5)

Introduction to problem-solving and proof techniques for computer science: modeling CS problems using mathematical concepts; solving problems and inventing mathematical arguments; writing rigorous, understandable proofs using LaTeX. Applications in all CS areas with focus on analyzing algorithms, programs, and protocols.

Prerequisite: Prerequisite(s): CSE 101 or CSE 101P.

CSE 101P - Introduction to Data Structures and Algorithms in Python (5)

Introduction to abstract data types and basics of algorithms. Linked lists, stacks, queues, hash tables, trees, heaps, and graphs are covered. Students taught how to derive big-Oh analysis of simple algorithms. All assignments are in Python. Note that CSE 101P assumes Python experience, students trained in a different language should self-study Python to prepare for CSE 101P. See CSE 20 Testout Exam for resources and further information. Students cannot receive credit for this course and CSE 101. Students intending to complete the Computer Science B.S. should enroll in course CSE 101.

Prerequisite: Prerequisite(s): CSE 16; and BME 160 or CSE 30; and MATH 11B or MATH 19B or MATH 20B or AM 11B. Enrollment is restricted to computer science and biolmolecular engineering and bioinformatics majors.

CSE 102 - Introduction to Analysis of Algorithms (5)

Methods for the systematic construction and mathematical analysis of algorithms. Order notation, the RAM model of computation, lower bounds, and recurrence relations are covered. The algorithm design techniques include divide-and-conquer, branch and bound, and dynamic programming. Applications to combinatorial, graph, string, and geometric algorithms. (Formerly Computer Science 102.)

Prerequisite: Prerequisite(s): CSE 101M.

CSE 103 - Computational Models (5)

Various representations for regular languages, context-free grammars, normal forms, simple parsing, pumping lemmas, Turing machines, the Church-Turing thesis, intractable problems, the P-NP question. (Formerly CMPS 130.)

Prerequisite: Prerequisite(s): CSE 101M.

CSE 104 - Computability and Computational Complexity (5)

Turing machines, general phase-structure grammars, the Chomsky hierarchy, recursive functions, diagonalization, the Halting problem, computability and unsolvability, computational complexity, time and space bounds, NP-completeness with emphasis on reductions between problems from various areas. (Formerly CMPS 132.)

Prerequisite: Prerequisite(s): CSE 103.

CSE 105 - Modern Algorithmic Toolbox (5)

Undergraduate course on the modern algorithmic toolbox, meant for undergraduate students with a strong mathematical background. Students need familiarity with discrete math, analysis of algorithms, basic analysis, probability theory, and graph theory. Class is aimed at students who want to learn more about the central ideas and algorithmic techniques that are used in modern data science applications. Class focuses on the theoretical underpinnings of these algorithms as well as their practical applications and implementation details.

Prerequisite: Prerequisite(s): CSE 101M, or CSE 102, or equivalent with instructor permission. Students need a solid background in analysis of algorithms, discrete math, probability theory, graph theory, and overall mathematical maturity.

CSE 106 - Applied Graph Theory and Algorithms (5)

Basic concepts and algorithms are reviewed including trees, Eulerian and Hamiltonian graphs, and graph transversal. Algorithms are explored to solve problems in connectivity, routing, matching, and embedding of graphs. Graph theory and algorithms are developed around applications in computer engineering. (Formerly Computer Engineering 177.)

Prerequisite: Prerequisite(s): CSE 101.

CSE 107 - Probability and Statistics for Engineers (5)

Introduction to fundamental tools of stochastic analysis. Probability, conditional probability; Bayes Theorem; random variables and transforms; independence; Bernnoulli trials. Statistics, inference from limited data; outcomes of repeated experiments; applications to design; assessment of relative frequency and probability; law of large numbers; precision of measurements. Elements of stochastic processes, Poisson processes; Markov chains. Students cannot receive credit for this course and Applied Mathematics and Statistics 131. (Formerly Computer Engineering 107.)

Prerequisite: Prerequisite(s): CSE 16; and AM 30 or MATH 22 or MATH 23A.

CSE 108 - Algorithmic Foundations of Cryptography (5)

Focuses on some of the foundational aspects of modern cryptography, namely, private and public key cryptography, digital signatures, pseudorandom generators and functions, message authentication codes, hash functions, and random oracles. Course also connects the formal concepts with some real-world applications, like RA, SSL, and bitcoin, exposing students to general concepts of probability theory, number theory, and rigorous proofs. (Formerly Computer Science 118.)

Prerequisite: Prerequisite(s): CSE 101. Enrollment restricted to computer engineering and computer science majors.

CSE 108C - Computing on Encrypted Data (5)

Introduction to privacy-preserving computation. Students understand and learn how to build end-to-end privacy-preserving systems. Topics cover different areas of private computation, secure multiparty computation, (fully) homomorphic encryption, anonymous communication, oblivious RAM and oblivious computation, hardware enclaves, structural and searchable encryption, and cryptanalysis topics.

Prerequisite: Prerequisite(s): CSE 108 or CSE 132, or permission of the instructor.

CSE 110A - Fundamentals of Compiler Design I (5)

An introduction to the basic techniques used in compiler design. Topics include compiler structure, symbol tables, regular expressions and languages, finite automata, lexical analysis, context-free languages, LL(1), recursive descent, LALR(1), and LR(1) parsing; and attribute grammars as a model of syntax-directed translation. Students use compiler building tools to construct a working compiler. (Formerly Computer Science 104A.)

Prerequisite: Prerequisite(s): CSE 12 and CSE 101.

CSE 110B - Fundamentals of Compiler Design II (5)

Advanced study of compiler implementation. Topics include compiler structure back end, run-time environments, storage management, garbage collection, register allocation, code generation, basic blocks, control flow, data flow, local and global optimization, interpretation, and machine-code

generation. Students may not receive credit for this course and CSE 211. Taught in conjunction with CSE 211. (Formerly Computer Science 104B.)

Prerequisite: Prerequisite(s): CSE 110A.

CSE 111 - Advanced Programming (5)

An introduction to object-oriented techniques of software development including data abstraction, inheritance, polymorphism, and object-oriented design. Extensive practice using a computer to solve problems, including construction of graphical user interfaces and a multithreaded client/server applications.

Prerequisite: Prerequisite(s): CSE 15 and CSE 15L; or CSE 13S and CMPM 35; or CSE 13E and CMPM 35; or ECE 13 and CMPM 35; or CSE 101.

CSE 112 - Comparative Programming Languages (5)

Covers several programming languages and compares styles, philosophy, and design principles. Principles underlying declarative, functional, and object-oriented programming styles are studied. Students write programs emphasizing each of these techniques. (Formerly Computer Science 112.)

Prerequisite: Prerequisite(s): CSE 101 or CSE 101P.

CSE 113 - Parallel and Concurrent Programming (5)

Introduction to parallel and concurrent programming. Topics include: types of parallel computers and programming platforms; design, implementation, and optimization of programs for parallel and multicore processors; basic and advanced programming techniques; performance analysis and load balancing; and selected parallel algorithms.

Prerequisite: Prerequisite(s): CSE 12 and CSE 101. CSE 120 recommended.

CSE 114A - Foundations of Programming Languages (5)

Problem solving emphasizing recursion, data abstraction, and higher-order functions. Introduction to types and type checking, modular programming, and reasoning about program correctness. (Formerly CSE 116, Introduction to Functional Programming.)

Prerequisite: Prerequisite(s): CSE 101 or CSE 101P.

CSE 114B - Functional Programming (5)

An in-depth study of the functional style of programming and functional abstraction, including the study of applicative functors and monads, and monadic parsers. (Formerly CSE 114.)

Prerequisite: Prerequisite(s): CSE 114A. Enrollment is restricted to junior and senior computer science majors.

CSE 115A - Introduction to Software Engineering (5)

Emphasizes the characteristics of well-engineered software systems. Topics include requirements analysis and specification, design, programming, verification and validation, maintenance, and project management. Practical and research methods are studied. Imparts an understanding of the steps used to effectively develop computer software. (Formerly Computer Science 115.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and CSE 101 and CSE 130.

CSE 115B - Software Design Project (5)

Students in teams specify, design, construct, test, and document a complete software system in a specialized application domain. Class time is spent in technical discussions and ongoing design reviews. A formal presentation and demonstration of each project is required. An organizational meeting will be held during the preceding quarter. Projects may be drawn from industry and campus research groups. (Formerly Computer Science 116.)

Prerequisite: Prerequisite(s): CSE 115A.

CSE 115C - Software Design Project II (5)

Continuation of CSE 116. Students work in teams to develop, test, document, and deploy a substantial software project. Teams give a formal presentation and demonstration of each project. (Formerly Computer Science 117.)

Prerequisite: Prerequisite(s): CSE 115B.

CSE 115D - Software Design Project - Accelerated (5)

Accelerated version of CSE 115B and CSE 115C. Students work in teams to develop, test, document and deploy a substantial software project. Each team gives a formal presentation and demonstration of their project. Students cannot receive credit for both CSE 115D and any part of the 115B-115C sequence.

Prerequisite: Prerequisite(s): CSE 115A.

CSE 117 - Open Source Programming (5)

Teaches the principles of open source software development. By participating in diverse projects, students experience the process of developing software in a distributed, community-centric environment. Students learn about the tools, processes, and soft skills that are essential in this context.

Prerequisite: Prerequisite(s): CSE 101; and CSE 102 or CSE 111 or CSE 115A. Enrollment restricted to School of Engineering majors.

CSE 118 - Mobile Applications (5)

Introduces the tools and techniques required to develop the sophisticated interactive mobile applications we use daily on our Android and iOS devices. Native (specific to Android or iOS devices) and cross-platform (designed to work on both Android and iOS) development is undertaken with deployment to device emulators and, optionally, personal devices. Ownership of an Android or iOS device is not required and confers no advantage. (Formerly CMPS 121.)

Prerequisite: Prerequisite(s): CSE 101. Enrollment is restricted to juniors and seniors.

CSE 119 - Software for Society (5)

Provides experience with applying computing to social issues. Case studies on multiple issues. For example: privacy, copyright, voting, education, poverty, energy, activism. Team project in which students develop software to address a pre-identified need of a global or local non-profit. (Formerly Computer Science 119.)

Prerequisite: Prerequisite(s): CSE 101.

CSE 120 - Computer Architecture (5)

Introduction to computer architecture including examples of current approaches and the effect of technology and software. Computer performance evaluation, basic combinatorial and sequential digital components, different instruction set architectures with a focus on the MIPS ISA and RISC paradigm. Evolution of CPU microarchitecture from single-cycle to multi-cycle pipelines, with overview of super-scalar, multiple-issue and VLIW. Memory system, cache, virtual memory and relationship between memory and performance. Evolution of PC system architecture. May include advanced topics, such as parallel processing, MIMD, and SIMD.

Prerequisite: Prerequisite(s): CSE 12; and CSE 13E, or CSE 13S, or ECE 13, or CSE 15 and CSE 15L. CSE 16 recommended.

CSE 121 - Embedded System Design (7)

The design and use of microprocessor-based embedded systems. Covers microprocessor and microcontroller architecture, programming techniques, bus and memory organization, DMA, timing issues, interrupts, peripheral devices, serial and parallel communication, and interfacing to analog and digital systems. (Formerly Microprocessor System Design, and formerly offered as two courses, CMPE 121 and CMPE 121L.)

Prerequisite: Prerequisite(s): CSE 100, CSE 100L; and CSE 13E or CSE 13S or ECE 13.

CSE 122 - Introduction to VLSI Digital System Design (5)

Introduces very large scale integrated (VLSI) custom integrated circuits. Topics include: semiconductor manufacturing, logic families, field-effect transistors (FETs), interconnect models, simulation, and circuits. Introduces the design flow from logic design to layout with a focus on high performance and low power. Students cannot receive credit for this course and CSE 222A. (Formerly Computer Engineering 122.)

Prerequisite: Prerequisite(s): CSE 100, CSE 100L, ECE 101, and ECE 101L.

CSE 123A - Engineering Design Project I (5)

First of a two-course sequence that is the culmination of the engineering program. Students apply knowledge and skills gained in elective track to complete a major design project. Students complete research, specification, planning, and procurement for a substantial project. Includes technical discussions, design reviews, and formal presentations; engineering design cycle, engineering teams, and professional practices. Formal technical specification of the approved project is presented to faculty.

Prerequisite: Prerequisite(s): CSE 121; previous or concurrent enrollment in CSE 185E.

CSE 123B - Engineering Design Project II (7)

Second of two-course sequence in engineering system design. Students fully implement and test system designed and specified in CSE 123A. Formal written report, oral presentation, and demonstration of successful project to review panel of engineering faculty required.

Prerequisite: Prerequisite(s): CSE 123A, and CSE 185E or CSE 185S.

CSE 125 - Logic Design with Verilog (7)

Verilog digital logic design with emphasis on ASIC and FPGA design. Students design and verify large-scale systems. Assignments and project use the Verilog Hardware Description Language with emphasis on verification and high-frequency ASIC/FPGA targets. May be taught in conjunction with CSE 225. Students cannot receive credit for both courses.

Prerequisite: Prerequisite(s): CSE 100 and CSE 100L and CSE 120.

CSE 127A - Chip Design Capstone I (5)

First of a two-course sequence focused on design specification, RTL development, and functional verification. Students work in teams to define and document a chip project, develop synthesizable RTL, and build testbenches. Emphasizes project planning, design methodology, and collaborative engineering practices.

CSE 127B - Chip Design Capstone II (7)

Second of a two-course sequence in VLSI system design. Students implement and validate the chip projects specified in the first course, focusing on synthesis, place-and-route, IP integration, timing closure, and sign-off. Emphasis is placed on hands-on design work, debugging, and meeting tape-out requirements. The course culminates in a formal report and public oral presentation. Chips may be fabricated depending on funds available.

Prerequisite: Prerequisite(s): CSE 127A; and CSE 122 or CSE 222A.

CSE 129A - Capstone Project I (2)

First of a three-course sequence in which students apply knowledge and skills gained in elective track to complete a major design project. In this first course, students complete the specification and planning for a substantial project. Topics covered: engineering design cycle, engineering teams, and professional practices. (Formerly Computer Engineering 129A.)

Prerequisite: Prerequisite(s): previous or concurrent enrollment in courses CSE 121 and CSE 121L. Enrollment is

restricted to bioengineering, biomolecular engineering and bioinformatics, computer engineering, and robotics engineering majors.

CSE 129B - Capstone Project II (5)

Second of a three-course sequence in which students apply knowledge and skills gained in elective track to complete a major design project. In this second course, students complete the research and procurement for a substantial project and a preliminary implementation. Prerequisite(s): CSE 121, CSE 121L, and CSE 129A. Previous or concurrent enrollment in CSE 185. Enrollment by permission of instructor.

CSE 129C - Capstone Project III (5)

Third of a three-course sequence in which students apply knowledge and skills gained in elective track to complete a major design project. In this third course, students work in teams to complete the project specified and advanced in the first two courses. A formal written report, oral presentation, and demonstration of the successful project to a review panel of engineering faculty is required. Prerequisite(s): CSE 129B and CSE 185. Enrollment by permission of instructor.

CSE 130 - Principles of Computer Systems Design (5)

Covers the principles governing computer-systems design and complexity; familiarity with memory, storage, and networking; concurrency and synchronization; layering (abstraction and modularity); naming; client-server and virtualized system models; and performance. Requires significant programming projects demonstrating mastery of these concepts.

Prerequisite: Prerequisite(s): CSE 12; and CSE 101, or CSE 15 and CSE 15L; and knowledge of C programming language.

CSE 132 - Computer Security (5)

Introduction to computer security (including selected topics in network security). Access control. Security in programming languages. Basic cryptography. Security protocols. (Formerly CMPS 122.)

Prerequisite: Prerequisite(s): CSE 130 or CSE 131 or permission of instructor. Enrollment restricted to School of Engineering majors.

CSE 134 - Embedded Operating Systems (5)

Detailed exploration of the internal design of an embedded operating systems kernel. Covers kernel structure and organization, device drivers, I/O systems, file systems, memory management, and security. Students complete significant programming projects that extend or modify existing operating systems. (Formerly Computer Engineering 114.)

Prerequisite: Prerequisite(s): CSE 120.

CSE 138 - Distributed Systems (5)

Covers topics in distributed computing including communication, naming, synchronization, consistency and replication, fault tolerance, and security. Examples drawn from peer-to-peer systems, online gaming, the World Wide Web; other systems also used to illustrate approaches to these topics. Students implement simple distributed systems over the course of the quarter. (Formerly CMPS 128, Distributed Systems: File Sharing, Online Gaming, and More.)

Prerequisite: Prerequisite(s): CSE 130 or CSE 131.

CSE 140 - Artificial Intelligence (5)

Introduction to the contemporary concepts and techniques of artificial intelligence, including any or all of: machine perception and inference, machine learning, optimization problems, computational methods and models of search, game playing and theorem proving. Emphasis may be on any formal method of perceiving, learning, reasoning, and problem solving which proves to be effective. This includes both symbolic and neural network approaches to artificial intelligence. Issues discussed include symbolic versus nonsymbolic methods, local versus global methods, hierarchical organization and control, and brain modeling versus engineering approaches. Lisp or Prolog may be introduced. Involves one major project or regular programming assignments.

Prerequisite: Prerequisite(s): CSE 101 or CSE 101P; and CSE 40 or STAT 132.

CSE 142 - Machine Learning (5)

Introduction to machine learning algorithms and their applications. Topics include classification learning, density estimation and Bayesian learning regression, and online learning. Provides introduction to standard learning methods such as neural networks, decision trees, boosting, and nearest neighbor techniques.

Prerequisite: Prerequisite(s): CSE 40 or STAT 132; and CSE 101 or CSE 101P; and AM 30, or MATH 22, or MATH 23A; and STAT 131 or CSE 107.

CSE 143 - Introduction to Natural Language Processing (5)

Introduces the theory and practice of natural language processing (NLP)--the creation of computer programs that can understand, generate, and learn natural language. Introduces the three major subfields of NLP: syntax (the structure of a sentence); semantics (the explicit meaning of a single sentence); and pragmatics (the implicit meaning of a sentence when it is used in a specific discourse). Projects focus on the techniques useful for a particular application area, alternating in different years. Project application areas include information extraction, narrative understanding, sentiment analysis, dialogue systems, and question answering. (Formerly CMPS 143.)

Prerequisite: Prerequisite(s): CSE 101 or CSE 101P, and CSE 107 or STAT 131; and CSE 40 or testout placement exam score.

CSE 144 - Applied Machine Learning: Deep Learning (5)

Provides a practical and project-oriented introduction to deep learning techniques. Starts with a review of basic elements of

machine learning: training and testing, loss function, gradient descent, linear regression, and logistic regression. Moves on to common deep learning models: feedforward networks, convolutional networks for image recognition, recurrent networks and LSTM for temporal and sequential data, attention models and transformers. Some practical concepts for deep learning, including how to find model parameters, how to train large scale models, techniques for regularization and avoid overfitting, are also covered. A very basic introduction to more complex techniques such as deep reinforcement learning, neural symbolic models and diffusion models is provided in week 9. Selected student teams present their course projects in the last week. (Formerly offered as Applied Machine Learning.)

Prerequisite: Prerequisite(s): CSE 40 or STAT 132; and CSE 101 or CSE 101P. Enrollment is restricted to juniors and seniors.

CSE 145 - Introduction to Data Mining (5)

Covers the techniques, algorithms, and applications of data mining, including data preprocessing, data exploration, classification, clustering, mining text, and sequential and social data. (Formerly TIM 145.)

Prerequisite: Prerequisite(s): CSE 15 and CSE 15L or CSE 30 or CSE 13S; and AM 30 or MATH 22 or MATH 23A; and STAT 5 or CSE 107 or STAT 131; and AM 10 or MATH 21; and CSE 16 or ECON 113. Enrollment restricted to juniors and seniors. Graduate students by permission of instructor.

CSE 146 - Ethics and Algorithms (5)

Provides an introduction to data-driven and algorithmic decision making, and ethical frameworks for evaluating automated systems. Emphasis on algorithmic literacy, critical analysis, and fundamental limitations of automated decision making. Covers concepts including predictive and causal modeling. Discusses bias, fairness, interpretability, privacy, and accountability. Finally, discusses notions of autonomy and algorithmic auditing.

Prerequisite: Prerequisite(s): CSE 101; and CSE 107 or STAT 131. CSE 142 and CSE 140 are recommended.

CSE 150 - Introduction to Computer Networks (7)

Addresses issues arising in organizing communications among autonomous computers. Network models and conceptual layers; Internet-working; characteristics of transmission media; switching techniques (packet switching, circuit switching, cell switching); medium access control (MAC) protocols and local area networks; error-control strategies and link-level protocols; routing algorithms for bridges and routers; congestion control mechanisms; transport protocols; application of concepts to practical wireless and wireline networks and standard protocol architectures. Lab component provides students with hands-on experience in computer networks. Students who have completed CSE 80N can take this course for credit.

Prerequisite: Prerequisite(s): CSE 16 and CSE 12; and CSE 30, or CSE 15 and CSE 15L.

CSE 151 - Advanced Computer Networks (5)

Provides an in-depth coverage of fundamental topics introduced in course 150 including routing, transport, and internetworking. Also introduces advanced concepts not covered in CSE 150 including wireless, application-layer services, security, etc. (Formerly Computer Engineering 151.)

Prerequisite: Prerequisite(s): CSE 150. Concurrent enrollment in CSE 151L is required.

CSE 151L - Advanced Computer Networks Laboratory (2)

Laboratory illustrating the concepts covered in CSE 151: provides students with hands-on experience in computer networks. (Formerly Computer Engineering 151L.)

Prerequisite: Prerequisite(s): CSE 150 and CSE 150L. Concurrent enrollment in CSE 151 is required.

CSE 152 - Principles of Computer Communication (5)

Course focuses on the design and analysis of protocols for computer communication. Topics include: the safety, liveliness, and performance of communication protocols for medium access control (MAC); link control; routing and switching; multicasting; and end-to-end transport. Students cannot receive credit for this course and CSE 250B.

Prerequisite: Prerequisite(s): CSE 107, CSE 150, and CSE 150L.

CSE 153 - Network Security and Privacy (5)

Comprehensive introduction to security and privacy in networked systems. Students develop experience in network protocol security, programmable network security, large scale network attacks and defenses, and privacy-enhancing technologies.

Prerequisite: Prerequisite(s): CSE 80N or CSE 150 or by permission of instructor.

CSE 156 - Network Programming (5)

Methods and tools used for network programming. Topics include: operating system (OS) support for network protocols; inter-process communication (IPC) facilities, such as pipes, sockets, and remote procedure call (RPC); design of client and server sides of network applications; network security; and programming projects. (Formerly Computer Engineering 156.)

Prerequisite: ,Prerequisites: CSE 150, CSE 150L and CSE 101. Concurrent enrollment in course CSE 156L is required.

CSE 156L - Network Programming Laboratory (2)

Laboratory sequence illustrating concepts taught in CSE 156. Students learn use of network programming tools and methods via programming exercises. (Formerly Computer Engineering 156L.)

Prerequisite: Prerequisites: CSE 150, CSE 150L, and CSE 101. Concurrent enrollment in CSE 156 is required.

CSE 157 - Internet of Things (7)

Introduces the key concepts and techniques in the design of Internet of Things (IoT). Topics include dominant architectures and protocols for IoT, wireless infrastructure for IoT, hardware and software development methodologies, embedded software design for IoT, cloud software for IoT, and network and system security. Students work in teams on a project to design, prototype, and test a complete IoT system.

Prerequisite: Prerequisite(s): CSE 121 and CSE 121L and CSE 150 and CSE 150L.

CSE 160 - Introduction to Computer Graphics (7)

Introduces techniques of modeling, transformation, and rendering for computer-generated imagery. Topics: 2D/3D primitives, projections, matrix composition, and shading algorithms. Programming assignments and major project required. Students cannot receive credit for both this course and CSE 260 in quarters when they are offered concurrently. Mastery of materials in the prerequisite courses will be verified with a quiz or assignment during the first two weeks of the course. Lab component will help with gaining additional competence with a number of important software development tools, graphics libraries, and graphical user interfaces. Topics include OpenGL, WebGL, rubberbanding, picking, sliders, buttons, dialog, event handling, double buffering, lighting, shading, materials, and textures. The topic list may be updated to reflect technological changes. (Formerly Computer Science 160.)

Prerequisite: Prerequisite(s): CSE 101 and MATH 21 or AM 10.

CSE 161 - Introduction to Data Visualization (5)

Concepts and methods for data analysis, information and scientific visualization, and effective communication of technical data. Topics include: mathematical foundations; scalar, vector, and tensor field visualization; multivariate visualization; and tree and graph visualizations. Applications are drawn from social-network analysis; environmental and space science; and medical imaging. Evaluation based on examinations, programming exercises, and a project. (Formerly CMPS 161.)

Prerequisite: Prerequisite(s): CSE 160 or equivalent. Concurrent enrollment in CSE 161L is required.

CSE 161L - Data Visualization Laboratory (2)

Complements CSE 161. Students gain additional competence with a number of important software development tools and techniques. Included are Paraview, Visualization Toolkit (VTK), and Insight Toolkit (ITK). Students get hands-on experience with designing transfer functions, isosurfacing, direct volume rendering, vector-field visualization techniques, as well as methods for dealing with non-spatial data. (Formerly CMPS 161L.)

Prerequisite: Concurrent enrollment in CSE 161 is required.

CSE 162 - Advanced Computer Graphics and Animation (5)

Covers concepts and methods for modeling and rendering static and dynamic scenes Topics include: mathematical foundations (e.g., splines and numerical integration; global illumination models; texture mapping; morphing; physically based animation; behavioral animations; and procedural animations. Evaluation based on examinations, programming exercises, and a project. (Formerly CMPS 162.)

Prerequisite: Prerequisite(s): CSE 160 or equivalent. Concurrent enrollment in CSE 162L is required.

CSE 162L - Advanced Computer Graphics and Animation Laboratory (2)

Complements CSE 162. Students gain additional competence in a hands-on computational laboratory setting. Representative examples include topics, such as interactive curve and surface design; shaders for advanced effects; crowd and behavioral animation; experiments with particle systems; facial animation; and motion and planning. (Formerly CMPS 162L.)

Prerequisite: Prerequisite(s): concurrent enrollment in CSE 162 is required.

CSE 163 - Data Programming for Visualization (5)

Presents the basics of open-source programming tools to perform data analysis and create interactive visualizations and maps for the web, data integrity and scraping, statistical computation, simple and novel visualizations, and geomapping. The examples are drawn from social science, public policy, and data journalism. (Formerly CMPS 165.)

Prerequisite: Prerequisite(s): CSE 101.

CSE 164 - Computer Vision (5)

Introduces both the basic computer vision concepts and the advanced deep learning methods for computer vision. Topics include fundamentals of image formation, camera imaging geometry, early-/mid-/high-level vision, basics of machine learning and convolutional neural networks for vision.

Prerequisite: Prerequisite(s): CSE 144.

CSE 165 - Human-Computer Interaction (5)

Theory and hands-on practice to understand what makes user interfaces usable and accessible to diverse individuals. Covers human senses and memory and their design implications, requirement solicitation, user-centered design and prototyping techniques, and expert and user evaluations. Interdisciplinary course for social science and engineering majors. Students cannot receive credit for this course and CSE 265 or DANM 231.

Prerequisite: Prerequisite(s): CSE 30.

CSE 167 - Mobile Sensing and Interaction (5)

Provides hands-on knowledge and experience with modern mobile computing platforms for sensing and interactions tasks. Students learn how to create usable applications on a

sensor-laden, mobile computing platform with adequate level of user interface.

Prerequisite: Prerequisite(s): CSE 13S; or CSE 13E or ECE 13; or CSE 15 and CSE 15L; and PHYS 5A or PHYS 6A; and AM 10 or MATH 21.

CSE 168 - Introduction to Augmented Reality and Virtual Reality (7)

Covers the concepts and methods needed to develop augmented reality (AR) and virtual reality (VR) applications. Topics include 3D modeling, graphics rendering, image compositing, occlusion handling, sensors, computer vision and image analysis, toolkits for AR, different display options, dynamics, interaction, and navigation.

Prerequisite: Prerequisite(s): CSE 160. Some knowledge of mobile platforms (e.g., CSE 118 or CSE 167) is helpful, but not required.

CSE 180 - Database Systems I (5)

Introduction to the concepts, approaches, tools, and methodology of database design. Covers the entity-relationship model, the relational model, relational algebra, relational calculus, commercial languages (such as SQL and QBE), functional dependencies, normal forms, and design theory. Other topics may include knowledge-bases, constraint databases, and alternative database models. Students that have taken and passed CSE 182 may not take CSE 180 for credit. (Formerly CMPS 180.)

Prerequisite: Prerequisite(s): CSE 101.

CSE 181 - Database Systems II (5)

Introduction to the architecture and implementation of database systems. Topics covered include data storage, tree and hash indexes, storage management, query evaluation and optimization, transaction management, concurrency control, recovery, and XML data management.

Prerequisite: Prerequisite(s): CSE 180 and CSE 130.

CSE 182 - Introduction to Database Management Systems (5)

Concepts, approaches, tools, and methodology of database design and utilization. Topics include the relational data model; modeling relationships between entities; dependencies and normal forms; commercial data management languages such as SQL (defining SQL data, SQL queries and modifications, views, indexes, constraints, and triggers); transactions; stored procedures and functions; access to databases from a programming language (Python); relational algebra; query execution plans; and non-relational data models such as JSON and XML. Involves database application development projects. Students that have taken and passed CSE 180 cannot receive credit for CSE 182.

Prerequisite: Prerequisite(s): CSE 16 or BME 160; and CSE 30. Course restricted to juniors and seniors and intended for non-majors; computer science majors should enroll in CSE 180.

CSE 183 - Web Applications (5)

The World-Wide Web is one of the main mechanisms by which computer applications are delivered to users. This course introduces the design of Web applications. Students learn the main technologies involved, and build web applications as part of homework assignments and group class projects. Students cannot receive credit for this course and CSE 186.

Prerequisite: Prerequisite(s): CSE 15 and CSE 15L, or CMPM 35, or CSE 101.

CSE 184 - Data Wrangling and Web Scraping (5)

Python basics; data extraction from CSV, JSON, XML, Excel, PDF, encoded text files; data cleaning, finding duplicates, missing data, fuzzy matching; data exploration, joining, aggregating, separating, correlation, clustering; web scraping, APIs, scraping data from social media, open data network. (Formerly CMPS 184.)

Prerequisite: Prerequisite(s): CSE 101.

CSE 185C - Building Careers in Emerging Technology: Sustainability, Innovation, and Impact (10)

Augments a summer internship in emerging technologies by building skills in three areas: (1) professionalism and career development in emerging technology (e.g., semiconductors, cybersecurity, data and AI, aviation, climate and energy, and digital health) work environments; (2) innovation and research skills to scope, identify, and validate new ideas, concepts, and knowledge; and (3) communication, impact, and dissemination to clearly present and articulate the nature and significance of your work. Enrollment is by permission of the instructor.

CSE 185E - Technical Writing for Computer Science and Engineering (5)

Writing by engineers and computer scientists to technical audiences. Writing exercises include: cover letter and resume for job application, tutorial writing, grant proposal, document specification, literature review, and a final technical report. Two oral presentations are also required, an in-class presentation and a poster presentation. Students also receive instruction in the use of UC library and journal database resources, and in the writing of a statement of purpose for graduate school application. Also offered as CSE 185S. (Formerly Computer Engineering 185, Technical Writing for Computer Engineers.)

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements; and CSE 12 or CSE 15 or CSE 30 or BME 160 or by permission of the instructor. Enrollment is restricted to computer engineering, bioengineering, bioinformatics, biomolecular engineering and bioinformatics, or network and digital technology majors. Crosslisted as: .

CSE 186 - Full Stack Web Development I (5)

Examines current uses of the World Wide Web for delivery of the sophisticated interactive applications used daily. Web

applications offer several advantages over traditional, locally installable binaries including heterogeneous deployment, instantaneous access, continuous updates, and the possibility of collaboration at scale. These full stack web applications are typically more complex than their traditional counterparts, requiring the seamless integrating of numerous related technologies if end users are to have a productive experience and the system is to remain robust, performant, and secure. Students cannot receive credit for this course and CSE 183.

Prerequisite: Prerequisite(s): CSE 101 or CSE 101P; and previous or concurrent enrollment in CSE 180 or CSE 182. Enrollment is restricted to juniors and seniors majoring in computer engineering, computer science, computer game design, and network and digital technology.

CSE 187 - Full Stack Web Development II (5)

Continues the examination of current uses of the World Wide Web for delivery of the sophisticated interactive applications we use daily. Advanced development techniques are examined with continued emphasis on automated testing. A sizable team project is undertaken to introduce topics including, but not limited to, automated build pipelines, penetration testing, API versioning, and deployment at scale.

Prerequisite: Prerequisite(s): CSE 186. Enrollment is restricted to juniors and seniors.

CSE 191 - Computer Science and Technology Seminar (2)

Weekly talks by industry experts, university researchers, field practitioners, and video presentations provide an in-depth exposure to a specific or a broad area of computer science and technology. Topics include emerging ideas, opportunities, challenges, and future of the industry. (Formerly CMPS 191.)

CSE 192 - Supervised Student Teaching/Tutoring (5)

Students hold tutoring hours, run a lab, or lead discussion section in conjunction with a regularly offered course and under close supervision by the course's instructor. Weekly meetings with a regular faculty member to discuss teaching techniques, pedagogy, sensitivity to students' needs, maintaining a comfortable learning environment, and strategies for handling difficult situations. Students submit a report on their teaching experience. Enrollment by permission of instructor and restricted to sophomores, juniors, and seniors. (Formerly CMPS 192.)

CSE 192F - Supervised Student Teaching/Tutoring (2)

Students hold tutoring hours, run a lab, or lead discussion section in conjunction with a regularly offered course and under close supervision by the course's instructor. Weekly meetings with a regular faculty member to discuss teaching techniques, pedagogy, sensitivity to students' needs, maintaining a comfortable learning environment, and strategies for handling difficult situations. Students submit a report on their teaching experience. Enrollment by permission of instructor and restricted to sophomores, juniors, and seniors. (Formerly CMPS 192F.)

CSE 193 - Field Study (5)

Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the Computer Engineering Department and a willing sponsor at the field site using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. May not be repeated for credit. Students submit petition to sponsoring agency.

CSE 193F - Field Study (2)

Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the Computer Engineering Department and a willing sponsor at the field site using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. May not be repeated for credit. Students submit petition to sponsoring agency.

CSE 194 - Group Tutorial (5)

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

CSE 194F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

CSE 195 - Senior Thesis Research (5)

Students submit petition to sponsoring agency. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Computer Engineering majors, CSE 123A or CSE 129A.

CSE 195F - Senior Thesis Research (2)

Students submit petition to sponsoring agency. Consent of instructor required. Prerequisite: CSE 123A.

CSE 198 - Individual Study or Research (5)

Students submit petition to sponsoring agency.

CSE 198F - Individual Study or Research (2)

Students submit petition to sponsoring agency.

CSE 199 - Tutorial (5)

For fourth-year students majoring in computer engineering. Students submit petition to sponsoring agency.

CSE 199F - Tutorial (2)

For fourth-year students majoring in computer engineering. Students submit petition to sponsoring agency.

Graduate

CSE 200 - Research and Teaching in Computer Science and

Engineering (3)

Basic teaching techniques for teaching assistants, including responsibilities and rights of teaching assistants, resource materials, computer security, leading discussion or lab sessions, presentation techniques, maintaining class records, electronic handling of homework, and grading. The course examines research and professional training, including use of the library and online databases, technical typesetting, writing journal and conference papers, publishing in computer science and computer engineering, giving talks in seminars and conferences, and ethical issues in science and engineering. Required for all teaching assistants. Formerly CMPS 200 and CMPE 200.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 201 - Analysis of Algorithms (5)

Rigorous analysis of the time and space requirements of important algorithms, including worst case, average case, and amortized analysis. Techniques include order-notation, recurrence relations, information-theoretic lower bounds, adversary arguments. Analysis of the key data structures: trees, hash tables, balanced tree schemes, priority queues, Fibonacci and binomial heaps. Algorithmic paradigms such as divide and conquer, dynamic programming, union-find with path compression, augmenting paths. Selected advanced algorithms. Introduction to NP-completeness. (Formerly Computer Science 201.)

Prerequisite: Enrollment is restricted to graduate students; undergraduate students may enroll in this course if they have completed CSE 102 or CSE 106 and have the consent of the instructor.

CSE 202 - Combinatorial Algorithms (5)

Fundamental combinatorial algorithms, graph algorithms, flow problems, matching problems, linear programming, integer programming, NP-completeness, approximation algorithms for optimization problems. (Formerly Computer Science 211.)

Prerequisite: Prerequisite(s): CSE 201.

CSE 203 - Randomized Algorithms (5)

Course on randomized algorithms, meant for graduate students with a good mathematical background. Students need familiarity with discrete math, analysis of algorithms, basic analysis, probability theory, and graph theory.

Prerequisite: Prerequisite(s): CSE 201. Students need a solid background in analysis of algorithms, discrete math, probability theory, graph theory, and overall mathematical maturity. Enrollment is restricted to graduate students. Undergraduates with a good understanding of the material in CSE101, CSE102, and CSE103, and real analysis can enroll with permission of the instructor.

CSE 204 - Computational Models and Complexity (5)

Finite automata and regular expressions, universal models of computation, computability and unsolvability, relations between complexity classes, hierarchy theorems, reductions, complete problems for the major complexity classes (L, NL, P, NP, PSPACE). Other topics may include complexity of counting and enumeration problems, complexity of approximation, randomized complexity classes. (Formerly Computer Science 210.)

Prerequisite: Prerequisite(s): CSE 201.

CSE 205 - Logic in Computer Science (5)

The applications and uses of formal systems to computer science. Covers the syntax and semantics of propositional logic and first-order logic, normal forms, soundness and completeness theorems, Herbrand's theorem, unification and resolution, foundations of logic programming, automated theorem proving. Other topics may include deductive databases, database query languages, nonmonotonic reasoning. (Formerly Computer Science 217.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 206C - Foundations of Modern Cryptography (5)

Focuses on foundational aspects of modern cryptography, namely, private and public key cryptography; digital signatures; pseudorandom generators and functions/permutations; message authentication codes; hash functions; and random oracles, certificates and public-key infrastructures. Also connects the formal concepts with real-world applications. Students are exposed to general concepts of probability theory, number theory, and rigorous proofs. Assumes background on proofs, discrete probability, and modular arithmetic as well as programming in C/C++ or Python. Prerequisite(s): CSE 201 is recommended. Enrollment is restricted to graduate students and requires instructor permission.

CSE 206G - Game Theory and Applications in Computer Science and Engineering (5)

Covers the fundamentals of game theory with a focus on connections to and applications within CSE. Examines the connection of complexity theory to concepts from game theory, the interaction of agents with differing incentives, and the fundamentals of mechanism design.

CSE 207 - Graph Algorithms (5)

Explores graph theory and algorithms for solving problems in engineering. A review of basic graph concepts and algorithms is followed by topics in network flow, partitioning, spectral analysis of graphs, graph isomorphism, and intractability. (Formerly Computer Engineering 277.)

Prerequisite: Prerequisite(s): CSE 101 and CSE 102; or CSE 106; or CSE 201; or equivalent. Enrollment is restricted to graduate students.

CSE 209A - Modern Algorithmic Toolbox (5)

Graduate course on the modern algorithmic toolbox, meant for graduate students with a good mathematical background. Students need familiarity with discrete math, analysis of algorithms, basic analysis, probability theory, and graph

theory. Class is aimed at students who want to learn more about the central ideas and algorithmic techniques that are used in modern data science applications. Class focuses on the theoretical underpinnings of these algorithms as well as their practical applications and implementation details.

Prerequisite: Prerequisite(s): CSE 201 or equivalent or instructor consent. Students need a solid background in analysis of algorithms, discrete math, probability theory, graph theory, and overall mathematical maturity. Enrollment is restricted to graduate students.

CSE 210A - Programming Languages (5)

Covers current issues in programming languages. Language topics include object oriented, concurrent, functional, and logic programming, and other programmable applications such as symbolic manipulators and simulation. (Formerly Computer Science 203.)

Prerequisite: Enrollment is restricted to graduate students; undergraduate students may enroll for this course if they have completed CSE 112 and have the consent of the instructor.

CSE 210B - Advanced Programming Languages (5)

Covers issues in the design, implementation, analysis, and specification of programming languages. Topics include formal semantics (including operational, axiomatic, and denotational semantics), advanced type systems, program analysis (including abstract interpretation and model checking), specification, and verification. (Formerly Computer Science 253.)

Prerequisite: Prerequisite(s): CSE 210A or equivalent.

CSE 211 - Compiler Design (5)

Advanced study of compiler implementation. Topics include compiler structure back end, run-time environments, storage management, garbage collection, register allocation, code generation, basic blocks, control flow, data flow, local and global optimization, interpretation, machine code generation. Students may not receive credit for this course and CSE 110B. Taught in conjunction with CSE 110B. (Formerly Computer Science 204.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 212A - Software Engineering (5)

Introduction to the general principles of software engineering. Covers current and classical topics from both practical and theoretical viewpoints. Topics include software evolution, project management, software inspections, design methods, requirements analysis and specification, software testing, maintenance, software implementation, human interfaces, and software engineering experimentation. (Formerly CMPS 276.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll in this course if they have completed CSE 115A.

CSE 212B - Software Reuse and Component-Based Software Engineering (5)

Detailed study of interlocking business, organizational, and technical issues in large-scale software reuse and component-based software engineering. Topics include architecture, design for reuse, domain engineering, model-driven development, domain-specific kits, components, frameworks, software agents, generators, problem-oriented languages, library design, reuse tools, patterns, and aspects. Assumes prior exposure to software engineering topics. (Formerly Computer Science 279.)

Prerequisite: Prerequisite(s): CSE 212A or consent of instructor. Enrollment is restricted to graduate students.

CSE 214 - Principles of Database Systems (5)

Advanced course on principles of database systems. Main topics include overview of the relational data model and relational query languages; recursive queries, datalog, and fixed-points; query processing and optimization; database design, dependencies, normal forms, and the chase procedure. Additional topics may include information integration, complex objects, semistructured data, and XML. (Formerly Computer Science 277.)

Prerequisite: Prerequisite(s): CSE 201 or equivalent or consent of instructor. Enrollment is restricted to graduate students.

CSE 215 - Design and Implementation of Database Systems (5)

Advanced course in implementation techniques for database systems. For students who wish to do research in databases or to learn more about large-scale data processing. Topics include: indexing of complex data; techniques for high-volume concurrency control; query processing and optimization; database recovery; parallel database system architectures; database systems for streaming data; approximate query answering. Additional topics may include: self-managing database systems; advanced query optimization techniques; and query processing techniques for semi-structured data.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students. Undergraduates that have taken CSE 181 may enroll. A basic knowledge of databases, similar to the content of CSE 180, is recommended.

CSE 216 - Formal Methods (5)

Mathematical techniques for analyzing systems to prove rigorous guarantees about their behavior. Fundamental algorithms for and advanced topics in modeling, specification, verification, correct-by-construction synthesis, and testing. Applications to hardware/software design, cybersecurity, robotics, machine learning. Course includes a final project.

Prerequisite: Prerequisite(s): CSE 103 or equivalent recommended, but not required. Enrollment is restricted to graduate students; undergraduates may enroll by permission of instructor.

CSE 220 - Computer Architecture (5)

Provides a thorough and fundamental treatment of the art of computer architecture. Topics include concepts of von Neumann architectures, methods of evaluating CPU performance, instruction-set design and examples, compiler issues, instruction pipelining, superscalar processors, methods for reduction of branch penalty, memory hierarchies, I/O systems, floating-point arithmetic, and current issues in parallel processing. (Formerly CMPE 202.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll if they have completed CSE 120 and with consent of instructor. A basic knowledge of computer architecture, similar to the content of CSE 120, is recommended.

CSE 221 - Advanced Microprocessor Design (5)

Introduction to latest advances in computer architecture. Focuses on processor core design. Topics include simultaneous multithreading, thread level speculation, trace caches, novel out-of-order mechanisms, and energy-efficient processor core designs. Final project is modification/enhancement of an out-of-order processor on an FPGA development system. (Formerly Computer Engineering 221.)

Prerequisite: Prerequisite(s): CSE 220; and CSE 125, CSE 225, or equivalent Verilog experience. Concurrent enrollment in CSE 221L is required. Enrollment restricted to graduate students.

CSE 221L - Advanced Microprocessor Design Laboratory (3)

Laboratory sequence illustrating topics covered in course 221. (Formerly Computer Engineering 221L.)

Prerequisite: Prerequisite(s): CSE 220; and CSE 125, CSE 225, or equivalent Verilog experience. Concurrent enrollment in CSE 221 is required. Enrollment restricted to graduate students.

CSE 222A - VLSI Digital System Design (5)

Advanced Very Large Scale Integrated (VLSI) custom integrated circuits. Topics include: semiconductors; field-effect transistors (FETs); circuits; and interconnect simulation, along with advanced material on manufacturability, variability, short-channel devices, and non-volatile memories. Students cannot receive credit for this course and CSE 122. (Formerly Computer Engineering 222.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 222B - VLSI System-on-a-Chip Design (5)

Design methodologies for Application Specific Integrated Circuits (ASICs). Topics include: behavioral specification; logic synthesis; standard-cell libraries; advanced timing analysis; and physical design automation tools. Familiarizes students with real-world tools during the design of a small system-on-a-chip project. Students are encouraged to fabricate and test their chips in an independent study. (Formerly Computer Engineering 223.)

Prerequisite: Prerequisite(s): CSE 222A or permission of instructor. Enrollment is restricted to graduate students.

CSE 225 - Introduction to ASIC Systems Design (7)

Verilog digital logic design with emphasis on ASIC and FPGA design. Students design and verify large-scale systems. Assignments and project use the Verilog Hardware Description Language with emphasis on verification and high-frequency ASIC/FPGA targets. Course may be taught in conjunction with CSE 125.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students. It is assumed that students have introductory knowledge of computer architecture, processor pipelines, and structural verilog. Undergraduates may enroll with instructor permission and should enroll in CSE 125.

CSE 226 - Advanced Parallel Processing (5)

Introduction to programming advanced parallel computer architecture. Topics may include: SIMD massively parallel processor arrays; streaming parallel coprocessors, such as graphics cards used for general-purpose processing (GPGPU); or other hybrid MIMD/SIMD architectures. Course has programming lab component, a project, and student presentation on related topics. (Formerly Computer Engineering 220.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

CSE 228A - Agile Hardware Design (5)

Agile Hardware Design techniques take the best of software engineering methods and apply them to improve hardware design productivity. Agile approaches not only reduce the time to solution, but they can also produce solutions which are better tailored for their target problems. In this synchronous in-person course, these techniques are covered while taking advantage of the Chisel hardware design language which brings the strengths of functional object-oriented programming to hardware design. Course consists of engaging lectures (intermixed coding demos and guest speakers) and progressive design assignments that culminate in a small project.

CSE 229 - Field-Programmable Gate Arrays Computer-Assisted Design (5)

Design methods for Field-Programmable Gate Arrays (FGPAs), including algorithms for technology mapping, routability estimation, placement, and routing. The relationship between FPGA architectures and their computer-aided design tools. Course project involves the modification and analysis of an FPGA tool. (Formerly Computer Engineering 229.)

Prerequisite: Enrollment is restricted to graduate students or by consent of instructor. CSE 100, CSE 125, CSE 222A, CSE 225, or other digital design experience recommended.

CSE 231 - Advanced Operating Systems (5)

A detailed study of the issues involved in operating systems design and implementation. Readings cover current research topics and systems of historical significance. Topics include (but are not restricted to) process and memory management, protection, security, synchronization, performance evaluation, file systems, distributed systems. (Formerly Computer Science 221.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates by interview only.

CSE 232 - Distributed Systems (5)

Overview of research topics in distributed computer systems. Topics may include communication paradigms, process management, naming, synchronization and coordination, consistency and replication, fault tolerance, and security. Examples include distributed operating systems, distributed file and object systems, distributed document systems, and peer-to-peer systems. (Formerly Computer Science 232.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 233 - Advanced Computer Security (5)

Overview of research topics in computer and network security. Topics may include cryptographic operations, security properties and policies, authentication and access control, attacks on computer systems and defenses against them, security in programming languages, and network protocols for security. (Formerly CMPS 223.)

Prerequisite: Enrollment is restricted to graduate students or consent of instructor.

CSE 234 - Understanding Cryptography (5)

Cryptography has become ubiquitous, from light bulbs to atomic weapons. This course provides both a comprehensive introduction to applied cryptography and an additional focus on the human issues caused by bad implementations, bad processes, and broken algorithms. Knowledge of C Programming, Linux, and Virtual machines is required. (Formerly Computer Engineering 236 and Computer Science 236.)

Prerequisite: Prerequisite(s): CSE 201. Enrollment is restricted to graduate students.

CSE 235 - Cyber-Physical Systems Security (5)

Cyber-physical systems now permeate our lives; they include autonomous vehicles, the Internet of things, and modern control of our critical infrastructure such as the power grid. Learning about the threats against these systems and the possible defenses is essential for computer security practitioners. In this course, students read and analyze the latest published research in this area, and work on projects to address new problems.

Prerequisite: Enrollment is restricted to graduate students.

CSE 237 - Storage Systems (5)

Topics include storage devices, storage architectures, local file systems, high-performance file systems, and next-generation storage devices and architectures; covers issues of performance, reliability, scalability, robustness, and security. (Formerly Computer Science 229.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 239 - Advanced Cloud Computing (5)

Cloud computing involves designing efficient software systems, as well as the application of computing to support the utilization of large-scale physical infrastructures, whereby resources are rented by users as an utility. Course is an in-depth exploration of distributed and operating systems principles essential for deploying a data center operating system. Topics include client-server programming, distributed scheduling, virtualization, frameworks, distributed storage, security, distributed middleware, and applications such as the IoT, web services, big data, and P2P systems.

Prerequisite: Prerequisite(s): CSE 232. CSE 231 is recommended but not required. Enrollment is restricted to seniors and graduate students.

CSE 239A - Private Computation on Encrypted Data (5)

Introduction to privacy-preserving computation, focusing on how to build end-to-end privacy-preserving systems. Topics cover different areas of private computation: multiparty computation, FHE, anonymous communication, oblivious RAM/computation, hardware enclaves, structured/searchable encryption, and cryptanalysis topics. The focus is on research papers from both the crypto/security side (with emphasis on definitions, foundations, and formal proofs) and the system side (with emphasis on aspects such as real-world practicality, efficiency, and deployability).

Prerequisite: Prerequisites: Enrollment is restricted to graduate students. CSE 108/CSE 206C or equivalent is preferred but not required. Undergraduates may enroll by permission of instructor. Students who have completed CSE 239A cannot take CSE 108C for credit.

CSE 240 - Artificial Intelligence (5)

Prepares students for doing research in artificial intelligence. Major topics covered are search and heuristics, knowledge representation, planning, deduction and inference, reinforcement learning, associative pattern retrieval, and adaptive search. Discussion includes current research issues in AI problem-solving methods. Individualized projects. (Formerly Computer Science 240.)

CSE 241 - Knowledge Engineering (5)

Introduction to the acquisition, representation, and application of knowledge in expert systems. Topics include production systems, backward and forward chaining, dependency-directed backtracking, reasoning with uncertainty, certainty factors, fuzzy systems, knowledge representation (rules, frames, and semantic nets), inference engines, and metaknowledge. Discussion includes current research issues

in adaptive expert systems. Involves one major project. Undergraduates may enroll in this course if they have completed CSE 140. (Formerly Computer Science 241.)

CSE 242 - Machine Learning (5)

Introduction to machine learning algorithms. Covers learning models from fields of statistical decision theory and pattern recognition, artificial intelligence, and theoretical computer science. Topics include classification learning and the Probably Approximately Correct (PAC) learning framework, density estimation and Bayesian learning, EM, regression, and online learning. Provides an introduction to standard learning methods such as neural networks, decision trees, boosting, nearest neighbor, and support vector machines. Requirements include one major experimental learning project or theoretical paper. Students may not receive credit for both this course and CSE 142. (Formerly CMPS 242.)

Prerequisite: Enrollment is restricted to graduate students in the computer science and engineering, computer engineering and computer science master's programs; and students in the following doctoral programs: computer science and engineering, computer engineering, computer science, applied mathematics, applied mathematics and statistics, biomolecular engineering and bioinformatics, electrical and computer engineering, electrical engineering, statistical science, and technology information management. Others may enroll by permission of the instructor.

CSE 243 - Data Mining (5)

Covers the principles, algorithms, and applications of data mining, including mining sequential data, structured data, stream data, text data, spatiotemporal data, biomedical data, and other forms of complex data. Formerly TIM 245.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 244A - Foundations of Deep Learning (5)

Provides foundations of deep learning algorithms and principles. Topics include neural networks, deep learning principles, deep learning architectures such as convolutional neural networks and recurrent neural networks, autoencoders, generative adversarial networks, and reinforcement learning. (CSE 244A and CSE 244B formerly offered as one course, CSE 244.)

Prerequisite: Prerequisite(s): CSE 201 and familiarity with basic machine learning concepts. Enrollment is restricted to computer science and engineering graduate students.

CSE 244B - Machine Learning for Natural Language Processing (5)

Introduction to machine learning models and algorithms for Natural Language Processing. Covers deep learning approaches and traditional machine learning models. Topics include an introduction to standard neural network learning methods such as feed-forward neural networks, recurrent neural networks, convolutional neural networks, and encoder-decoder models with applications to natural language processing problems such as utterance classification and sequence tagging. Requirements include a midterm, final, programming assignments, and a project. (CSE 244A and CSE 244B formerly offered as one course, CSE 244.)

Prerequisite: Prerequisite: CSE 244A.

CSE 244C - Deep Learning for Advanced Computer Vision (5)

This 10-week course delves deep into advanced computer vision with deep learning, introducing key concepts, applications, and the latest advancements in the field. Specifically, the course covers topics including image basics, convolutional neural network and its applications in different vision tasks (i.e., classification, detection, segmentation and video understanding), Transformer, self-supervised learning, vision language models, and three advanced topics. Upon completion, students should understand basics and cutting-edge advancements in this field and be able to solve real-world vision challenges.

Prerequisite: Prerequisite(s): CSE 244A is recommended but not required. Enrollment is restricted to CSE graduate students; other graduate students may enroll by permission of the instructor.

CSE 245 - Computational Models of Discourse and Dialogue (5)

Focuses on classic and current theories and research topics in the computational modeling of discourse and dialogue, with applications to human-computer dialogue interactions; dialogue interaction in computer games and interactive story systems; and processing of human-to-human conversational and dialogue-like language such as e-mails. Topics vary depending on the current research of the instructor(s) and the interests of the students. Students read theoretical and technical papers from journals and conference proceedings and present class lectures. A research project is required.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates may enroll with permission of instructor.

CSE 246 - Responsible Data Science (5)

Graduate course covering basics of data science literacy and data science ethics. Topics include algorithmic discrimination, fairness, interpretability, privacy, and reproducibility. Key statistical topics such as generalization, causality, curse of dimensionality, and sampling bias are covered.

Prerequisite: Enrollment is restricted to graduate students.

CSE 247 - Projects in Artificial Intelligence (5)

Overview of artificial intelligence (AI) and machine learning (ML) and principles, implementation and deployment pipeline, and approaches in solving domain-related problems. Topics covered through direct instruction, invited guest speakers, reviews of state-of-art research papers, and a team project. Students are given an opportunity to work on a quarter-long AI/ML project to be counted toward their master's degree project requirements. Enrollment is by instructor consent. Prior experience in machine learning and deep learning is required. (Formerly AI: Problem Solving and Intelligent Search.)

CSE 247B - Projects in Computer Science (5)

Students are given an opportunity to work on a quarter-long computer science project to be counted toward their master's degree project requirements. Students work individually or in small teams with instructor supervision on individualized projects. Students cannot receive credit for both CSE 247 and CSE 247B.

Prerequisite: Enrollment is restricted to graduate students.

CSE 248 - Foundations of Data Science (5)

Examines the mathematical and algorithmic foundations of data science including high dimensional data, probabilistic inequalities, dimensionality reduction, correlation detection, streaming algorithms, and clustering. (Formerly Computer Science 218.)

Prerequisite: Prerequisite(s): CSE 201. Enrollment is restricted to graduate students.

CSE 249 - Large-Scale Web Analytics and Machine Learning (5)

Provides a systematic methodology and corresponding set of methods and analytical tools in stochastic models; reinforcement learning; stochastic (neuro-)dynamic programming; Bayesian graphical models; inference; and social networks used for web analytics and machine learning to achieve business intelligence (BI) and support research and applications in computer science, computer engineering, and electrical engineering, applied mathematics and statistics, business, management, and economics. Includes exposure to Hadoop for large-scale computation. Students should have solid background in probability equivalent to statistics, stochastic, methods, calculus, (and preferably) stochastic processes and optimization, or mathematical maturity and exposure to business intelligence and algorithms. (Formerly TIM 251.)

Prerequisite: Prerequisite(s): CSE 107 or STAT 131 or permission of instructor. Enrollment is restricted to graduate students.

CSE 250A - Computer Networks (5)

Issues resulting from organizing communication among autonomous computers. Includes network models and switching techniques; medium access control protocols and local area networks; error control and retransmission strategies; routing algorithms and protocols; congestion control mechanisms and end-to-end protocols; application-level protocols; and application of concepts to wireless and wireline networks, with emphasis on the Internet. (Formerly Computer Engineering 252A.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 250B - Principles of Computer Communication (5)

Focuses on the design and analysis of protocols for computer communication. Topics include: the safety, liveliness, and performance of communication protocols for medium access control (MAC); link control; routing and switching; multicasting; and end-to-end transport. Students cannot receive credit for this course and CSE 152. (Formerly CMPE 252B.)

Prerequisite: Prerequisite(s): CSE 250A. Enrollment is restricted to graduate students.

CSE 250C - High Speed Computer Networks (5)

Fiber-optic technology; fiber-optic link design; network protocol concepts; coding and error control; high-speed local area and metropolitan area networks; gigabit networks; error and congestion control; photonic networks; research topics. (Formerly Computer Engineering 254.)

Prerequisite: Prerequisite(s): CSE 250B.

CSE 253 - Network Security (5)

Fundamental mechanisms for network security and their application in widely deployed protocols. In-depth treatment of security mechanism at the data-link, network, and transport layers for both wired and wireless networks. Covers mechanisms for privacy and integrity, and methods for intrusion detection. (Formerly CMPE 253.)

Prerequisite: Enrollment restricted to graduate students.

CSE 257 - Wireless and Mobile Networks (5)

An interdisciplinary course on wireless communication and mobile computing. Covers the physical aspects of wireless communication but emphasizes higher protocol layers. Topics include cellular networks, packet radio and ad hoc networks, wireless transport protocols, security, and application-level issues. (Formerly Computer Engineering 257.)

Prerequisite: Prerequisite(s): CSE 250A or permission of instructor.

CSE 258 - Spectral Graph Theory (5)

Explores what eigenvalues and eigenvectors of graphs can tell us about their structure, and exploiting this knowledge for algorithmic purposes. It can be thought of as "Advanced Linear Algebra with examples from Graph Theory."

Prerequisite: Prerequisite(s): linear algebra familiarity. Enrollment is restricted to graduate students, undergraduate students with linear algebra familiarity may enroll by permission of the instructor.

CSE 259 - Sensor Networks (5)

Focuses on the networking aspects of sensor networks: protocols at the various layers and how they answer the specific requirements posed by these networks (e.g., data driven, energy efficient, etc.) and their applications (monitoring, tracking, etc.). Explores how physical layer and hardware issues may influence protocol design. (Formerly Computer Engineering 259.)

Prerequisite: Prerequisite(s): CSE 250A. CSE 257 is recommended as a prerequisite.

CSE 260 - Computer Graphics (5)

Introduces current research and techniques of modeling, 2D/3D transformation, matrix composition, shading algorithms, and rendering to obtain computer-generated imagery. Programming assignments and major project required. Students cannot receive credit for both this course and CSE 160. (Formerly Computer Science 260.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates by interview only.

CSE 261 - Advanced Visualization (5)

Covers advanced topics in visualization, e.g., tensor-field visualization, uncertainty visualization, information visualization. Topics vary with differing offerings of the course. Course includes lectures, exam, research paper reading/presentation, and projects. Final project is expected to be at a sufficiently advanced level for submission to a conference. Students work individually or in pairs. (Formerly Computer Science 261.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 262 - Computer Animation (5)

An in-depth treatment of computer animation, including its origins in conventional animation, 2-D animation, inbetweening, motion control, morphing, graphical motion editors, animation languages, motion blur, simulation of articulated body motion, real-time animation, and special-purpose animation hardware. (Formerly Computer Science 262.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 263 - Data Driven Discovery and Visualization (5)

Explores high-quality interdisciplinary research using socio-economic data and software available on the Internet, and data curation, computation, and visualization to strengthen scientific inquiry to bear on large-scale societal problems. Applications include inequality, poverty, water, energy, environment, health, education, and democracy. Enrollment restricted to graduate students. Enrollment by instructor consent. (Formerly Computer Science 263.)

CSE 264 - Computer Vision (5)

Introduces general concepts in computer vision, with an emphasis on geometric 3D reconstruction. Topics include radiometry, photometry, projective geometry, geometric camera model, epipolar geometry, stereo depth reconstruction, corner and edge features, point descriptors and matching, and optical flow. (Formerly Computer Engineering 264.)

Prerequisite: Enrollment is restricted to graduate students. Undergraduate students who are interested in enrolling should meet with the instructor first.

CSE 265 - Human-Computer Interaction (5)

Theory and hands-on practice to understand what makes user interfaces usable and accessible to diverse individuals. Covers human senses and memory and their design implications, requirement solicitation, user-centered design and prototyping techniques, and expert and user evaluations. Individual research project. Interdisciplinary course for art, social science and engineering graduate students. Students cannot receive credit for this course and CSE 165.

Prerequisite: Enrollment is restricted to graduate students.

CSE 269 - Approximation Algorithms (5)

Meant for graduate students with a good mathematical background. Students should be familiar with discrete math, algorithms, calculus/probability, graph theory. Topics include clustering, linear programming, LP duality, semidefinite programming, etc.

Prerequisite: Enrollment is restricted to graduate students or by permission of the instructor. Students taking this course need to have had at least one prior course in algorithms, similar to CSE 102 or equivalent. Students need a solid background in analysis of algorithms, discrete math, probability theory, graph theory, and overall mathematical maturity.

CSE 272 - Information Retrieval (5)

Course covers major topics of information retrieval including: characteristics and representation of text, several important retrieval and ranking models, content recommendation and classification; distributed or federated search, AI semantics and dialog for information access; human factors and interfaces; and evaluation, and domain-specific applications. A research project is required. (Formerly TIM 260.)

Prerequisite: Enrollment is restricted to graduate students. Undergraduates may enroll with permission of instructor.

CSE 276 - Optimization Theory and Applications (5)

A first graduate course in optimization with an emphasis on problems arising in management and engineering applications. Objectives are to become experts in problem formulation, comfortable with software for solving these problems, and familiar with analytical methods behind these solver technologies. (Formerly TIM 206.)

Prerequisite: Prerequisite(s): calculus and linear algebra. Enrollment is restricted to graduate students.

CSE 277 - Random Process Models in Engineering (5)

A first graduate course in stochastic process modeling and analysis with an emphasis on applications in technology management, information systems design, and engineering. (Formerly TIM 207.)

Prerequisite: Enrollment is restricted to graduate students. Prerequisite: CSE 107 or other undergraduate probability course recommended.

CSE 279 - Data Mining and Business Analytics in Knowledge Services (5)

Provides students with systematic methodology and analytical tools in data and text mining and business analytics. Also provides an integrated perspective and examines use of these

methods in the field of knowledge services, such as online marketing, sponsored search, health care, financial services, recommender systems, etc. Includes training in the basic elements of stochastic optimization and other algorithmic approaches, such as stochastic dynamic programming, statistics, constrained optimization, and machine learning with exposure to software tools. These methods enable firms to achieve rapid, effective, and profitable optimization of knowledge-services management. (Formerly TIM 209.)

Prerequisite: Enrollment is restricted to graduate students. Students are expected to have undergraduate preparation in probability and statistics. Undergraduates may enroll with instructor approval.

CSE 280A - Seminar in Computer Science and Engineering (2)

Weekly seminar covering topics of current research in computer science. Enrollment by permission of instructor. (Formerly CMPS 280A, Seminar in Computer Science Research.)

CSE 280D - Seminar in Database Systems (2)

Covers advanced research topics from the recent literature in database systems and related fields. Involves presentations from UCSC students and faculty, and guest talks from researchers in industry and other academic institutions. Enrollment by permission of instructor. (Formerly 280D.)

CSE 280F - Seminar on Software Engineering (2)

Weekly seminar covering topics of current research in software engineering. (Formerly CMPS 280G.)

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students.

CSE 280G - Hardware Systems Collective Seminar (2)

Weekly seminar on advanced topics in all aspects of computer hardware design, tools, and verification. Speakers are primarily guests from industry and academia. (Formerly VLSI/CAD Seminar.)

CSE 280H - Seminar in Human Computation Systems (2)

Covers advanced topics and current research in the general area of human computation. Material is drawn from several disciplines that involve or deal with human computation, including computer vision, human-computer interaction, databases, and machine learning. The course comprises presentations from faculty, enrolled students, and external visitors. (Formerly CMPS 280H.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 280I - Seminar on Information Retrieval and Knowledge Management (2)

Seminar series discussing advanced topics in information retrieval and knowledge management. Current research and literature are presented during each meeting. (Formerly 280I.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 280J - Seminar on Computer Graphics (2)

Weekly seminar covering topics of current research in computer graphics. Enrollment restricted to graduate students and by permission of instructor. (Formerly CMPS 280J.)

CSE 280K - Sales and Marketing for Technologists and Engineers (2)

Perspective on the theory, plus examples, and tools useful to technologists and engineers for successfully guiding and supporting sales and marketing endeavors and, thereby, ensuring funding, staffing, product appeal, positive customer relationships, and marketplace success. (Formerly TIM 280M.)

CSE 280L - Seminar on Logic in Computer Science (2)

Covers advanced research topics from the recent literature in the uses of logic in computer science with particular emphasis on the applications of logic to the representation and the management of data. Involves presentations from UCSC students and faculty, and guest talks from researchers in other academic institutions or industrial research labs. Enrollment is by permission of the instructor and is restricted to graduate students. (Formerly CMPS 280L.)

CSE 280M - Seminar on Machine Learning (2)

Weekly seminar covering topics of current interest in machine learning. Enrollment is by permission of the instructor. Enrollment is restricted to graduate students. (Formerly CMPS 280M.)

CSE 280N - Seminar on Networks (2)

Weekly seminar series covering topics of current research in networks and networked systems. Current research work and literature in these areas are discussed. Prerequisite(s): permission of instructor. Enrollment is restricted to graduate students. (Formerly Computer Engineering 280N.)

CSE 280O - Languages, Systems, and Data Seminar (2)

Covers current research in language-based approaches to security, distributed systems, databases, and formal verification. Students read and present papers from academic journals and conferences. (Formerly Seminar in Applied Programming Languages.)

Prerequisite: Enrollment is restricted to graduate students, or by permission of the instructor.

CSE 280P - Seminar on Parallel Processing (2)

Weekly seminar series covering topics of current research in parallel systems, architectures, and algorithms. Current research work and literature in these areas are discussed. (Formerly Computer Engineering 280P.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 280S - Seminar on Computer Systems (2)

Weekly seminar series covering topics of current research in computer systems. Enrollment by permission of instructor. (Formerly CMPS 280S AND CMPE 280S.)

CSE 280T - Seminar on New Technologies (2)

Weekly seminar series in which distinguished speakers from industry, universities, and government discuss current developments in networking and computer technology. The emphasis is on open research questions that may lead to collaborative work with faculty and graduate students. (Formerly Computer Engineering 280T.)

CSE 280V - Seminar on Computer Vision (2)

Weekly graduate-level seminar series discussing advanced topics in computer vision and image analysis. Current research and literature presented during each meeting. Enrollment is by permission of the instructor. Enrollment is restricted to graduate students. (Formerly Computer Engineering 280V.)

CSE 280X - Seminar in Distributed Systems (2)

Covers advanced research topics from the recent literature in distributed systems and related fields. Involves presentations from UCSC students and faculty. Enrollment is restricted to graduate students and by permission of the instructor.

CSE 280Z - Seminar in Natural Language Processing and Dialogue (2)

Covers advanced topics and current research in natural language processing. Focuses on student presentations and seminar participation. Enrollment is restricted to graduate students. Enrollment is by permission of the instructor. (Formerly CMPS 280Z.)

CSE 285 - Technical Writing for Engineering Graduates (5)

Writing skills development for graduate engineers. Students produce a major writing project with many subtasks. Exercises includes fellowship application; mathematical and algorithmic description; use of tables and graphs; experiment description; and producing technical web sites, presentations, and posters. Enrollment is restricted to graduate students in biomolecular engineering, computer science and engineering, computer science, and electrical and computer engineering and by permission of the instructor. (Formerly CMPE 285.)

CSE 290A - Topics in Algorithms and Complexity Theory: Probabilistic Algorithms and Average Case Analysis (5)

Graduate seminar in algorithms and complexity theory on topics from recently published research journal articles and conference proceedings. Topics vary from year to year depending on the current research of the instructor(s) and interests of students. Students read technical papers from relevant journals and conference proceedings and present class lectures. Guest lectures may supplement the student presentations. A research project and/or paper may be required. (Formerly Computer Science 290A.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 290C - Advanced Topics in Machine Learning (5)

In-depth study of current research topics in machine learning. Topics vary from year to year but include multi-class learning with boosting and SUM algorithms, belief nets, independent component analysis, MCMC sampling, and advanced clustering methods. Students read and present research papers; theoretical homework in addition to a research project. (Formerly Computer Science 290C.)

Prerequisite: Prerequisite(s): CSE 242.

CSE 290D - Neural Computation (5)

An introduction to the design and analysis of neural network algorithms. Concentrates on large artificial neural networks and their applications in pattern recognition, signal processing, and forecasting and control. Topics include Hopfield and Boltzmann machines, perceptions, multilayer feed forward nets, and multilayer recurrent networks. (Formerly Computer Science 290D.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 290E - Object-Oriented Programming Methodology (5)

Object-oriented programming methodology is the application of abstract-data types and polymorphism to coding solution. Topics geared to beginning thesis research in this field. (Formerly Computer Science 290E.)

Prerequisite: Prerequisite(s): CSE 201 and CSE 210A. Enrollment is restricted to graduate students.

CSE 290F - Applications of Combinatorics (5)

Combinatorial mathematics, including summation methods, working with binomial coefficients, combinatorial sequences (Fibonacci, Stirling, Eulerian, Harmonic, Bernoulli numbers), generating functions and their uses, Bernoulli processes, and other topics in discrete probability. Oriented toward problem solving, applications mainly to computer science, but also physics. (Formerly Computer Science 290F.)

Prerequisite: Prerequisite(s): CSE 16 and AM 10. Enrollment is restricted to graduate students and upper-division undergraduates.

CSE 290G - Topics in Software Engineering (5)

Research seminar on current topics in software engineering. Topics vary from year to year depending on the current research of the instructor(s) and interests of students. Students read technical papers from relevant journals and conference proceedings. Synthesis and understanding of materials is demonstrated by a required research project. (Formerly Computer Science 290G.)

Prerequisite: Prerequisite(s): CSE 212A recommended. Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

CSE 290H - Topics in Database Systems (5)

Focuses on current research topics in database systems. Different offerings cover different topics depending on current research of instructor(s) and the interests of students. Students read technical papers from journals and conference proceedings and present class lectures. A research project is required. (Formerly Computer Science 290H.)

Prerequisite: Prerequisite(s): CSE 180 (or equivalent) or CSE 214 or consent of instructor. Enrollment is restricted to graduate students.

CSE 290J - Advanced Topics in Computer Graphics and Visual Computing (5)

A graduate seminar in computer graphics on topics from recently published research journal articles and conference proceedings. Topics vary from year to year depending on interests of students. Primary areas of interest are likely to be scientific visualization, modeling, rendering, scattered data techniques, wavelets, and color and vision models. Students read technical papers and present class lectures. Guest lecturers supplement the student presentations. A research project is required. (Formerly Computer Science 290B.)

CSE 290K - Advanced Topics in Natural Language Processing (5)

Teaches participants about current methods and directions in active areas of Natural Language Processing research and applications. Students perform independent research and hone skills with state-of-the-art NLP tools and techniques.

Prerequisite: Enrollment is restricted to computer science and engineering, computer engineering, computer science, and technology management graduate students.

CSE 290L - Topics in Crowdsourcing and Collaboration (5)

Explores the foundations of crowdsourcing and computer-mediated collaboration. Covers the algorithmic and statistical foundations of crowdsourcing, introducing and analyzing algorithms, and experimenting with concrete systems. Also, provides an introduction to computational systems for mediating user interaction and collaboration. (Formerly Computer Science 290L.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 290M - Topics in Parallel Computation (5)

Investigates selected topics in applied parallel computation. Topics may include numerical methods, artificial intelligence and machine learning algorithms, graphics and image processing, systolic algorithms, and the interplay between hardware and algorithms. Students are encouraged to investigate and discuss the parallelization of their own research. (Formerly Computer Engineering 290M.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 290N - Topics in Computer Performance (5)

Selected topics of current interest in the area of computer system performance. Subjects may include aspects of large systems, performability, computer networks, storage subsystems, and nontraditional approaches and are subject to periodic revision. (Formerly Computer Engineering 290N.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 290O - Algorithmic Foundations of Convex Optimization (5)

Focuses on some of the foundational aspects of convex and its relationship to modern machine learning. Discusses positive results--how can you solve convex optimization problems--and negative ones with statements like This family of problems is too hard to be solved in reasonable time. Course is divided into three parts, each exploring a different aspect of convex optimization: 1) algorithmic frameworks; 2) Oracle complexities; 3) the power of randomness. Through this course students are exposed to general concepts of convex geometry, learning theory, and rigorous proofs. (formerly CMPS 290O.)

Prerequisite: Prerequisite(s): CSE 201 and CSE 242. Enrollment is restricted to computer engineering and computer science graduate students.

CSE 290P - Data Privacy Via Machine Learning, and Back (5)

Helps students achieve both expository knowledge and expertise in the field of data privacy. Focuses on fundamental techniques used in designing privacy-preserving, machine-learning systems in both academia and in the industry. Students are expected to read and understand recent research papers in the topic. (Formerly Computer Science 290P.)

Prerequisite: Prerequisite(s): CSE 201 and CSE 242 or equivalent. Enrollment is restricted to graduate students.

CSE 290Q - Topics in Programming Languages (5)

Current research topics on computer programming languages. Topics vary year to year. Students read papers from current conferences and journals, and present class lectures. A research project is required. (Formerly Computer Science 290Q.)

Prerequisite: Prerequisite(s): CSE 210A. Enrollment is restricted to graduate students.

CSE 290S - Advanced Topics in Computer Systems (5)

Focuses on current research topics in computer systems. Topics vary from year to year depending on the current research of the instructor(s) and the interests of the students. Students read technical papers from current journals and conference proceedings, and present class lectures. A research project is required. (Formerly Computer Science 290S.)

Prerequisite: Prerequisite(s): CSE 231 recommended. Enrollment is restricted to graduate students; qualified undergraduates may enroll with instructor's consent.

CSE 290T - Topics in Computing for Society (5)

Current research topics on computer technology that is intentionally targeted to benefiting society. Topics vary year to year. Students read papers from current conferences and

journals, and present class lectures. A research project is required. (Formerly Computer Science 290T.)

Prerequisite: Enrollment is restricted to graduate students.

CSE 290X - Cryptography and Computer Security (5)

Research seminar on encryption and related technologies. Topics include theory of codes, random sequences and generators, public key cryptosystems, private key cyphers, key exchange protocols, quantum computing and cryptography. Major project required. Prerequisite: interview with instructor. (Formerly Computer Science 290X.)

CSE 293 - Advanced Topics in Computer Science & Engineering (5)

A graduate seminar on a research topic in computer engineering which varies according to instructor. Possible topics include, but are not limited to, communication networks, data compression, special-purpose architectures, computer arithmetic, software reliability and reusability, systolic arrays.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll by permission of instructor.

CSE 296 - Masters Project (2)

Independent completion of a masters project under faculty supervision. Students submit petition to sponsoring agency.

CSE 297A - Individual Study or Research (5)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency.

CSE 297B - Individual Study or Research (10)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency.

CSE 297C - Individual Study or Research (15)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency.

CSE 297F - Independent Study or Research (2)

Independent study or research under faculty supervision. Although this course may be repeated for credit, not every degree program will accept a repeated course toward degree requirements.

CSE 299A - Thesis Research (5)

Thesis research conducted under faculty supervision. Although the course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency.

CSE 299B - Thesis Research (10)

Thesis research conducted under faculty supervision. Although the course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency.

CSE 299C - Thesis Research (15)

Thesis research conducted under faculty supervision. Although the course may be repeated for credit, not every degree program will accept a repeated course towards degree requirements. Students submit petition to sponsoring agency.

CSE 299F - Thesis Research (2)

Independent study or research under faculty supervision. Enrollment is restricted to graduate students. Recommended for part-time students. Students submit petition to sponsoring agency.

CSP - COASTAL SCIENCE AND POLICY

Undergraduate

CSP 182 - Quantitative Methods for Coastal Climate Resilience (5)

Focuses on quantitative methods and skills for coastal climate resilience, using data science, statistics, data visualization and geospatial analysis. Prepares students through hands-on work and real-world case studies. The course uses lectures, python notebooks and examples of coastal hazard risks and data analysis and representation. No previous programming or geospatial modeling experience is necessary.

Graduate

CSP 200 - Natural Sciences for Coastal Sustainability (5)

Provides a basic foundation in the natural sciences including the environment (atmosphere, land, water, sea), species populations, ecosystems and biodiversity, and their relevance to sustainability issues of the coastal zone.

Prerequisite: Prerequisite(s): concurrent enrollment in CSP 210 and CSP 220. Enrollment is restricted to graduate students in the coastal science and policy program, or by permission of the instructor.

CSP 210 - Social Sciences for Coastal Sustainability (5)

Provides a basic foundation in the social sciences, through systematic study of communities, institutions, and entire societies. Examines the relevance of sociological theory, social interactions and relationships, social inequality, and social change to sustainability issues of the coastal zone.

Prerequisite: Prerequisite(s): concurrent enrollment in CSP 200 and CSP 220. Enrollment is restricted to graduate students in the coastal science and policy program, or by permission of the instructor.

CSP 220 - Economics for Coastal Sustainability (5)

Builds a foundation of economic concepts pertaining to the environment and explores tools for environmental valuation. Investigates the role for government action related to the environment, including estimation of costs and benefits for regulations and related policies.

Prerequisite: Prerequisite(s): concurrent enrollment in CSP 200 and CSP 210. Enrollment is restricted to graduate students in the coastal science and policy program, or by permission of the instructor.

CSP 230 - Integrated Problem-Based Discussion (0)

Focusing on a series of case studies, this discussion section demonstrates means and values of integrating across the natural and social sciences and economics disciplines in developing solutions to coastal sustainability.

Prerequisite: Prerequisite(s): Concurrent enrollment in CSP 200, CSP 210, and CSP 220. Enrollment restricted to coastal science and policy graduate students.

CSP 231A - CSP Year 1 Capstone Planning & Design Fall (2)

Students learn and apply methods for designing scalable solutions to complex problems, focusing on sustainability challenges and opportunities in coastal areas. Sessions primarily involve peer-review and feedback on student progress in planning their individual Coastal Science and Policy (CSP) capstone project. The capstone project must engage with a real-world partner(s) on a scalable opportunity for solving a critical problem in coastal areas (from land to sea). Faculty lead mini-lectures as needed. Course stresses learning-by-doing: weekly assignments have students work outside of class on steps or skills in the design process and then the student shares their work in the following class to gain peer insights. Students should expect to do the reading and a substantial assignment each week BEFORE the class session meets.

Prerequisite: Enrollment restricted to Coastal Science and Policy M.S. students; and to Ph.D. students who have declared the Coastal Science and Policy Designated Emphasis by permission.

CSP 231B - CSP Year 1 Capstone Planning & Design Winter (2)

Picks up where the fall capstone planning seminar ended. Students continue designing capstone project for pursuing a scalable solution to a complex and pressing coastal sustainability problem. Winter focus is learning and applying strategies and methods to: (a) co-create a capstone project with a non-academic partner in the government, non-governmental or private sector; and (b) develop and submit successful funding proposals for the project. Methods learned apply broadly to collaborative, solutions-oriented work that may be pursued after graduation. Weekly assignments mean working outside of class on steps or skills for co-creating and fundraising with partners and then sharing work for peer-review in class in the next week. Expect to do the reading and weekly assignments before each week's seminar session. Instructor provides separate instructions for weekly assignments.

Prerequisite: Enrollment restricted to Coastal Science and Policy M.S. students; and to Ph.D. students who have declared the Coastal Science and Policy Designated Emphasis by permission.

CSP 244 - Adaptation and Planning (5)

Introduces students to conceptual frameworks for developing solutions to coastal sustainability problems, and drawing on knowledge and skills gained in previous coastal science and policy courses to perform an integrated assessment of a coastal sustainability problem. This class is offered for Satisfactory/Unsatisfactory grading only.

Prerequisite: Enrollment restricted to coastal science and policy graduate students.

CSP 271 - Fisheries Ecology (2)

Overview of current topics in fisheries ecology and management. Students learn about basic ecological concepts as they apply to fisheries management systems. Specific topics include: fisheries systems, alternative management controls, history of fisheries management, whether fisheries are sustainable, fisheries-induced evolution, population structure and portfolio effects, and ecosystem-based management. The course aims to provide students with an overview of topics in fisheries ecology through a combination of lectures, current literature, and case studies. Students explore controversies and hot topics in fisheries science through discussion and review of literature. (Formerly CSP 281B.)

Prerequisite: Enrollment is intended for students in the programs of Coastal Science and Policy, Environmental Studies, Ecology and Evolutionary Biology, Ocean Sciences, and Science Communication. There are no formal prerequisites, but undergraduate students are strongly encouraged to contact the instructor regarding prior coursework.

CSP 281A - Hacking for Oceans—Lean Design Methods (5)

One-quarter graduate-level class in which multidisciplinary student teams of four address problem or challenges provided by real-world sponsors or identified by student groups. Teams learn how to apply the Lean Launchpad and Lean Startup methodologies to discover and validate customer needs and to continually build prototypes to test whether they understood the problem and solution. Weekly assignments involve working outside of class on steps or skills in the design process and then sharing it for peer-review in class. Involves reading and a substantial assignment each week before the next week's session on that topic. Taught in conjunction with ENVS 155. Students cannot receive credit for this course and ENVS 155. Graduate students are required to submit an additional culminating report such as a funding proposal to support next steps in their team's solution, a critical analysis of the Lean Design Method, or a policy analysis regarding scalable adoption of the solution. Enrollment is by instructor

consent. Application and interview in winter quarter for spring quarter course is required.

CSP 282 - Quantitative Methods for Coastal Climate Resilience (5)

Focuses on quantitative methods and skills for coastal climate resilience, using data science, statistics, data visualization, and geospatial analysis. Prepares students through hands-on work and real-world case studies. The course uses lectures, python notebooks, and examples of coastal hazard risks and data analysis and representation. No previous programming or geospatial modeling experience is necessary.

Prerequisite: Enrollment is restricted to graduate students.

CSP 290A - Coastal Science and Policy Capstone Project (10)

First of three independent research courses during which students work closely with partner institutions and faculty co-mentors to generate alternative, interdisciplinary-based solutions to coastal sustainability problems. Provides experience in a real-world, collaborative, problem-solving environment. This class is offered for Satisfactory/Unsatisfactory grading only.

Prerequisite: Prerequisite(s): Concurrent enrollment in CSP 291. Enrollment restricted to coastal science and policy graduate students.

CSP 290B - Coastal Science and Policy Capstone Project (10)

Second of three independent research courses during which students work closely with partner institutions and faculty co-mentors to generate alternative, interdisciplinary-based solutions to coastal sustainability problems. Provides experience in a real-world, collaborative, problem-solving environment. Offered for Satisfactory/Unsatisfactory grading only.

Prerequisite: Prerequisite(s): Concurrent enrollment in CSP 291. Enrollment restricted to coastal science and policy graduate students.

CSP 290C - Coastal Science and Policy Capstone Project (10)

Third of three independent research courses during which students work closely with partner institutions and faculty co-mentors to generate alternative, interdisciplinary-based solutions to coastal sustainability problems. Provides experience in a real-world, collaborative, problem-solving environment. Offered for Satisfactory/Unsatisfactory grading only.

Prerequisite: Prerequisite(s): Concurrent enrollment in CSP 291. Enrollment restricted to coastal science and policy graduate students.

CSP 291 - Coastal Science and Policy Capstone Seminar (2)

Interactive workshop format to share and get feedback on students' capstone projects. Topics by quarter include, but are not limited to: fall–project progress and challenges, midterm report preparation (due winter term); winter–sharpen capstone's theory of change, outcomes and communications; spring–prepare capstone deliverables, final written/oral reports, rehearse public-facing presentation. Additional topics may include career and networking skill-building, and exposure to real-world collaborative initiatives on coastal sustainability issues. Offered for Satisfactory/Unsatisfactory grading only. Concurrent with implementation of students' yearlong capstone projects (CSP 290A, CSP 290B, and CSP 290C).

Prerequisite: Corequisite(s): CSP 290A, CSP 290B, or CSP 290C. Enrollment is restricted to coastal science and policy graduate students.

CSP 292 - Special Topics in Coastal Science and Policy (2)

Seminar in which students present, discuss, and gain feedback on a current special topic in the interdisciplinary arena of coastal science and policy. The special topic can involve identification of current problems, relevant research and practice, and/or design of solutions in coastal science and policy.

Prerequisite: Enrollment is restricted to graduate students.

CSP 293 - Special Topics in Coastal Science and Policy (5)

Intensive seminar in which students present, discuss, and gain feedback on a current special topic in the interdisciplinary arena of coastal science and policy. The special topic can involve identification of current problems, relevant research and practice, and/or design of solutions in coastal science and policy.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of instructor. Enrollment is limited to 20. May be repeated for credit.

CSP 297 - Independent Study in Coastal Science and Policy (5)

Independent study and research under faculty supervision. The student, guided by a faculty member, pursues in-depth learning about a specific coastal science and policy problem, opportunity or solution. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

DANM - DIGITAL ARTS AND NEW MEDIA

Lower-Division

DANM 50 - Gayming: An Introduction to Queer Theory in Games (5)

Students learn the basics of queer theory and how to apply it to game design and play. They engage with a number of queer games both physical and digital as well as learn how to apply queer theory to their own design and style of play.

DANM 51 - Queer and Trans Art Practices (5)

Beginning with the liberation movements of the 1960s, course traces the work of queer and trans artists over the decades that

followed. Students consider representations of queer life amid the Gay Liberation Movement of the 1970s, underground experimental film and New Queer Cinema, art of the AIDS crisis and the activist art collectives of ACT UP, and millennial artists working today across digital and fine arts. One of the driving questions of our explorations will be, how do these artists undo and rework concepts like identity, medium, and form? (Formerly Queer and Trans Art History Since Stonewall.)

DANM 52 - Altering the Digital Image and Creative Art Practices (5)

Throughout the 10-week course, students are guided through the principles and elements of digital design and digital filters for editing as a creative approach to image-making, template building, poster design, collage, and color theory methodology. Students are encouraged to develop a portfolio of digital images based on their primary interests. The course is focused on aesthetics, color theory, and design as the central common theme.

Upper-Division

DANM 130 - Embodiment in New Media Art (5)

Engages the topic of embodiment within new media art theory and practice. Focus is on embodiment within performance, time-based, electronic, and new media arts practice. Students produce a final paper and artistic project on the topic. Lower-division undergraduates may enroll with permission of instructor.

Prerequisite: Enrollment restricted to juniors and seniors.

DANM 132 - Literary Games: The Intersection of Writing and Play (5)

Hands-on course surveying the thriving micro-genres in the neutral zone between games and literature. Students read, play, and author stories that couldn't exist on a printed page. Interactive fiction, algorithmic poetry, and brand-new experiments.

DANM 133 - Introduction to Electronics and Physical Computing (5)

Introduces electronics using the open-source Arduino platform. Learn how to build interactive circuits through hands-on tutorials. In a workshop environment, students acquire the technical skills required to create electronic artwork. No previous experience required.

DANM 134 - Hacking for Artists: Experimenting with Digital Media (5)

Hacking is the modification, reconfiguration, and reuse of computer code or hardware to create new functionality. Course encourages a hands-on approach to digital-media creation including the basics of computer programming and hacking techniques. No programming experience required.

DANM 135 - Kinematics: Motion and Machine Art (5)

Explores the history of machines. Kinetic art is presented including: animatronic puppetry, balance mobiles, light compositions, logic and mechanical art, interactive sculpture, and resonance cymatics. Students utilize automation techniques to create art projects using a modular set of gears, linkages, cams, belts, and springs. Discussion of technological advances in the field of kinetic art and its impact on society.

DANM 136 - Mapmaking for Environmental Activism (5)

Introduces the basic principles of geographic analysis and visual communication through mapmaking. Projects focus on environmental issues, and class discusses best practices for distributing information and communicating ideas.

DANM 138 - Procession: Where Sculpture Meets Costumes Meets Performance (5)

Teaches techniques to animate sculptures, such as wearables/body art, mobility, puppetry, sound, light, or projection. Covers building techniques and how to incorporate individual creativity in a collaborative setting to create a common theme for the procession.

DANM 140 - Introduction to 3D Printing, Laser Cutting, and More (5)

Learn to design functional objects, sculpture, and other digitally inspired forms in a variety of 3-D applications (Cinema 4-D, Maya, AutoCad, Rhino, SketchUp), then produce those models as physical objects with a variety of rapid prototyping methods including additive 3-D printing, CNC milling, vacuum forming, and laser cutting.

DANM 141 - Introduction to Soft Interaction: Fiber Arts and Reactive Technologies (5)

Students learn to create interactive artwork through the combination of fiber arts and reactive technology. Course explores electronic art that is worn or touched, and discovers new developments in eTextiles that allow for this interaction.

DANM 143 - Projects in Ecological Art (5)

By investigating topics related to water in California, students produce works of digital and new media art that engage with environmental issues and the local community.

DANM 144 - Surveillance and Digital Design (5)

How can we understand surveillance through a digital arts lens? What are the connections between surveillance and race, gender, sexuality, and class? How can we challenge oppressive surveillance policies in creative ways? In this interdisciplinary course students critically engage with the topic of surveillance by interacting with important scholarship and artworks in digital arts and surveillance studies. Knowledge on the subject deepened through class discussions, submission of written reflections, and group creative responses to the course content.

DANM 146 - Game Design in Participatory Performance (5)

Students get a grounding in the fundamentals of game design and character driven performance. Meetings focus on a combination of understanding current practice across various styles of interactivity, and practice of participatory performance culminating in a short group performance with participatory elements.

DANM 147 - Introduction to Queer Game Studies (5)

Examines writing about Queer games—both academic and non-academic—as well as contemporary Queer games. Students write an essay that synthesizes Queer theory and game studies and also answer a few short questions about each reading. A midterm draft of the game and a final prototype are required, as well as a post-mortem as a final paper. Throughout the course, students gain experience in looking critically at pieces of digital media art, creating short video games, and reading Queer theory as well as game studies writing.

DANM 148 - Introduction to Game Prototyping (5)

Introductory course on the process of game prototyping. By playing seminal works made by oppressed creators in the industry, and performing close readings of their mechanics, students build games literacy and learn how to use free and low-cost tools to make personal, fluid work. Engages in the creation of games on a weekly basis, while thinking about the political, artistic, and cultural values the work embodies. Throughout this process, students discuss different models of prototyping, iterate on game design procedure, and reflect deeply on their finished work.

DANM 149 - Intro to Games Culture (5)

Survey course on game communities. Games are a globally entrenched medium, with communities of players gathering together both online and offline. Students map how different communities navigate status and mastery, study online fan groups, and document their interactions to gain a better understanding of the dynamics at play. Investigates how marginalized communities can be left behind in the search for mastery, and as a class students create tools for intervening in our own communities when exclusionary trends are seen.

DANM 199 - Tutorial (5)

Independent digital arts and new media research project under the guidance of a digital arts and new media faculty member or other faculty. Students submit petition to sponsoring agency. Enrollment restricted to juniors and seniors.

DANM 199F - Tutorial (2)

Independent digital arts and new media research project under the guidance of a digital arts and new media faculty member or other faculty. Students submit petition to sponsoring agency.

Graduate

DANM 201 - Recent Methods and Approaches to Digital Arts and Culture (5)

Students examine methods and approaches to research and writing in digital art and new media, while exploring key theories concerning technology, art, and culture. Focus is on the interaction between digital technologies and socio/cultural formations.

Prerequisite: Enrollment is restricted to graduate students.

DANM 202 - Dialogues and Questions in Digital Arts and Culture (5)

Students engage in dialogues at the intersection of theory and practice with the goal of producing a pre-thesis proposal and essay. Readings and seminar discussions inform the development of project proposals and essays, which theoretically contextualize students' work.

Prerequisite: Enrollment is restricted to graduate students.

DANM 203 - Professional Development for the Arts (5)

A professional art practices practicum that focuses on researching opportunities and developing practical strategies and skills to ensure success outside an academic environment.

Prerequisite: Enrollment is restricted to graduate students.

DANM 210 - Project Design Studio (5)

Students work on the design of individual projects by developing project proposals, budgets, proof of concept design documents and/or prototypes and exploring tools, technologies, programming languages, hardware, software, and electronics techniques relevant to their projects.

Prerequisite: Enrollment is restricted to graduate students.

DANM 211 - Critique (5)

First-year digital arts and new media graduate students are required to present work-in-progress based on the projects developed in earlier courses and during the current quarter in individual studio critiques with the instructor as well as in group critiques.

Prerequisite: Enrollment is restricted to graduate students.

DANM 212 - Thesis Proposal (0)

First-year digital art and new media graduate students work on the development and completion of their thesis-project proposal and abstract under the supervision of the program chair and their thesis committees.

Prerequisite: Enrollment is restricted to DANM students.

DANM 215 - MFA Exhibition Production (5)

Second-year digital arts and new media graduate students work with faculty curator/coordinator to develop thesis projects specifically for the group exhibition context. Students contribute to exhibition design and collateral materials while studying the unique presentation and curatorial challenges of new media.

Prerequisite: Enrollment is restricted to graduate students.

DANM 216 - Digital Bodies (5)

Explores the appearance, form, and theoretical status of the human body/political subject in online art. Focuses on representations of race and gender, family resemblances, and local communities, as well as the political and colonial metaphors of spatial interaction operating on the World Wide Web. Visual representations of bodies that take the form of avatars, advertising, robots, and anime studied in their contextual usage.

Prerequisite: Enrollment is restricted to graduate students. Upper-division undergraduates may enroll with permission of instructor.

DANM 219 - Introduction to Electronics for Artmaking (5)

Intensive introduction to electronic devices used in artmaking, providing hands-on experience with sensors, motors, switches, gears, lights, simple circuits, microprocessors, and hardware storage devices to create kinetic and interactive works of art. Students are billed a materials fee of $118.

Prerequisite: Enrollment is restricted to graduate students.

DANM 220 - Introduction to Programming for the Arts (5)

Covers aspects of computer programming necessary for digital art projects. Students learn to manipulate digital media using program control for installations, presentations, and the Internet. No prior programming experience required.

Prerequisite: Enrollment is restricted to graduate students.

DANM 221 - Mathematics and the Arts (5)

Examines the role of mathematics in the arts since the computer revolution with an emphasis on chaos, fractals, and symmetry. Covers abstract animation and algorithmic music, including the history of leading innovators and techniques from 1950 to the present. Student projects explore the creative process today using cutting-edge technologies.

Prerequisite: Enrollment is restricted to graduate students. Upper-division undergraduates may enroll with permission of instructor.

DANM 227 - Projected Light in Performance (5)

Exploration of projected light in performance and art. The history of lighting as art is covered in a hands-on demystifying format from the shadow of a bare light bulb to the latest in automated and projection equipment and techniques.

Prerequisite: Enrollment is restricted to graduate students. Juniors and seniors may enroll with permission of instructor.

DANM 233 - The Object as Interface (5)

Combination theory and studio-based exploration into the role of the object in real and virtual space. Provides a broad conceptual and theoretical examination of issues relating to object-making on a physical and dematerialized plane.

Prerequisite: Enrollment is restricted to graduate students.

DANM 241B - Modern Art: Cubism to Pop (5)

A history of the visual arts from the 1910s to the 1960s beginning in Europe and moving to the United States. Follows key movements of modern art while emphasizing the social, political, and philosophical events that inform it. Students cannot receive credit for this course and HAVC 141B.

Prerequisite: Enrollment is restricted to graduate students in digital arts new media, film, music, social documentation, theater, or visual studies.

DANM 250A - Art and Science (5)

Students investigate new methods in art and science collaboration through faculty-initiated projects to solve real-world problems and produce outcomes of substantial artistic and scientific value. (Formerly Collaborative Research Project Group: Art and Science.)

Prerequisite: Enrollment is restricted to graduate students.

DANM 250B - Socially Engaged Art (5)

Students join digital methods with community-media activism through faculty-initiated projects to facilitate a culture of participation and social engagement. (Formerly Collaborative Research Project Group: Socially Engaged Art.)

Prerequisite: Enrollment is restricted to graduate students.

DANM 250C - Performance and Embodiment (5)

Students investigate performance and embodied experience as profound sources of understanding and communication through faculty-initiated projects, pushing the limits of human identity, affect, empathy, and expression. (Formerly Collaborative Research Project Group: Performance and Embodiment.)

Prerequisite: Enrollment is restricted to graduate students.

DANM 250E - Collaborative Research Project Group: Experimental Play (5)

Three-quarter, collaborative-research, project group encompasses a range of faculty-initiated projects that investigate computer games and related forms to engage audiences, make arguments, tell stories, and shape social space through creation of new games and through reading and playing related works.

Prerequisite: Enrollment is restricted to graduate students.

DANM 250F - Film, Moving Image Installation, and Curatorial Lab (5)

Workshop investigating moving and still images to create visual and sonic languages for production, exhibition and installation. Core faculty Mark Nash and Isaac Julien invite students to participate in ongoing projects as well as present and discuss their own work. Established artists, film makers and curators are also invited to present their work to the

group. (Formerly offered as Research Group: Isaac Julien Studio Lab.)

Prerequisite: Enrollment is restricted to graduate students.

DANM 250G - Research Group: Isaac Julien Studio Lab - London Quarter (15)

Research group course focusing on research and production of Isaac Julien's and Mark Nash's moving image and curatorial projects. Course takes place in the Isaac Julien Studio in London. Students encouraged to develop and prototype their own projects and thesis work. Course includes case studies, workshops, guest speakers, seminar discussions, and site visits. Outside of class students work on independent projects, as well as projects in the Isaac Julien Lab alongside staff. Enrollment is by instructor permission and open to DANM graduate students and graduate and Ph.D. students in other project groups or programs upon application.

DANM 250I - Interdisciplinary Arts Production Lab (5)

The IAPL is open to musicians, visual artists, programmers, designers, writers, dancers, actors, or artists of any discipline. The course/lab addresses various topics regarding interdisciplinary, cross-cultural, and multimedia practices, including performance practices, collaborative art-making, improvisation and listening, music and video performance software, networked performance, distribution, and online broadcasting. Each Interdisciplinary Arts Production Lab series involves the creation and development of special project and artworks that are presented either at the end of the term or at the conclusion of the academic year. Students cannot receive credit for this course and MUSC 150Z

DANM 254I - Empirical Approaches to Art Information (5)

Reading and practice in empirical methods, as applied to the study of music, visual art, multimedia production, and performance arts. Topics include semiotics, critiques of empiricism, cultural determinants and contingents of perception, the psychophysics of information, sensory perception (visual and auditory), memory, pattern recognition, and awareness. Students apply existing knowledge in the cognitive sciences to a developing creative project, or develop and conduct new experiments.

Prerequisite: Enrollment is restricted to graduate students.

DANM 280 - Seminar in Digital Arts and New Media (5)

Weekly seminar covering topics of current research in digital arts and new media. Focuses on student presentations and seminar participation.

Prerequisite: Enrollment is restricted to graduate students.

DANM 281 - Special Topics in Digital Arts and New Media (5)

This hybrid theory/practice course examines the social implications of emerging technologies and cultural practices, with a focus on how artists and other producers engage with them in a critical manner that reveals their inner logics and/or deploys them for alternative purposes.

Prerequisite: Enrollment is restricted to graduate students; juniors and seniors may enroll by permission of the instructor.

DANM 297 - Independent Study (5)

Independent digital arts and new media research project under the guidance of a digital arts and new media faculty member or other faculty with approval of adviser. Project includes readings, research, and a written report. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students. Maximum 10 credits.

DANM 297G - Independent Study (3)

Independent digital arts and new media research project under the guidance of a digital arts and new media faculty member or other faculty with approval of adviser. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students. May be repeated for a maximum 6 credits.

DANM 299 - Thesis Research (5)

Students carry out a master's of fine arts thesis in digital arts and new media research, under the guidance of a thesis committee. The thesis will be an arts project with digital documentation accompanied by a written paper discussing the student's preparatory research as well as the theoretical significance of the project. Enrollment is restricted to graduate students. Maximum 10 credits.

EART - EARTH SCIENCES

To view planned offerings for the current academic year, please visit this page.

Lower-Division

EART 1 - Oceanography (5)

An introduction to the physical environment of the ocean. Origin and evolution of ocean basins; sea-floor morphology; origin, distribution, historical record, and economic significance of marine sediments; ocean currents, waves, tides, and changing sea level; beaches, shorelines, and coastal processes; marine resources, pollution, and human impacts on the oceans. Students may also enroll in and receive credit for OCEA 1.

EART 2 - Earth Catastrophes (5)

The role of catastrophic processes in shaping Earth and the environment in which we live. The physical processes causing earthquakes, volcanic eruptions, tsunamis, floods, windstorms, landslides, and meteorite impacts will be described, along with the role played by these rapid processes in the geological and biological evolution of the planet. Interdisciplinary approaches to understanding these phenomena will be discussed. The entire time scale from formation of the universe to the present Earth system will be considered.

EART 3 - Geology of National Parks (5)

Geologic concepts and processes responsible for shaping our national parks including mountain building, volcanic and

earthquake activity, sedimentation, weathering, erosion, and glaciation. An understanding of how geology impacts our lives is emphasized. Appropriate for both science and non-science majors who wish to enhance their knowledge, enjoyment, and appreciation of our national parks.

EART 5 - California Geology (5)

An introduction to physical geology emphasizing the minerals, rocks, volcanoes, mountains, faults, and earthquakes of California. In-class field trips to study the caves, rocks, and landforms of the campus and the Monterey Bay area. Discussion-1 hour. Concurrent enrollment in EART 5L is required for majors and minors.

EART 5L - California Geology Laboratory (1)

Laboratory sequence illustrating topics covered in course 5 with particular emphasis on rock and mineral identification and map interpretation. Field trip. Laboratory three hours.

EART 7 - The History of Life (5)

An examination of the major events in the history of life, from the origin of life approximately four billion years ago, to the wave of extinctions that has decimated plants and animals around the globe over the past 30,000 years.

EART 8 - Planetary Discovery (5)

A sweeping tour of planets, satellites, and small bodies in and out of the solar system. Focuses on major scientific results from telescopes and spacecraft missions. Topics include planetary system architecture, planetary atmosphere, surface and interior, planetary formation and evolution, astrobiology, extra-solar planets. Open to all students.

EART 10 - How the Earth Works (5)

Introduction to the scientific study of Earth, the materials composing it, and the processes shaping it. Topics include minerals and rocks, Earth's internal structure, plate tectonics, earthquakes and volcanoes, oceans and the atmosphere, the formation of landscapes and global change. A one-day, optional field trip is included. Concurrent enrollment in EART 10L is required for majors and minors. (Formerly Geologic Principles.)

EART 10L - Geologic Principles Laboratory (1)

Laboratory sequence illustrating topics covered in course 10, with particular emphasis on rock and mineral identification and map interpretation. Laboratory 3 hours. In-lab field trips.

EART 11 - Earthquakes (5)

Causes and effects of earthquakes. How do we measure, mitigate, and try to predict earthquakes? Plate motion, frictional faulting, earthquake triggering, wave propagation, earthquake damage, related hazards, and other social effects. Hazard reduction through earthquake forecasting and earthquake-resistant design. Class includes one full day weekend field trip to local faults. Advanced algebra and high school geometry recommended.

EART 12 - Introduction to Weather and Climate (5)

Many meteorological phenomena are familiar to us: clouds, fog, rain, snow, wind, lightning, and severe storms. Climate is the sum of weather over long periods and is changing (e.g., greenhouse warming, ozone depletion, urban smog) due to mankind's activities. Conceptual understanding of how and why the present-day atmosphere behaves as it does and how this may change in the future is the primary goal of this course.

EART 15 - Science and Colonialism (5)

Critical examination of the relationship between colonialism and science from the 19th century to today. Reexamines stories on the history of science through a critical feminist and postcolonial framework. In particular, students focus on the role of science in creating ideas of racial categories and hierarchies; ideas that were used to justify colonialist and imperialist endeavors. Ultimately, course turns to decolonizing methods in science, exploring modes of resistance to dominant scientific narratives. (Formerly Science as a Colonial Practice.)

EART 20 - Environmental Geology (5)

Introduction to aspects of geology which affect and are affected by humans. Addresses a broad range of topics including resource management, geologic hazards, air and water issues, population and land use, energy costs and effectiveness, and global change, all from a unique geological/environmental perspective. Lectures include strategies for mitigating these issues. Includes a one-day field trip. Concurrent enrollment in 20L required for majors and minors.

EART 20L - Environmental Geology Laboratory (1)

Laboratory sequence illustrating topics covered in course 20, with emphasis on rock and mineral identification, geologic hazard assessment, geologic resource management, and land use planning. In-lab field trip. Laboratory 3 hours.

EART 30 - Water in the Environment (5)

Broadly explores how components of the water cycle (precipitation, evapotranspiration, streamflow, groundwater) influence the structure of different environments as well as the communities, cultures, and people within these environments.

EART 32 - The Science of Cooking (5)

Investigates principles of physics and chemistry as they apply to cooking. Students cook different dishes weekly to both illustrate these principles and to understand how ingredients, technique, and science intersect to make the food that is eaten all around the world. By the end of the course, students will have made recipes that represent a diversity of global cooking traditions. Access to a kitchen and basic cooking equipment is required, and rudimentary cooking skills and kitchen safety knowledge are assumed.

EART 66 - Natural History of Dinosaurs (5)

Explores the origin, evolution, and extinction of dinosaurs with emphasis on paleobiology and paleoecology. Covers fundamental paleontological and evolutionary principles, dinosaur anatomy and behavior, the hot-blooded/cold-blooded debate, dinosaur-bird relationships, diversity, and exploits of the great dinosaur hunters. One and a half hour of discussion each week. (Formerly EART 65.)

EART 96 - Earth Sciences Orientation (2)

Practical, evidence-based strategies for maximizing learning, developing a sense of belonging, and building your identity in Earth and planetary sciences studies. This course can be taken for Pass/No Pass grading only. (Formerly Academic Success Skills.)

Prerequisite: Enrollment is restricted to first-year proposed Earth sciences majors.

EART 98 - Earth Sciences Internship (5)

A supervised learning experience involving practical application of lower division Earth sciences knowledge while working with approved companies, governmental agencies, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work, to be evaluated both by the sponsoring agency and the faculty supervisor. Consult sponsoring agency for enrollment criteria; after instruction on resume preparation and interview skills, student must interview and be selected for internship by approved sponsoring organizations.

EART 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

EART 100 - Vertebrate Paleontology (5)

Introduction to vertebrate history, with an emphasis on vertebrate relationships and the co-evolution of organisms and environments. Specific topics include vertebrate origins, systematics and classification, adaptive revolutions, mass extinctions, and the rise and fall of dinosaurs.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and EART 5 or EART 10 or EART 20 or BIOE 20C, or ANTH 1. Concurrent enrollment in EART 100L is required.

EART 100L - Vertebrate Paleontology Laboratory (2)

Comparative anatomy and functional morphology of vertebrates, and preservation of vertebrate hard parts, using modern and fossil specimens. Laboratory three hours and one 1-day field trip.

Prerequisite: Concurrent enrollment in EART 100 is required.

EART 101 - Invertebrate Paleobiology (5)

An introduction to paleobiology; the use of fossil evidence to pose and solve evolutionary and geologic questions.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and EART 5 or EART 10 or EART 20 or BIOE 20C or ANTH 1. Concurrent enrollment in EART 101L is required.

EART 101L - Invertebrate Paleobiology Laboratory (1)

Systematics, ecology, and evolutionary history of the major groups of fossil-forming animals. Laboratory 3 hours and one 1-day field trip.

Prerequisite: Concurrent enrollment in EART 101 is required.

EART 102 - Marine Geology (5)

Geology of the marine environment. Topics include controls on the types, origin, and distribution of marine sediments; geology of oceanic crust; evolution of continental margins and plate boundaries; introduction to paleoceanography. Discussion: 1 hour. Students cannot receive credit for this course and OCEA 280.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements,and EART 5 or EART 10 or EART 20 or BIOE 20C.

EART 104 - Geologic Hazards (5)

The recognition, evaluation, and mitigation of geologic hazards: earthquakes and faulting, tsunamis, volcanism, landslides and mass movements, and flooding.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and EART 10 and EART 10L; or EART 5 and EART 5L; or EART 20 and EART 20L.

EART 105 - Coasts and Beaches (5)

An investigation of the evolution, morphology, and processes in the coastal zone including the terrestrial (marine terraces, dunes, estuaries, sea cliffs) and marine (beaches, continental shelves, sea level changes, shoreline erosion and protection, waves, tides) components and their interaction. Laboratory: 3 hours. (Formerly EART 105, Coastal Geology.)

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20.

EART 106 - Coasts in Crisis (5)

Comprehensive assessment of the impacts that the human population is having on the coastal zone globally and the diverse ways in which geologic processes and coastal hazards impact human settlement and development in the coastal zone.

EART 107 - Remote Sensing of the Environment (5)

Introduction to geographic information systems (GIS) and remote sensing (RS) as valuable tools in the study of geology. Covers application of GIS/RS to study of surface processes, including landslides, hydrologic basins, coastal erosion, modern floods, volcanic activity and surface deformation.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20.

EART 109 - Elements of Field Geology (5)

Basic tools and techniques used in geologic fieldwork. Preparation, analysis, and interpretation of geologic maps. Nine to 10 days of weekend field trips required, including a six-day geologic mapping exercise. Laboratory: 3 hours. Recommended for courses EART 120, EART 130, EART 150, and required for EART188A-EART 188B. May not be taken concurrently with EART 120, EART 150, or EART 188.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, and EART 5 or EART 10 or EART 20; and EART 5L or EART 10L or EART 20L; or by permission of instructor. Concurrent enrollment in EART 109L is required. Enrollment is restricted to majors and minors in Earth and planetary sciences and the combined majors with anthropology and environmental studies.

EART 109L - Field Geology Laboratory (2)

Laboratory exercises essential to the successful completion of fieldwork required in course 109. Topics include topographic maps, Brunton compass, rock identification and description, geologic map analysis, structure section construction, and landslide recognition.

Prerequisite: Concurrent enrollment in EART 109 is required. Enrollment is restricted to Earth sciences majors and minors and the combined majors with anthropology and environmental studies or by permission of instructor.

EART 110A - Evolution of the Earth (7)

Investigation of the processes and mechanisms that have produced the present Earth system, with an emphasis on the temporal evolution of the earth from the Archean to the present. Specific topics covered include cyclicity in Earth processes and the evolution of, and interplay between the planet's crust, atmosphere, hydrosphere, and biosphere.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20, and EART 5L or EART 10L or EART 20L, and MATH 11A or MATH 19A or AM 15A.

EART 110B - Earth as a Chemical System (5)

The chemical properties of Earth materials and the chemical processes by which the planet has evolved to its present state. Specific topics covered include properties of minerals; the genesis of igneous, metamorphic, and sedimentary rocks; and the linkage between the solid Earth and the hydrosphere. Enrollment is permitted by permission code with equivalent or exceptional background, or if enrolled concurrently in CHEM 1B.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20, and EART 5L or EART 10L or EART 20L, and CHEM 1B or CHEM 3A or CHEM 4A.

EART 110C - The Dynamic Earth (5)

Physical processes occurring in the interior of the earth, at its surface and in the oceans and atmospheres including plate tectonics, structural deformation of rocks, and material and heat transport.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20, and EART 5L or EART 10L or EART 20L; and MATH 11B or MATH 19B; and PHYS 6A or PHYS 5A.

EART 110M - Earth as a Chemical System Laboratory (2)

Laboratory sequence illustrating topics covered in course 110B. Emphasizes identification of the major rock-forming minerals and common rock types; principles of basic crystallography.

Prerequisite: Prerequisite(s): concurrent enrollment in EART 110B.

EART 110N - The Dynamic Earth Laboratory (2)

Laboratory sequence illustrating topics covered in course 110C.

Prerequisite: Prerequisite(s): concurrent enrollment in EART 110C.

EART 111 - Mathematics in the Earth Sciences (5)

Series and sequences, vectors, 3D analytic geometry, partial differentiation, matrix algebra, and differential equations with applications in the Earth sciences. Topics include matrix manipulation, systems of linear equations, least-squares, Taylor series, gradients, optimization, analytic and numerical solutions to differential equations.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20, and MATH 11B or MATH 19B or AM 15B.

EART 112 - Geophysical Data Science (5)

Introduction to coding through fitting and modelling data. General linear models and spectral analysis introduced with applications to environmental and geophysical data. Introduction to MATLAB included.

Prerequisite: Prerequisite(s): MATH 21 or AM 10; plus one of the following series: MATH 19A and MATH 19B (strongly preferred); or MATH 11A and MATH 11B; or AM 15A and AM 15B.

EART 116 - Hydrology (5)

Introduces processes involving water on and near Earth's surface, including meteorology, water properties, surface flows in steams and runoff, flood analysis, ground water, water budgets, sediment transport, erosion, and water quality. Problem set and laboratory each week. Laboratory/field: 3 hours.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20; and MATH 11A or MATH 19A or AM 15A; and PHYS 6A and PHYS 6L, or PHYS 5A and PHYS 5L, or by permission of the instructor. EART 5L or EART 10L or

EART 20L and PHYS 6B and PHYS 6M are recommended. Enrollment is restricted to majors and minors in Earth sciences and the combined majors with anthropology and environmental studies, and to majors in environmental sciences.

EART 118 - Seismotectonics (5)

Earthquakes and their relationship to plate tectonics. Topics include seismological analysis of earthquake faulting, types of seismic waves, seismicity distributions, thermal and rheological structure of plates, and seismic investigation of plate dynamics.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20; and MATH 11B or MATH 19B; and PHYS 5A or PHYS 6A.

EART 119A - Introduction to Scientific Programming (5)

Introduction to programming for Earth and environmental scientists. Course assumes no prior programming experience. Develops useful Python skills for prospective scientists, rather than cover all aspects of the computer language. (Formerly EART 119.)

Prerequisite: Prerequisite(s): MATH 19A or MATH 11A or MATH 20A and EART 5 or EART 10 or EART 20.

EART 119B - Advanced Scientific Programing (5)

Advanced programming course designed to cover the basic software design workflow in the context of scientific computing, including specific topics such as using Linux, cloud computing, version control, numerical simulation, computer vision, and machine learning. Learners should bring basic Python experience (e.g., prerequisite EART119A) or significant programming experience in another language. The final project has learners collaborate on developing a scientific computing project, collaboratively implement the project with git version control and then deploy the repository for computation on the UCSC Hummingbird cluster or in the cloud. Taught in conjunction with EART 219. Students cannot receive credit for this course and EART 219.

Prerequisite: Prerequisite(s): EART119A or other programming experience by instructor permission. Enrollment is restricted to sophomores, juniors, and seniors.

EART 120 - Sedimentology and Stratigraphy (5)

Stratigraphic principles used in classifying sedimentary rocks. Fundamentals of sedimentary mechanics. Analysis and interpretation of facies and depositional systems. Introduction to seismic facies and basin analysis. Course includes three Sunday field exercises.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and EART 110A. EART 110B is recommended as preparation. May not be taken concurrently with EART 109. Corequisite: Concurrent enrollment in EART 120L is required.

EART 120L - Sedimentology and Stratigraphy Laboratory (2)

Laboratory sequence illustrating topics in course 120, including sedimentary petrology, sedimentary structures, sequence stratigraphy, and geohistory analysis.

Prerequisite: Prerequisite(s): concurrent enrollment in EART 120.

EART 121 - The Atmosphere (5)

Course focuses on understanding basic atmospheric weather and climate phenomena starting from the fundamentals of physics and chemistry. Using this approach, covers topics such as atmospheric circulation, precipitation, clouds, storms, urban and regional air quality, atmospheric aerosols, and climate and global change.

Prerequisite: Prerequisite(s): MATH 11B or MATH 19B or AM 15B; and CHEM 1A or CHEM 3B or CHEM 4B; and PHYS 5B or PHYS 6B.

EART 124 - Modeling Earth's Climate (5)

A hands-on course in climate modeling with emphasis on computer programming (Python) exercises. Topics include the physical laws governing climate, the hierarchy of model complexity, parameterizations, using models for prediction versus understanding, and application to past and future Earth climates.

Prerequisite: Prerequisite(s): MATH 11B or MATH 19B and PHYS 6B or PHYS 5B.

EART 125 - Statistics and Data Analysis in the Geosciences (5)

Project-based introduction to analytical methods, such as univariate and multivariate statistics, cluster analysis and ordination, and maximum likelihood estimation, using a conceptual approach. Introduction to analysis and programming using the R software package. Students cannot receive credit for this course and EART 225.

EART 126 - Geomechanics (5)

An integration of rock mechanics, geophysics, fluid flow, and geology to quantify stress state in the subsurface. Covers a range of topics including: basic constitutive laws for stress and strain, tectonic stress fields, the effects of fluids on rock and fault strength, natural and human-induced hydrofracture, human-induced seismicity, fault, drilling techniques for determining subsurface physical rock properties, and fault zones drilling.

Prerequisite: Prerequisite(s): PHYS 5A or PHYS 6A, and EART 110B.

EART 127 - Measuring Earth's 4.5 Billion-Year History (5)

Introduces the methodology for measuring the timing of events in Earth's past. Topics include: radiogenic and stable isotopes, chemostratigraphy and paleomagnetism. Case studies focus on reconstructing the timing of major extinction and climatic events in Earth's history. Students cannot receive credit for this course and EART 127.

Prerequisite: Prerequisite(s): EART 110B.

EART 128 - Isotopes: Fundamentals and Applications in Earth and Marine Sciences (5)

Explores the fundamentals and concepts of stable, radiogenic, and cosmogenic isotope chemistry with applications relevant to Earth, marine, and biological sciences.

Prerequisite: Prerequisite(s): EART 110B or permission of instructor.

EART 129 - Global Change (5)

Covers the science of past and future climate change. Topics include: drivers of radiative forcing; carbon cycle; climate history of Earth; climate feedbacks; detection and attribution of climate change; climate change responses, impacts, adaptation, and mitigation.

Prerequisite: Prerequisite(s): MATH 11B and CHEM 1C. Enrollment is restricted to environmental sciences majors and Earth sciences majors.

EART 130 - Igneous and Metamorphic Petrology (5)

Introduction to the relationship between tectonic environments and the genesis of rock assemblages, primarily igneous and metamorphic. Examples from California and elsewhere are used to illustrate petrogenetic processes and characteristic petrologic features of rocks from all major tectonic settings.

Prerequisite: Prerequisite(s): EART 110B. Concurrent enrollment in EART 130L is required.

EART 130L - Igneous and Metamorphic Petrology Laboratory (2)

An introduction to optical mineralogy and the petrography of igneous rocks.

Prerequisite: Prerequisite(s): EART 110B. Concurrent enrollment in EART 130 is required.

EART 131 - Sea Level Change (5)

From the origin of the oceans to the modern climate crisis, this course aims to explore sea-level change over a wide range of timescales. The course links a series of solid Earth processes, such as mantle convection, viscoelastic deformation, and plate tectonics, to the past climate record. Students investigate how these processes contribute to our understanding of past, present, and future changes in sea level and climate.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20; and MATH 11A or MATH 19A or MATH 20A; and PHYS 5A or PHYS 6A.

EART 134 - Thermochemistry of Geologic Systems (5)

Introduction to the thermodynamic and kinetic principles with a strong emphasis on applications to Earth materials. Implications for phase equilibria, geothermometry/geobarometry, element partitioning, and physical properties of minerals, magmas, and solutions.

Prerequisite: Prerequisite(s): EART 110B.

EART 140 - Geomorphology (5)

An introduction to the evolution of the Earth's landscape, with emphasis on the processes responsible. Review of climatic and tectonic forcing followed by detailed discussion of weathering, glaciers, hillslopes, wind, rivers, and coastal processes with emphasis on their geographic distribution. One single day and one three-day field trip.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and EART 110A. Concurrent enrollment in EART 140L is required.

EART 140L - Geomorphology Laboratory (2)

Laboratory sequence illustrating topics covered in course 140. These extensive laboratory exercises emphasize the quantification of the geomorphic processes and forms, and on the writing of concise summaries of the science in the form of abstracts.

Prerequisite: Prerequisite(s): Concurrent enrollment in EART 140 is required.

EART 142 - Engineering Geology for Environmental Scientists (5)

Introduction to the formation, composition, and classification of soils; the chemical interaction of soil and groundwater; and basic soil mechanics: stress-strain behavior, effective stress concept, consolidation, soil testing methods. Applications to problems including slope stability, landslides, liquefaction, subsidence, soil creep, debris flows. Laboratory: 3 hours.

Prerequisite: Prerequisite(s): EART 5 or EART 10 or EART 20; and MATH 11A or MATH 19A or AM 15A.

EART 146 - Groundwater (5)

Explores saturated and unsaturated fluid flow below Earth's surface, well hydraulics, and resource evaluation and development, flow simulation, field techniques, geochemistry, and contaminant transport and remediation. Weekly reading and problem sets, midterm and final exams, and a final paper.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and EART 5 or EART 10 or EART 20; and MATH 11A or MATH 19A or MATH 20A; and PHYS 6A and PHYS 6L or PHYS 5A and PHYS 5L (PHYS 6B and PHYS 6M recommended); and CHEM 1A or CHEM 3B or CHEM 4B, or by permission of the instructor. Enrollment is restricted to majors and minors in Earth sciences, the combined majors with anthropology and environmental studies, and the environmental sciences major. Concurrent enrollment in EART 146L is required.

EART 146L - Groundwater Laboratory (2)

A sequence of exercises that provide hands-on learning and exploration of topics covered in course EART 146, including laboratory experiments, analytical and numerical simulation,

and field methods. Two field trips: one during a normal lab time (three hours); one all-day trip on a weekend.

Prerequisite: Prerequisite(s): Concurrent enrollment in EART 146 is required.

EART 148 - Glaciology (5)

Introduction to the role of snow and ice in the dynamics of the earth surface system. Snow deposition and metamorphosis. Heat and mass balance at snow and ice surfaces. Flow of glaciers, ice sheets, and sea ice. Methods of climate reconstruction. Ice age theories.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and EART 5 or EART 10 or EART 20; and MATH 11A or MATH 19A or AM 15A.

EART 150 - Structural Geology (5)

Principles and methods of analysis of brittly and ductily deformed rocks. Includes descriptions of structures, field analysis of structures, and mechanics of deformation. Three day-long field trips on weekends.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and EART 110A or EART 110B; EART 109 recommended; concurrent enrollment in EART 150L is required.

EART 150L - Structural Geology Laboratory (2)

Structural analysis of faults, folds, and maps. Use of stereographic projections. Cross section construction and balancing from field data.

Prerequisite: Concurrent enrollment in EART 150 is required.

EART 152 - Tectonics (5)

The processes, techniques, and interpretations involved in the study of active crustal movements; constraints from plate tectonics; horizontal and vertical motions and rates; geodesy, including GPS; stress measurement; image interpretation; fault system analysis; paleoseismicity; fluid effects. Examples from the circum-Pacific. Laboratory-3 hours. Students cannot receive credit for this course and course 207. Students are billed a materials fee.

Prerequisite: Prerequisite(s): EART 10 or EART 5 or EART 20; and EART 10L or EART 5L or EART 20L; and PHYS 5A or PHYS 6A or equivalent per instructor permission.

EART 160 - Planetary Science (5)

Broad introduction to planetary science. Topics include the fundamental characteristics of solar system bodies; space exploration of these bodies; formation and evolution of surfaces, atmospheres and interiors of planets, satellites and small bodies.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and MATH 11B or MATH 19B or AM 15B; and PHYS 5A or PHYS 6A.

EART 162 - Planetary Interiors (5)

The chemical and thermal structure and evolution of silicate planet interiors. Topics include equation of state of mantle and core materials, thermal history of the mantle and core, dynamics of mantle convection, geophysical determination of interior structure. Students cannot receive credit for this course and EART 262.

Prerequisite: Prerequisite(s): EART 160 or PHYS 116A, and either MATH 22, or MATH 23A, or EART 111.

EART 163 - Planetary Surfaces (5)

Comparative study of surfaces and atmospheres of planetary bodies in solar system, focusing on comparative planetology and geophysical processes at work, including differentiation, impact cratering, tectonics, volcanism, and geomorphic evolution. Explores terrestrial planets, giant planets and their moons. Students cannot receive credit for this course and EART 263.

Prerequisite: Prerequisite(s): EART 160 or PHYS 116A.

EART 164 - Planetary Atmospheres (5)

A quantitative study of the origin, chemistry, dynamics, and observations of the atmospheres of terrestrial and gas-giant planets. Students cannot receive credit for this course and EART 264.

Prerequisite: Prerequisite(s): EART 160 or PHYS 116A.

EART 165 - History and Geochemistry of the Solar System (5)

Introduces solar system history and geochemistry. Observation methods and tools discussed include major and trace element geochemistry, geothermometry, radiogenic and stable isotopes. Solar system reconstructed through the examination of meteorites from different parent bodies. Taught in conjunction with EART 268. Students cannot receive credit for this course and EART 268.

EART 172 - Geophysical Fluid Dynamics (5)

Introduces fluid motion influenced by rotation. Topics include the Coriolis force, geostrophic flow, potential vorticity, the shallow water model, quasigeostrophic approximation, planetary waves, Ekman theory, thermal wind, models of the large-scale oceanic and atmospheric circulation, and equatorial dynamics. Taught in conjunction with EART 272. Students cannot receive credit for this course and EART 272.

Prerequisite: Prerequisite(s): PHYS 107 or AM 107; MATH 22 or MATH 23B recommended.

EART 189A - Geographic Information Systems with Applications in Earth Sciences (5)

Introduces Geographic Information Systems (GIS) for geologic mapping and interpretation. Students gain experience with satellite, air photo, and digital elevation model (DEM) interpretation, and research the geology, tectonics, paleontology, and stratigraphy for field sites in eastern California. Prerequisite(s): EART 109, EART 109L, EART 110A, and EART 110. Enrollment is restricted to Earth

sciences majors, and combined Earth sciences/environmental studies majors. Enrollment via an application.

EART 189B - Summer Field Study (5)

Students spend three weeks in this field course on advanced geologic mapping acquiring and analyzing original data and then another 11 days refining their interpretations. Emphasis is on geologic mapping, stratigraphy, structure and tectonic analysis, and petrology. Students are billed a fee of $1,000. Prerequisite(s): EART 109, EART 109L, EART 110A, EART 110L, EART 110B, EART 110M, and EART 189A and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to Earth sciences and combined Earth sciences/environmental studies majors. Enrollment via an application.

EART 190 - Earth Sciences Mentorship (1)

Faculty research activity, analytic facilities, and career counseling in three separate Earth sciences laboratories are offered with varied formats including field trips, discussions, and equipment demonstrations. Three different faculty participate in each offering.

Prerequisite: Enrollment is restricted to Earth sciences, Earth sciences/anthropology, and environmental studies/Earth sciences majors.

EART 191 - Earth Sciences Capstone Seminar (5)

In-depth exploration of a topic within the Earth sciences. Involves at least one research paper. Topics vary quarterly; consult the current course listings. (Formerly EART 191A, Climate Change Science and Policy.)

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior majors in Earth sciences and the combined major with anthropology. Enrollment is by application with selection based on appropriate background and academic performance and by consent of the instructor.

EART 191B - Planetary Capstone (5)

Examines a crosscutting topic in planetary sciences (e.g., volcanism) to satisfy the senior capstone requirement. Students are assessed on the basis of an oral presentation and a written report in which a synthetic review is present.

Prerequisite: Prerequisite(s): EART 160, and EART 111 or MATH 22. Enrollment is restricted to seniors and graduate students.

EART 191C - Practical Geophysics (5)

Hands-on practice analyzing real-life observational data including earthquake catalogs, seismograms, gravity, and GPS data. Emphasis on data collection, and access and manipulation skills. Introduction to MATLAB programming included. Prerequisite(s): EART 112 (preferred) or EART 119; and EART 110C and EART 110N, plus satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior majors in Earth sciences. Enrollment is by application with selection based on appropriate background and academic performance and by consent of the instructor. Students cannot receive credit for this course and EART 266.

Prerequisite: Prerequisite(s): EART 112 or EART 119; and EART 110C, and satisfaction of the Entry Level Writing and Composition requirements.

EART 191D - Practical Geochemistry (5)

Provides hands-on experience to geochemical instrumentation with focus on data collection. Practical labs apply sample imaging, isotopic major- and trace-element measurements to natural samples. Lab sessions are supported by instruction, geochemistry, and Earth science. Students investigate a new Earth science problem using new samples “unknowns.” Scientific literature relevant to this new topic is also explored. Prerequisite(s): EART 5 and EART 5L, or EART 10 and EART 10L, or EART 20 and EART 20L; and EART 110B and EART 110M; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is by application with selection based on appropriate background and academic performance and by consent of the instructor.

EART 194F - Education Capstone (2)

Students write a paper on a lesson plan developed after their CalTeach internship courses. This independent study is supervised by Earth and planetary sciences faculty or ocean sciences faculty, as well as a member of the CalTeach staff or Education Department.

Prerequisite: Prerequisite(s): EDUC 185C and EDUC 185L. Enrollment is restricted to Earth and planetary sciences majors with a concentration in science education.

EART 195 - Senior Thesis (5)

Students submit petition to sponsoring agency. Enrollment is restricted to seniors. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

EART 196B - Tutoring Earth Sciences in the University (5)

Students facilitate laboratory and field exercises in conjunction with faculty and teaching assistants in various Earth sciences courses. May not count toward upper-division major requirements. Approval of sponsoring agency; interview, and selection by primary instructor of specific courses required.

EART 196C - Tutoring Earth Sciences in the University (2)

Students facilitate laboratory and field exercises in conjunction with faculty and teaching assistants in various Earth sciences courses. May not count toward upper-division major requirements. Approval of sponsoring agency; interview. and selection by primary instructor of specific courses required. Enrollment restricted to Earth sciences, Earth sciences/anthropology, and environmental studies/Earth sciences majors.

EART 198 - Earth Sciences Internship (5)

A supervised learning experience involving practical application of Earth sciences through working with approved companies, governmental agencies, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work. Consult sponsoring agency for enrollment criteria. After instruction on resume preparation and interview skills, students must interview and be selected for internship by approved sponsoring organizations. Enrollment is restricted to Earth sciences, Earth sciences/anthropology, and environmental studies/Earth sciences majors.

EART 198F - Earth Sciences Internship (2)

A supervised learning experience involving practical application of Earth sciences through working with approved companies, governmental agencies, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work. May not be counted toward upper-division major requirements. Consult sponsoring agency for enrollment criteria. After instruction on resume preparation and interview skills, student must interview and be selected for internship by approved sponsoring organizations. Enrollment is restricted to Earth sciences, Earth sciences/anthropology, and environmental studies/Earth sciences majors.

EART 199 - Tutorial (5)

Introduction to research in laboratory, field, or theoretical subjects as an independent study. Students submit petition to sponsoring agency.

EART 199F - Tutorial (2)

Introduction to research in laboratory, field, or theoretical subjects as an independent study. May not be counted toward upper-division major requirements. Students submit petition to sponsoring agency.

Graduate

EART 203 - Introductory Teaching Seminar (1)

Intended for new Earth sciences graduate students. Focus on preparation, assessment, and feedback. Classroom techniques, organizational and time management strategies, practice teaching sessions specific to laboratory and/or science instruction. Required follow-up meetings to discuss practical teaching experience.

Prerequisite: Enrollment is restricted to graduate students.

EART 204 - Earth and Planetary Sciences Foundations (5)

Provides a comprehensive overview of key concepts, dominant paradigms, and research frontiers in Earth and planetary sciences in plenary talks by multiple faculty. Provides a required foundation course for all incoming students pursuing graduate degrees in Earth and planetary sciences.

Prerequisite: Enrollment is restricted to Earth sciences graduate students.

EART 206 - Great Papers in the Earth Sciences (5)

Exposure to the most important ideas in the Earth sciences through exploration of the primary literature. Seminal papers in different subdisciplines of the Earth sciences are read and analyzed to provide breadth and improve students' ability to think critically.

Prerequisite: Enrollment is restricted to Earth sciences graduate students.

EART 207 - Tectonics (5)

An overview of tectonic theory and processes for application to the Earth sciences. The course explores the primary tools of tectonic interpretation including plate kinematics, rheology, plate boundary dynamics, and the behavior of active fault systems. Taught in conjunction with EART 152. Students cannot receive credit for this course and EART 152.

Prerequisite: Prerequisite(s): graduate standing or permission of instructor.

EART 208 - Methods in Paleoclimatology (5)

Addresses methods used to reconstruct aspects of paleoclimates and paleoenvironments from the geologic record, focusing primarily on terrestrial records. Topics to be covered include dendrochronology and dendroclimatology, paleopalynology, paleobotany, ice cores, and paleosol studies. Lectures, discussions, and laboratory work.

Prerequisite: Enrollment is restricted to graduate students.

EART 219 - Advanced Scientific Programing (5)

Advanced programming course designed to cover the basic software design workflow in the context of scientific computing, including specific topics such as using Linux, cloud computing, version control, numerical simulation, computer vision, and machine learning. Learners should bring basic Python experience (e.g., prerequisite EART 119A) or significant programming experience in another language. The final project has learners collaborate on developing a scientific computing project, collaboratively implement the project with git version control and then deploy the repository for computation on the UCSC Hummingbird cluster or in the cloud. Taught in conjunction with EART 119B. Students cannot receive credit for this course and EART 119B.

Prerequisite: Enrollment is restricted to graduate students.

EART 220 - Ground Water Modeling (5)

Introduction to building and using models to solve hydrogeologic problems. Modeling methods include mainly analytical and finite-difference. Emphasis on using models rather than the details of their functioning, although some coding is required. Comfort with mathematical methods and computers expected. Course designed for graduate students, but available to qualified Earth science majors.

Prerequisite: Prerequisite(s): graduate standing or permission of instructor required. One year of calculus and courses in differential equations and basic hydrologic principles are recommended as preparation.

EART 225 - Statistics and Data Analysis in the Geosciences (5)

Using a conceptual approach, this course is a project-based introduction to analytical methods, such as univariate and multivariate statistics, cluster analysis and ordination, and maximum likelihood estimation. Introduces analysis and programming using the R software package. Students cannot receive credit for this course and EART 125.

Prerequisite: Enrollment is restricted to graduate students.

EART 227 - Measuring Earth's 4.5 Billion Year History (5)

Introduces the methodology for measuring the timing of events in Earth's past. Topics include: radiogenic and stable isotopes chemostratigraphy and paleomagentism. Case studies focus on reconstructing the timing of major extinction and climatic events in Earth's history. Students cannot receive credit for this course and EART 127.

Prerequisite: Enrollment is restricted to graduate students.

EART 229 - Isotopic Methods in Environmental Science (5)

Explores how natural variations in stable isotope ratios answer questions in ecology, paleobiology, and other environmental sciences. Format includes lectures by the instructor and student presentations on applications following literature-based research on each topic.

Prerequisite: Enrollment is restricted to graduate students.

EART 230 - Applications of Isotopes in Earth and Environmental Sciences (5)

Exploration of various applications of different isotope systems in geological, oceanographic, and environmental studies at low temperature. The use of isotopes as tracers for weathering rate, biogeochemical cycling, food-web structure, ecology, paleo-chemistry, provenance, circulation, archeology, anthropogenic and extraterrestrial inputs and more. Participants experience giving presentations, reviewing a paper, and submitting a proposal as part of the class.

EART 240 - Communicating Science (3)

Introduces inquiry-based instructional strategies for communicating a passion for science. These strategies, combined with content knowledge and enthusiasm for sharing it, equips college students to introduce science to K-8 students and teachers in local schools.

Prerequisite: Enrollment is restricted to graduate students.

EART 252 - Hydroclimatology (5)

An interdisciplinary investigation of the interaction between terrestrial systems and climate, with a focus on the cycling of water between atmosphere, land, and biosphere. Lecture topics include the global energy budget, atmospheric general circulation and climate, water balance, surface energy fluxes, watershed hydrology, modeling of terrestrial ecosystems, and climate-vegetation dynamics. Complementary discussions of the scientific literature provide perspective on how these systems affect and are affected by climate change.

Prerequisite: Enrollment is restricted to graduate students.

EART 254 - The Climate System (5)

Focuses on atmospheric and oceanic processes that are important within the Earth's climate system, especially those that operate on annual to centennial time scales. Format includes lectures by the instructors, paper readings, and discussion.

Prerequisite: Enrollment is restricted to graduate students.

EART 258 - Deep Time Paleoclimates (5)

Weekly lectures/readings/presentations focused on the key events in the long-term evolution of Earth's climate (i.e., before the Pliocene), including early Archean, faint, young-sun period; Proterozoic snowballs; Paleozoic glaciations and greenhouse events; the mid-Cretaceous oceanic anoxic events (OAEs); and Paleogene thermal maxima and glacial intervals. Considerable emphasis on evaluating the proxies of climate and mechanisms of climate change (e.g., greenhouse gasses, paleogeography).

Prerequisite: Enrollment is restricted to graduate students.

EART 262 - Planetary Interiors (5)

The chemical and thermal structure and evolution of silicate planet interiors. Topics include equation of state of mantle and core materials, thermal history of the mantle and core, dynamics of mantle convention, geophysical determination of interior structure. Students cannot receive credit for this course and EART 162.

Prerequisite: Enrollment is restricted to graduate students.

EART 263 - Planetary Surfaces (5)

Comparative study of surfaces of planetary bodies in our solar system, focusing on comparative planetology and geophysical processes at work, including differentiation; on-impact cratering; tectonics; volcanism and geomorphic evolution; and exobiology. Explores terrestrial planets, giant planets and their moons, and trans-Neptunian objects, focusing on modern exploration. Students cannot receive credit for this course and EART 163.

Prerequisite: Enrollment is restricted to graduate students.

EART 264 - Planetary Atmospheres (5)

Quantitative study of the origin, chemistry, dynamics, and observations of the atmospheres of terrestrial and gas giant planets. Students cannot receive credit for this course and EART 164.

Prerequisite: Enrollment is restricted to graduate students.

EART 265 - Order of Magnitude Estimation (5)

Practice in making rough estimates and leading-order approximations in physical and chemical processes.

Prerequisite: Enrollment is restricted to graduate students.

EART 266 - Geologic Signal Processing and Inverse Theory (5)

Theoretical and practical aspects of digital signal analysis including data sampling, spectral estimation, digital filtering, statistical estimation, correlation tools, and principle-component analysis. Emphasis on practical examples of geophysical time series. Multivariable calculus and linear algebra are required and used extensively in the course. Taught in conjunction with EART 191C. Students cannot receive credit for this course and EART 191C.

Prerequisite: Enrollment is restricted to graduate students.

EART 268 - History and Geochemistry of the Solar System (5)

Introduction of solar system history and geochemistry. Observation methods and tools discussed include major and trace element geochemistry, geothermometry, radiogenic and stable isotopes. Course reconstructs solar system history through the examination of meteorites from different parent bodies. Students cannot receive credit for this course and EART 165.

Prerequisite: Enrollment is restricted to graduate students.

EART 270 - Global Seismology (5)

Introduction to quantitative earthquake and global Earth structure seismology. Topics include basic elasticity, wave characteristics, seismic ray theory, wave reflection, surface waves, normal modes, seismic instrumentation, application of seismic waves to reveal Earth structure and resulting models, representation of earthquake sources such as explosions and faulting, earthquake rupture scaling, modern methods of modeling seismic recordings to study source complexity, and an introduction to seismotectonics. Laboratory: 3 hours.

Prerequisite: Enrollment is restricted to graduate students.

EART 271 - Current Research Topics in Deep Earth Processes (5)

Students and instructor lead discussions of recent and significant publications in geophysics and chemistry of deep Earth. Articles structured around current theme of interest are selected by participants and approved by instructor. Emphasis on defining multidisciplinary significance of each article and its relationship to fundamental processes in deep Earth, including core and mantle. Designed for graduate students but available to qualified Earth sciences majors.

EART 272 - Geophysical Fluid Dynamics (5)

Introduces fluid motion influenced by rotation. Topics include the Coriolis force, geostrophic flow, potential vorticity, the shallow water model, quasigeostrophic approximation, planetary waves, Ekman theory, thermal wind, models of the large-scale oceanic and atmospheric circulation, and equatorial dynamics. Students cannot receive credit for this course and EART 172.

Prerequisite: Enrollment is restricted to graduate students.

EART 273 - Earthquake Physics (5)

Why do earthquakes happen? Topics include friction, fracture, earthquake triggering, stress in the crust, observed source scalings, and seismicity statistics. Emphasis on observations and current research topics. (Formerly course 290J, Topics in Earthquake Physics.)

Prerequisite: Enrollment is restricted to graduate students and advanced undergraduates.

EART 274 - Crustal Deformation (5)

Advanced study of the deformation processes in the Earth's crust and upper mantle. Covers fundamental theories of stress and strain, brittle fracture, friction, ductile deformation and flow laws, earthquake processes, faults and shear zones, scaling lab-derived measurements to tectonic plate scale.

Prerequisite: Enrollment is restricted to graduate students.

EART 278A - Advanced Seismology (5)

Elastic wave propagation. Advanced topics in ray theory, WKBJ solutions in seismology, singularities and nonlinearities, surface wave theory, propagating matrices, normal modes, and inversion theory. Selected topics in time series analysis and seismic signal processing, seismic wave dispersion.

Prerequisite: Course is designed for graduate students but available to qualified Earth sciences majors. PHYS 110B and PHYS 116C are recommended as preparation. Enrollment is restricted to graduate students.

EART 280D - Short Course in Atmospheric/Climate Science (3)

Addresses specialized topics in atmospheric and/or climate science that are too narrow for a full (5-credit) format. Examples include: cloud physics; atmospheric boundary layer; aerosol physics and chemistry; atmospheric radiation; atmospheric thermodynamics.

Prerequisite: Enrollment is restricted to graduate students.

EART 290A - Hidden Curriculum (5)

Much of graduate education is focused on tangible and formal skill development surrounding research and teaching. This course focuses on the informal "hidden curriculum" in graduate school that can complement formal student learning to help individuals lead successful research careers.

Prerequisite: Enrollment is restricted to graduate students.

EART 290B - Topics in Glaciology (5)

Advanced review of the physics and chemistry of ice and snow. Mass and heat balance of ice masses. Motion of glaciers and ice sheets. Subglacial and englacial hydrology. Thermodynamics of ice masses and the linkage to climate.

Prerequisite: Enrollment is restricted to graduate students.

EART 290C - Topics in Geophysics (5)

Different problems and approaches will be stressed from year to year such as geotectonics, paleomagnetism, or properties and processes in the mantle and core.

Prerequisite: Enrollment is restricted to graduate students; qualified Earth sciences majors by permission of instructor.

EART 290D - Petrology and Plate Tectonics (5)

Selected topics illustrating relationships between igneous and metamorphic rocks and plate tectonics are explored in detail. Designed for graduate students but available to qualified Earth sciences majors.

EART 290E - Topics in Planetary Science (5)

We examine one well-defined topic in planetary science, beginning with a summary of current knowledge and concluding with the latest research literature. Topics will vary from year to year and may include planetary collisions, terrestrial planets, origin of planetary systems, small bodies, the New Mars, and satellites of Jupiter. Achievement will be evaluated based on class participation, exams, and a research project.

Prerequisite: Open to undergraduate majors with permission of instructor. Enrollment is restricted to graduate students.

EART 290F - Topics in Coastal Processes (2)

Instructor and students lead discussions and make presentations on current research, problems, and publications in coastal processes. These topics include littoral drift, sediment transport and storage on the inner shelf, shoreline erosion/change and its documentation, and related issues.

Prerequisite: Enrollment is restricted to graduate students.

EART 290G - Topics in Global Tectonics (5)

Explores different problems of special interest in global tectonics with the approach of integrating marine and terrestrial geologic and geophysical information. Course designed for graduate students but available to qualified Earth sciences majors.

EART 290H - Topics in Hydrogeology (5)

Selected topics in groundwater, hydrothermal systems, and related subjects. Discussion of theoretical models, field and laboratory approaches, and recent research. Topics vary from year to year. Course designed for graduate students but available to qualified Earth sciences majors.

EART 290I - Topics in Geomorphology (5)

Discussion of journal articles focused on a theme in contemporary geomorphology. Topics include: coupling of climate; tectonics and landscape evolution; mechanics of bedrock river channels; fundamentals of fluvial gravel transport; and inference of tectonic rates and processes from analysis of topography.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll by permission of instructor.

EART 290J - Intersections of Geodynamics and Climate (5)

Reading seminar that focuses on current research aimed at understanding interactions between solid Earth geodynamics and components of the Earth's climate system. Focuses on three main solid Earth processes: (1) mantle convection and dynamic topography; (2) glacial isostatic adjustment; and (3) tectonics processes. Considers the ways that Earth's landscape, atmosphere, and cryosphere respond to these geodynamic processes and vice versa. Possible topics include past sea-level and ice sheet inferences, passive margin earthquakes and submarine landslides, river and landscape evolution, and marine-terminating glacier dynamics.

EART 290K - Paleontology Seminar (3)

Seminar discussion based on current readings in the literature around some topic in the history and evolution of life.

Prerequisite: Course designed for graduate students but available to qualified upper-division science students.

EART 290L - Topics in Climate Change (5)

Explores current issues and recent developments in the field of past, present, and future climate change. Topic is different each year, but focuses on the interaction between different components of Earth's environment and the effect of that interaction on climate change. Designed for graduate students but open to qualified undergraduates.

Prerequisite: Enrollment is restricted to graduate students.

EART 290M - Topics in Atmospheric Science (5)

Selected topics encompassing atmospheric physics and chemistry. Topics vary from year to year. Sample topics include: atmospheric physics, atmospheric chemistry, boundary layer meteorology, aerosol science, and atmospheric thermodynamics.

Prerequisite: Designed for graduate students, but qualified undergraduates may enroll with permission of instructor.

EART 290N - Topics in Mineral Physics (5)

Selected topics encompassing the physics and chemistry of Earth's interior, planetary physics, high-pressure experimental geophysics and material properties at high pressure and temperature. Topics vary from year to year.

Prerequisite: Enrollment is restricted to graduate students and qualified Earth sciences majors by permission of instructor.

EART 290O - Topics in Hydrology (5)

Selected topics in watershed hydrology and related subjects. Discussion journal articles focused on fundamental concepts, scientific breakthroughs, and innovative methods. Topics include: water storage, runoff generation and thresholds, hydrologic connectivity, and ecohydrology.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of the instructor.

EART 290P - Interdisciplinary Topics in the Earth Sciences (5)

An understanding of the chemical and physical properties and processes in the earth is sought by integrating information from several subdisciplines in the Earth sciences. Topics vary from year to year, focusing on areas of active research. Course designed for graduate student but available to qualified Earth sciences majors.

Prerequisite: Prerequisite(s): graduate standing or permission of instructor. Course is designed for graduate student but available to qualified Earth sciences majors.

EART 290Q - Topics in Outer Solar System (5)

Exploration of the planets and satellites beyond the asteroid belt, with an emphasis on the underlying physical processes at work. Course includes lectures, computer practicals, and student presentations.

Prerequisite: Enrollment is restricted to graduate students.

EART 290R - Topics in the Chemistry and Physics of the Earth (5)

Explores problems and current research developments in the application of physics and chemistry to planetary interiors. Topics differ from year to year and include, but are not limited to, research related to the accretion, differentiation, evolution, and structure of the terrestrial planets. Course is designed for graduate students but available to qualified Earth sciences majors.

EART 290T - Current Research Topics in Paleoceanography and Paleoclimatology (5)

Students and instructor lead discussions of recent and significant problems in paleoceanography and paleoclimatology. Articles structured around current themes of interest are selected by the instructor. Emphasis on major climatic transitions or events which noticeably influenced evolution of biota. Course is designed for graduate students but available to qualified Earth sciences majors.

EART 290U - Topics in Thermochronology (5)

Surveys the use of thermochronometry to quantify the rates of tectonic processes. Topics include heat conduction and diffusion; radioactive decay; analytical methods; and modeling of thermochronologic data. Seminars review seminal papers from the literature.

Prerequisite: Enrollment is restricted to graduate students.

EART 290X - Topics in Modeling Planetary Interiors (5)

Introduces computer modeling of thermal convection in planetary interiors. Students learn to write and run a basic computer code using spectral and finite-difference methods, then are shown how to improve the numerical method and physics. Basic computer programming experience is required (for example, in Fortran, C, IDL, or MATLAB).

Prerequisite: Course is designed for and enrollment restricted to graduate students, but available to qualified science majors.

EART 292 - Seminar (0)

Weekly seminar attended by faculty, graduate students, and upper-division undergraduate students.

EART 293 - Graduate Research Seminar (1)

Weekly seminar series covering a broad spectrum of topics in the Earth sciences. Graduate students give 15- to 20-minute oral presentations on current or anticipated research.

Prerequisite: Enrollment is restricted to graduate students.

EART 296 - Special Student Seminar (5)

Permission of instructor required.

EART 297A - Independent Study (5)

Permission of instructor required.

EART 297B - Independent Study (10)

Permission of instructor required.

EART 297C - Independent Study (15)

Permission of instructor required.

EART 298 - Earth Sciences Internship (5)

A supervised learning experience involving practical, graduate-level application of Earth sciences through working with approved companies, governmental agencies, or research organizations. Students consult weekly with supervising faculty and prepare a final report of their work. Consult sponsoring agency for enrollment criteria. After instruction on resume preparation and interview skills, students must interview and be selected for internship by approved sponsoring organizations.

EART 299A - Thesis Research (5)

Permission of instructor required.

EART 299B - Thesis Research (10)

Permission of instructor required.

EART 299C - Thesis Research (15)

Permission of instructor required.

ECE - ELECTRICAL AND COMPUTER ENGINEERING

To view planned offerings for the current academic year, please visit this page.

Lower-Division

ECE 1 - Hands-On Computer Engineering (2)

Hands-on introduction to computer engineering practice and research, including computer hardware, robotics, and embedded systems. Encourages interaction with UCSC's School of Engineering community. Designed for students without previous background in computer engineering. (Formerly Computer Engineering 1.)

Prerequisite: Enrollment restricted to first-year students and sophomores.

ECE 8 - Introduction to Robotics, Automation and Intelligent Control (5)

Fundamental concepts in robotics, dynamical systems, modeling, analysis and robustness to uncertainty. Control as it occurs naturally, and the design of control laws to engineer desirable motion or dynamic response. The course also introduces students to MATLAB. (Formerly Robot Automation: Intelligence through Feedback Control.)

Prerequisite: Prerequisite(s): CSE 20 or CSE 5J or CSE 10 or ASTR 19 or ASTR 119 or BME 160 or by permission of the instructor. Prerequisites may be waived if students have passed the CSE 20 test-out exam.

ECE 9 - Statics and Mechanics of Materials (5)

Theory and application of statics and mechanics of materials for mechanical and biomechanical systems. Covers statics of particles; equilibrium of rigid bodies; free-body diagrams; analysis of structure; friction; concepts of stress and strain; axial loading; torsion and bending; and failure criteria. (Formerly Introduction to Statics, Dynamics, and Biomechanics.)

Prerequisite: Prerequisite(s): MATH 19A or MATH 20A; and PHYS 5A and PHYS 5L or PHYS 6A and PHYS 6L; and AM 10 or MATH 21.

ECE 10 - Fundamentals of Robot Kinematics and Dynamics (5)

Covers the theory and application of mathematical models to analyze the kinematics and dynamics of robot mechanisms or their components using vector algebra, differential equations, and computer simulations; also covers robot vehicle kinematics, robot arm kinematics, and robot dynamics with computational examples and problems. Some basic programming skills and familiarity with MATLAB are expected. (Formerly CMPE 10.)

Prerequisite: Prerequisite(s): ECE 9, and AM 20 or MATH 24.

ECE 11 - 3D Prototyping (5)

Introduces the basics of rapid prototyping for robotics design from limiting stresses to optimal design. Discusses fast prototyping methods, advantages, and disadvantages. Introduces CAD, CAD packages, 3D printing with different materials, and 3D scanning. (Formerly CMPE 11.)

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ECE 9.

ECE 13 - Computer Systems and C Programming (7)

Computer Systems and C Programming is intended to bring students up to speed on programming small and large programs in C. Originally written in 1978, C remains the most popular programming language, and the most used one in terms of numbers of computer programs written in it. The course approaches C from an embedded paradigm, and all programming assignments are on a 32-bit embedded micro, the Microchip PIC32. Students learn how to program in C, how to write modular code, and some of the tips and tricks when dealing with an embedded micro. This is a programming class and students will write lots of code. Expect to spend at least 15-20 hours outside of class playing with the code to get things to work. (Formerly CSE 13E Embedded Systems and C Programming; Students cannot receive credit for ECE 13, CSE 13S, and CSE 13E.)

Prerequisite: Prerequisite(s): CSE 12. CSE 20 or CSE 30 (Python programming background) is recommended but not required. Programming experience in any other language is also acceptable.

ECE 30 - Engineering Principles of Electronics (5)

Suitable for sophomores pursuing computer science and engineering careers. Aims at deriving basic engineering principles directly from examples relevant to computing and electronics: 1) Newton's Laws and related fundamental mechanics; 2) basic thermodynamics and heat/energy transfer; 3) key electromagnetic principles, including Coulomb's Law, Gauss's Law, and basic circuit analysis using Kirchoff's Laws/Rules; and 4) Ray optics for fiber optic communications and camera electronics.

Prerequisite: Prerequisite(s): MATH 19B or MATH 20B. Enrollment is restricted to computer engineering, computer science: computer game design, computer science, network and digital technology, and technology and information management majors and proposed majors; and to computer engineering, computer science, and technology and information management minors.

ECE 80B -
Engineering Innovations for Medicine and Natural Sciences (5)

Introduces to a lay audience engineering innovations that have had an impact in medicine and biology. Course is designed for non-engineering majors, or pre-med students, as well as pre-engineering to provide a broad understanding of how technology has improved and keeps on improving healthcare.

ECE 80G - Creating and Financing a Sustainable Startup in the Global Economy (5)

Introduces students and prospective entrepreneurs to the ingredients required to successfully create and finance a sustainability-minded startup or nonprofit in the global economy. Emphasis is placed on ethical business practice, tools for understanding markets and supply chains, and

building value for all stakeholders, including communities and the environment.

ECE 80H - Bending the Curve: Solutions to Climate Change (5)

Students examine the interconnectedness of natural and social systems as they evaluate, interpret, and debate evidence and explanations of climate change. Includes interviewing family members, friends, and professionals for a variety of divergent views on the climate change debate. Class sessions are devoted to student discussion of the course materials, including readings, take-home assignments and pre-recorded videos. The class culminates with a written proposal and group presentations of ideas for solutions, with the guidance of the instructor, addressing one of the "grand challenges" presented in the course with the goal of empowering students to emerge as critical thinkers and actors equipped with a solution-based mindset.

ECE 80E - Engineering Ethics (5)

Ethical theories, analysis, and their application to issues in the practice of engineering, such as safety and liability, professional responsibility to clients and employers, codes of ethics, legal obligations, environmental issues, and social issues. Emphasis on developing independent ethical analysis through the use of case studies. (Formerly CMPE 80E.)

ECE 80J - Renewable Energy Sources, Storage, and Smart Grids (5)

Introduces energy sources and storage with special emphasis on renewables as part of smart grids. Fundamental energy-conversion limits based on physics and existing source properties are studied. Various sources, such as solar, wind, hydropower, geothermal, tidal energy, and fuel cells are described. Electric vehicles, sustainable microgrids, and the integration to smart grids are studied. Finally, smart meters, demand response, the energy market, and policy are covered. Students cannot receive credit for this course and course 81J. (Formerly EE 80J.)

ECE 80S - Sustainability Engineering and Practice (5)

Topical introduction to principles and practices of sustainability engineering and ecological design with emphasis on implementation in society. Provides an understanding of basic scientific, engineering, and social principles in the design, deployment, and operation of resource-based human systems, and how they can be maintained for this and future generations. No specialized background in engineering, science, or social sciences is assumed. (Formerly EE 80S.)

ECE 80T - Modern Electronic Technology and How It Works (5)

Basic knowledge of electricity and how things work, how technology evolves, its impact on society and history, and basic technical literacy for the non-specialist. Broad overview of professional aspects of engineering and introduction and overview of basic systems and components. Topics include electrical power, radio, television, radar, computers, robots, telecommunications, and the Internet. (Formerly EE 80T.)

ECE 94 - Group Tutorial (5)

A means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

ECE 94F - Group Tutorial (2)

A means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

ECE 99 - Tutorial (5)

Students submit petition to sponsoring agency.

ECE 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

ECE 101 - Introduction to Electronic Circuits (5)

Introduction to the physical basis and mathematical models of electrical components and circuits. Topics include circuit theorems (Thevenin and Norton Equivalents, Superposition), constant and sinusoidal inputs, natural and forced response of linear circuits. Introduction to circuit/network design, maximum power transfer, analog filters, and circuit analysis using Matlab. Topics in elementary electronics including amplifiers and feedback. (Formerly EE 101.)

Prerequisite: Prerequisite(s): PHYS 5C and PHYS 5N; or PHYS 6C and PHYS 6N; and MATH 24 or PHYS 116A, or previous or concurrent enrollment in AM 20. Concurrent enrollment in ECE 101L is required.

ECE 101L - Introduction to Electronic Circuits Laboratory (2)

Illustrates topics covered in ECE 101. One two-hour laboratory session per week.

Prerequisite: Prerequisite(s): PHYS 5C and PHYS 5N or PHYS 6C and PHYS 6N; and MATH 24 or PHYS 116A, or previous or concurrent enrollment in AM 20. Concurrent enrollment in ECE 101 is required.

ECE 102 - Properties of Materials (5)

The fundamental electrical, optical, and magnetic properties of materials, with emphasis on metals and semiconductors: chemical bonds, crystal structures, elementary quantum mechanics, energy bands. Electrical and thermal conduction. Optical and magnetic properties. (Formerly EE 145.)

Prerequisite: Prerequisite(s): PHYS 5A and PHYS 5L, PHYS 5B and PHYS 5M, and PHYS 5C and PHYS 5N; or PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M, and PHYS 6C and PHYS 6N. Concurrent enrollment in ECE 102L is required.

ECE 102L - Properties of Materials Laboratory (2)

Laboratory sequence illustrating topics covered in course 145. One two-hour laboratory per week.

Prerequisite: Prerequisite(s): PHYS 5A and PHYS 5L, PHYS 5B and PHYS 5M, and PHYS 5C and PHYS 5N; or PHYS 6A and PHYS 6L, PHYS 6B and PHYS 6M, and PHYS 6C and PHYS 6N. Concurrent enrollment in ECE 102 is required.

ECE 103 - Signals and Systems (5)

Course covers the following topics: characterization and analysis of continuous-time signals and linear systems, time domain analysis using convolution, frequency domain analysis using the Fourier series and the Fourier transform, the Laplace transform, transfer functions and block diagrams, continuous-time filters, sampling of continuous time signals, examples of applications to communications and control systems. (Formerly EE 103.)

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L; and AM 20 or MATH 24.

ECE 103L - Signals and Systems Laboratory (2)

Use and operation of spectrum analyzers; advanced signal analysis using oscilloscopes; measuring impulse response, step response, frequency response, and computer analysis of real signals. MATLAB programming is taught and used as a tool for signal analysis. Students are billed a materials fee. (Formerly EE 103L.)

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L and AM 20 or MATH 24. Concurrent enrollment in ECE 103 is required.

ECE 104 - Bioelectronics (5)

Covers selected case studies in interfacing electronic devices with biological systems. from Galvani to neuronal stimulation and electroceuticals. These studies include: the squid giant axon, the pace maker, deep brain stimulation, organic bioelectronics, bionanoelectronics and optogenetics, bioenergetics, and bioprotonics electroceuticals. Students are assessed through weekly student papers on case studies and through a final presentation. (Formerly EE 104.)

Prerequisite: Enrollment is restricted to juniors, seniors, and graduate students.

ECE 110 - Brain-Inspired Machine Learning (5)

Studies how the computational principles of the brain can be applied to build efficient machine learning models in software and hardware. Topics include the neuroscience of deep learning, spiking neural networks, hardware accelerators, and memory circuit design. Taught in conjunction with ECE 210. Students cannot receive credit for this course and ECE 210.

Prerequisite: Prerequisite(s): ECE 101.

ECE 115 - Introduction to Solid Mechanics (5)

Introduces the solid mechanics of materials. Topics include: stress and strain, torsion, bending of beams, shearing stresses in beams, compound stresses, principal stresses, deflections of beams, and statically indeterminate members and columns. (Formerly CMPE 115.)

Prerequisite: Prerequisite(s): ECE 9; and MATH 19B or MATH 20B; and AM 10 or MATH 21.

ECE 118 - Introduction to Mechatronics (10)

Technologies involved in mechatronics (intelligent electro-mechanical systems) and techniques necessary to integrate these technologies into mechatronic systems. Topics include electronics (A/D, D/A converters, opamps, filters, power devices), software program design (event-driven programming, state machine-based design), DC and stepper motors, basic sensing, and basic mechanical design (machine elements and mechanical CAD). Combines lab component of structured assignments with a large and open-ended team project. Students who enrolled in this class will learn how to solve engineering problems using the C Programming Language. Cannot receive credit for this course and ECE 218.

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L and CSE 100 and CSE 100L; and ECE 13 or CSE 13E. ECE 121 and ECE 167 are highly recommended (but not required).

ECE 121 - Microcontroller System Design (7)

Focus is on the design and use of microcontroller-based embedded systems, specifically addressing issues of low-level functionality, direct manipulation of input/output using various specialized peripheral sets, and multiple communications protocols. Covers timers, Input Capture, Output Compare, ADC, PWM, interrupts, bus and memory organization, DMA, SPI, I2C, device driver programming, serial packet communication, and clocking. Students enrolled in this class learn how to use the C programming language to solve engineering problems.

Prerequisite: Prerequisite(s): CSE 12; and ECE 13 or CSE 13E. Concurrent enrollment in ECE 101 and ECE 101L is required.

ECE 122A - Collaborative Sustainability Project Design (5)

This course is the first quarter of a three quarter series of courses that together comprise the IDEASS Program (Impact Designs: Engineering and Sustainability through Student Service), which provides students with opportunities to plan, implement, and evaluate interdisciplinary sustainable design projects in the built environment for the Monterey Bay Region. In fall quarter students are introduced to project topics and background information. In collaboration with an outside mentor project teams design, revise, and complete a project plan including project goals and deliverables, timeline of key activities and major milestones, stakeholder map, evaluation plan, and budget (as applicable). Students apply online; selected applicants complete in-person interviews. (Formerly EE 122A.)

ECE 122B - Collaborative Sustainability Project Implementation (5)

The second of a three-quarter sequence that together comprise the IDEASS Program (Impact Designs: Engineering and

Sustainability through Student Service) which provides opportunities for students to plan, implement, and evaluate interdisciplinary sustainable-design projects in the built environment for the Monterey Bay Region. In winter quarter, project teams work collaboratively to implement the project plans approved during the fall quarter. Students participate in a weekly seminary series that includes guest lectures and field trips as well as workshops in project management, public speaking, writing skills, and other professional development. Prerequisite(s): ECE 122A. Students apply online; selected applicants complete in-person interviews. Enrollment is restricted to juniors and seniors. (Formerly EE 122B.)

ECE 122C - Collaborative Sustainability Project Implementation (5)

The third of a three-quarter sequence that together comprise the IDEASS Program (Impact Designs: Engineering and Sustainability through Student Service) which provides opportunities for students to plan, implement, and evaluate interdisciplinary sustainable-design projects in the built environment for the Monterey Bay Region. In spring quarter, project teams work collaboratively to continue implementation of project plans approved during the fall quarter, then evaluate projects impacts. Students participate in a weekly seminary series that includes guest lectures and field trips as well as workshops in project management, public speaking, writing skills, and other professional development. Students also work in the community on educational public outreach regarding project impacts. Prerequisite(s): ECE 122A. Students apply online; selected applicants complete in-person interviews. Enrollment is restricted to juniors and seniors. (Formerly EE 122C.)

ECE 129A - Capstone Project I (5)

First of a three-course sequence in which students apply knowledge and skills gained in elective track to complete a major design project. In this first course, students complete the specification and planning for a substantial project. Topics covered: engineering design cycle, engineering teams, and professional practices. (Formerly EE 129A.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and CSE 100; enrollment restricted to senior Electrical Engineering and Robotics Engineering majors. Electrical Engineering majors must complete ECE 171; and ECE 157 or ECE 173 or ECE 118 or ECE 121. Robotics Engineering majors must complete ECE 118 and ECE 121.

ECE 129B - Capstone Project II (5)

Second of a three-course sequence in which students apply knowledge and skills gained in elective track to complete a major design project. In this second course, students complete the training, research, and procurement for a substantial project and a preliminary implementation.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and ECE 129A. Enrollment is restricted to seniors.

ECE 129C - Capstone Project III (5)

Third of a three-course sequence in which students apply knowledge and skills gained in this elective track to complete a major design project. In this third course, students work in teams to complete the project specified and advance on the results of the work in the first two courses. A formal written report, oral presentation, and demonstration of the successful project to a review panel of engineering faculty is required.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and ECE 129B. Enrollment is restricted to seniors.

ECE 130 - Introduction to Optoelectronics and Photonics (5)

Introduction to optics, photonics and optoelectronics, fiber optic devices and communication systems: Topics include: ray optics, electromagnetic optics, resonator optics, interaction between photons and atoms, dielectric waveguides and fibers, semiconductor light sources and detectors, modulators, amplifiers, switches, and optical fiber communication systems. Taught in conjunction with course 230. Students cannot receive credit for this course and ECE 230. (Formerly EE 130.)

Prerequisite: Prerequisite(s): PHYS 5B and PHYS 5C, or PHYS 6B and PHYS 6C; concurrent enrollment in PHYS 130L.

ECE 130L - Introduction to Optoelectronics Laboratory (1)

Includes a series of projects to provide hands-on experience needed for basic concepts and laboratory techniques of optical fiber technology.

Prerequisite: Prerequisite(s): PHYS 5L, PHYS 5M, and PHYS 5N, or PHYS 6L, PHYS 6M, and PHYS 6N; concurrent enrollment in ECE 130.

ECE 135 - Electromagnetic Fields and Waves (5)

Vector analysis. Electrostatic fields. Magnetostatic fields. Time-varying fields and Maxwell's equations. Plane waves. (Formerly EE 135.)

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L or PHYS 102; and AM 20 or PHYS 116A or MATH 24. Students must concurrently enroll in ECE 135L.

ECE 135L - Electromagnetic Fields and Waves Laboratory (2)

Laboratory sequence illustrating topics in course 135. One two-hour laboratory session per week.

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L or PHYS 102; and AM 20 or PHYS 116A or MATH 24. Students must concurrently enroll in ECE 135.

ECE 136 - Engineering Electromagnetics (5)

Course will cover electromagnetic wave propagation, transmission lines, waveguides, and antennas. (Formerly EE 136.)

Prerequisite: Prerequisite(s): ECE 135 and ECE 135L. Enrollment is restricted to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor.

ECE 141 - Feedback Control Systems (5)

Analysis and design of continuous linear feedback control systems. Essential principles and advantages of feedback. Design by root locus, frequency response, and state space methods and comparisons of these techniques. Applications. (Formerly CMPE 141 and EE 153.)

Prerequisite: Prerequisite(s): ECE 103. Enrollment is restricted to School of Engineering and Division of Physical and Biological Sciences majors, or by permission of instructor.

ECE 145 - Estimation and Introduction to Control of Stochastic Processes (5)

Provides practical knowledge of Kalman filtering and introduces control theory for stochastic processes. Selected topics include: state-space modeling; discrete- and continuous-time Kalman filter; smoothing; and applications in feedback control. Students learn through hands-on experience. Students cannot receive credit for this course and course 245. Enrollment by permission of instructor. (Formerly CMPE 145.)

ECE 149 - Introduction to Cyber-physical Systems (5)

Presents the basic concepts and tools for the study of cyber-physical systems, including modeling and analysis tools for continuous-time and discrete-time systems, finite state machines, stateflow, timed and hybrid automata, concurrency, invariants, linear temporal logic, verification, and numerical simulation. Students are guided on methods for simulation and encouraged to apply them to several applications. The course is self-contained. Students are expected to have a basic background in logic circuits, programming, the mathematical modeling of dynamical systems (ECE 8 is recommended), differential equations, linear algebra, and basic calculus. Knowledge of MATLAB/Simulink is useful. Students cannot receive credit for this course and ECE 249.

Prerequisite: Prerequisite(s): CSE 100 and CSE 100L or equivalent, and ECE 13 or CSE 13E or equivalent.

ECE 151 - Communications Systems (5)

An introduction to communication systems. Analysis and design of communication systems based on radio, transmission lines, and fiber optics. Topics include fundamentals of analog and digital signal transmission in the context of baseband communications, including concepts such as modulation and demodulation techniques, multiplexing and multiple access, channel loss, distortion, bandwidth, signal-to-noise ratios and error control. Digital communication concepts include an introduction to sampling and quantization, transmission coding and error control. (Formerly EE 151.)

Prerequisite: Prerequisite(s): ECE 103, ECE 101, and ECE 101L; and CSE 107 or STAT 131 or probability theory and random variables background. Enrollment is restricted to School of Engineering and Physical and Biological Sciences majors.

ECE 152 - Introduction to Wireless Communications (5)

Introduction to the principles of wireless communications systems. Wireless propagation channels and their impact on digital communications. Modulation techniques for wireless systems and their performance. Multi-antenna systems and diversity. Multicarrier and spread spectrum. Multi-access methods: FDMA, TDMA, CDMA. The structure of cellular systems. Students cannot receive credit for this course and course 252. (Formerly EE 152.)

Prerequisite: Prerequisite(s): CSE 107 and ECE 151, or by consent of instructor. Enrollment is restricted to juniors and seniors.

ECE 153 - Digital Signal Processing (5)

Introduction to the principles of signal processing, including discrete-time signals and systems, the z-transform, sampling of continuous-time signals, transform analysis of linear time-invariant systems, structures for discrete-time systems, the discrete Fourier transform, computation of the discrete Fourier transform, and filter design techniques. Taught in conjunction with Electrical Engineering 250. Students cannot receive credit for this course and Electrical Engineering 250. (Formerly EE 153 and CMPE 153.)

Prerequisite: Prerequisite(s): ECE 103. Enrollment is restricted to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor.

ECE 157 - RF Hardware Design (5)

Engineering design cycle for wireless and RF systems: design, practical hardware implementation, and prototype. (Formerly EE 157.)

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L, ECE 103, and ECE 171, and ECE 174; or consent of instructor. Concurrent enrollment in ECE 157L is required.

ECE 157L - RF Hardware Design Laboratory (2)

Laboratory to accompany course 157, emphasizing hardware-design practice and principles applies to RF apparatus. Students design and implement a substantial final project during the last half of the course.

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L, ECE 103, and ECE 171, and ECE 174; or consent of instructor. Concurrent enrollment in ECE 157 is required.

ECE 163 - Introduction to Small-Scale UAV Theory and Practice (7)

Technologies involved in the modeling and simulation of small-scale unmanned aerial vehicles (UAVs) with an emphasis on control applications, from low-level flight stabilization to higher level path planning and vision-based control. Topics include coordinate frames, aerodynamics, equations of motion, full non-linear simulation, linearized

dynamics models and trim states, force and moment balances for steady flight, flight controls by successive loop closure, state space control, path planning and guidance, sensors and estimation. Students enrolled in this class learn how to use the Python programming language to solve engineering problems. Taught in conjunction with ECE 263. Students cannot receive credit for this course and ECE 263.

Prerequisite: Prerequisite(s): ECE 141 or ECE 241 or ECE 242; and CSE 30 or ECE 13 or CSE 13E or CSE 13S. ECE 121, ECE 167, and ECE 145 recommended but not required. Enrollment is restricted to sophomores, juniors and seniors.

ECE 167 - Sensing and Sensor Technologies (7)

Introduces fundamental issues in sensing of temperature, motion, sound, light, position, etc. Sensors are integrated into a digital system using filtering, amplification, and analog-to-digital conversion. Advanced topics may include noise, temperature, and other sources of variability. Students who enrolled in this class will learn how to solve engineering problems using the C Programming Language.

Prerequisite: Prerequisite(s): CSE 13E or ECE 13; and ECE 103 and ECE 103L.

ECE 169 - Electric Machinery and Control (5)

Advanced modeling and analysis of synchronous generators, permanent-magnet ac machines, and dual-fed induction machines. Machine control techniques including droop control, field weakening, multiple reference frame control, and indirect vector control. Taught in conjunction with ECE 269. Students cannot receive credit for this course and ECE 269.

Prerequisite: Prerequisites: ECE 176 and ECE 176L, or by permission of the instructor.

ECE 170 - Advanced Power Electronics (5)

Advanced topics in power electronics including SCR circuits, modulation techniques, multilevel power converters, active and current-source rectifiers, magnetic circuit design, state-space averaging, power converter controller design and stability. Taught in conjunction with ECE 270. Students cannot receive credit for this course and ECE 270.

Prerequisite: Prerequisites: ECE 177 or equivalent or instructor approval. Enrollment is restricted to seniors.

ECE 171 - Analog Electronics (5)

Introduction to (semiconductor) electronic devices. Conduction of electric currents in semiconductors, the semiconductor p-n junction, the transistor. Analysis and synthesis of linear and nonlinear electronic circuits containing diodes and transistors. Biasing, small signal models, frequency response, and feedback. Operational amplifiers and integrated circuits. (Formerly EE 171.)

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L; previous or concurrent enrollment in ECE 171L is required.

ECE 171L - Analog Electronics Laboratory (2)

Laboratory sequence illustrating topics covered in course 171. One two-hour laboratory session per week.

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L; previous or concurrent enrollment in ECE 171 is required.

ECE 172 - Advanced Analog Circuits (5)

Analog circuit design covering the basic amplifier configurations, current mirrors, differential amplifiers, frequency response, feedback amplifiers, noise, bandgap references, one- and two-stage operational amplifier design, feedback amplifier stability, switched capacitor circuits and optionally the fundamentals of digital-to-analog and analog-to-digital converters. Emphasis throughout will be on the development of approximate and intuitive methods for understanding and designing circuits. Cannot receive credit for this course and course 221. (Formerly EE 172.)

Prerequisite: Prerequisite(s): ECE 171.

ECE 173 - High-Speed Digital Design (7)

Studies of analog circuit principles relevant to high-speed digital design: signal propagation, crosstalk, and electromagnetic interference. Topics include electrical characteristics of digital circuits, interfacing different logic families, measurement techniques, distributed circuits and transmission lines, ground planes and grounding, terminations, power systems, electromagnetic compatibility and noise suppression. Laboratory sequence illustrates fundamental lecture topics and includes completion of a final design project.

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L and ECE 174, or by permission of the instructor. ECE 171 and ECE 121 are recommended.

ECE 174 - Introduction to EDA Tools for PCB Design (3)

Focus on EDA tools for design of printed-circuit boards. Elements of design flow covered: schematic capture and simulation to final PCB layout. Final project is required. Students are billed a materials fee.

Prerequisite: Prerequisite(s): ECE 101 and ECE 101L or consent of instructor.

ECE 175 - Energy Generation and Control (5)

Introduces electrical energy generation, sensing, and control, emphasizing the emerging smart grid. Topics include 3-phase AC power systems, voltage and transient stability, fault analysis, grid protection, power-flow analysis, economic dispatch, and high voltage DC distribution (HVDC). (Formerly EE 175.)

Prerequisite: Prerequisite(s): ECE 101. Concurrent enrollment in ECE 175L is required.

ECE 175L - Energy Generation and Control Laboratory (2)

Computer analysis and simulation of energy generation, components, power-flow analysis, systems, and control

covering topics from course 195. Weekly computer simulations reinforce the concepts introduced in course 175. (Formerly EE 175L.)

Prerequisite: Prerequisite(s): ECE 101. Concurrent enrollment in ECE 175 is required.

ECE 176 - Energy Conservation and Control (5)

AC/DC electric-machine drives for speed/position control. Integrated discussion of electric machines, power electronics, and control systems. Computer simulations. Applications in electric transportation, hybrid-car technology, robotics, process control, and energy conservation. (Formerly EE 176.)

Prerequisite: Prerequisite(s): ECE 103 and ECE 171. Concurrent enrollment in ECE 176L is required.

ECE 176L - Energy Conversion and Control Laboratory (2)

Simulink-based simulations of electric machines/drives in applications such as energy conservation and motion control in robotics and electric vehicles. (Formerly EE 176L.)

Prerequisite: Prerequisite(s): ECE 103 and ECE 171. Concurrent enrollment in ECE 176 is required.

ECE 177 - Power Electronics (5)

Switch-mode power converter design and analysis. Non-switching power supplies. Electronic power-factor correction. Soft switching. Power-semiconductor devices. Use in energy conservation, renewable energy, lighting, and power transmission. (Formerly EE 177.)

Prerequisite: Prerequisite(s): ECE 103. Concurrent enrollment in ECE 177L is required.

ECE 177L - Power Electronics Laboratory (2)

Buck, boost, buck-boost, flyback, and forward converter design and control.

Prerequisite: Prerequisite(s): ECE 103. Concurrent enrollment in ECE 177 is required.

ECE 178 - Device Electronics (5)

This course reviews the fundamental principles, device's materials, and design and introduces the operation of several semiconductor devices. Topics include the motion of charge carriers in solids, equilibrium statistics, the electronic structure of solids, doping, the pn junction, the junction transistor, the Schottky diode, the field-effect transistor, the light-emitting diode, and the photodiode. (Formerly EE 178.)

Prerequisite: Prerequisite(s): ECE 102 and ECE 102L and ECE 171 and ECE 171L. Enrollment is restricted to School of Engineering and Division of Physical and Biological Sciences majors or permission of instructor.

ECE 179 - Decision Analysis in Management (5)

Presents decision tools/theory with a focus on investment, finance, management, technology, and policy. Often, irreversible decisions are made without enough information to analyze the possible consequences. Course uses systematic approaches to analyze these types of situations to enable rational decisions. (CSE 174.)

Prerequisite: Prerequisite(s): AM 30 or MATH 22 or MATH 23A; and ECON 113; and ECON 100A or ECON 100M. Enrollment is restricted to juniors and seniors.

ECE 180J - Advanced Renewable Energy Sources, Storage, and Smart Grids (5)

Provides a comprehensive overview of renewable energy, storage, and smart grids. Fundamental energy-conversion limits based on physics and existing material properties are discussed. Various sources and facilities, such as solar, wind, hydropower, geothermal, tidal energy, and fuel cells are described. Solar- and wind-site assessment, electric vehicles, as well as sustainable microgrids are also discussed. Finally, the latest research on smart grids and smart cities is introduced. Students who enroll in this class will learn how to use Matlab to solve engineering problems.(Formerly EE 180J.)

Prerequisite: Prerequisite(s): (AM 11A or MATH 11A or MATH 19A or MATH 19B or MATH 20A or MATH 20B); and (STAT 5 or STAT 7 or STAT 17 or STAT 131 or CSE 107). PHYS 5C and PHYS 5N or PHYS 6C and PHYS 6N are recommended.

ECE 181J - Renewable Energy Sources in Practice (7)

Provides a fundamental understanding of renewable energies in practice by experiencing them in a functional context. Students visit and evaluate renewable-energy facilities, such as wind power, solar energy, hydrogen storage, biofuel production, waste-water testing facilities, biomass, biodiesel, and biogas. This intensive one-month program allows students to carry out applied research in a real-life, industrial-scale, renewable-energy context. Prerequisite(s): course 80J or equivalent. Enrollment restricted to junior, senior, and graduate students and by permission of instructor. (Formerly EE 181J.)

ECE 183 - Special Topics in Electrical Engineering (5)

Topics vary with instructor. Sample topics include smart grids, bioelectronics, antennas, etc. Enrollment by instructor permission. Approval of undergraduate adviser required for credit as an upper-division elective. (Formerly EE 183.)

ECE 185 - Introduction to the US Electricity Industry (5)

Teaches students about the U.S. electricity industry. Topics include power generation costs, electric grid, power flows, retail market and tariff design, regulation and market monitoring, locational marginal pricing, risk management, market power, and contemporary issues.

Prerequisite: Prerequisites: PHYS 5C and PHYS 5N. Enrollment is restricted to juniors and seniors.

ECE 193 - Field Study (5)

Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the electrical engineering program and a

willing sponsor at the field site and using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. May not normally be repeated for credit.

ECE 193F - Field Study (2)

Provides for individual programs of study with specific academic objectives carried out under the direction of a faculty member of the electrical engineering program and a willing sponsor at the field site and using resources not normally available on campus. Credit is based on the presentation of evidence of achieving the objectives by submitting a written and oral presentation. May not normally be repeated for credit.

ECE 195 - Senior Thesis Research (5)

Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency. If using this course to replace the capstone design requirement (ECE 129A, ECE129B, ECE 129C), students must take ECE 129A. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

ECE 195F - Senior Thesis Research (2)

Prerequisite(s): petition on file with sponsoring agency. Students submit petition to sponsoring agency.

ECE 198 - Individual Study or Research (5)

Provides for department-sponsored individual study program off campus, for which faculty supervision is not in person, but by correspondence. Students submit petition to sponsoring agency.

ECE 198F - Independent Field Study (2)

Provides for department-sponsored individual study program off campus for which faculty supervision is not in person, but by correspondence. Students submit petition to sponsoring agency.

ECE 199 - Tutorial (5)

Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency.

ECE 199F - Tutorial (2)

Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency.

Graduate

ECE 200 - Research and Teaching in Electrical Engineering (3)

Basic teaching techniques for TAs: responsibilities and rights, resource materials, computer security, leading discussion or lab sessions, presentations techniques, maintaining class records, electronic handling of homework, and grading. Examines research and professional training: use of library and online databases, technical typesetting, writing journal and conference papers, publishing, giving talks, and ethical issues. (Formerly EE 200.)

Prerequisite: Enrollment is restricted to graduate students.

ECE 201 - Introduction to Nanotechnology (5)

Introduction to underlying principles of nanoscience and nanotechnology. Intended for multidisciplinary audience with a variety of backgrounds. Introduces scientific principles and laws relevant on the nanoscale. Discusses applications in engineering, physics, chemistry, and biology. (Formerly EE 211.)

Prerequisite: Prerequisite(s): ECE 102 or consent of instructor.

ECE 203 - Nanocharacterization of Materials (5)

Covers the many characterization techniques used to characterize materials from volumes less than one cubic micrometer, including the basic physics of each method, the methodology used to get quantitative results, and the advantages and limitations of each technique. (Formerly EE 213.)

Prerequisite: Enrollment restricted to graduate students, or to undergraduates majoring in engineering or science by permission of instructor.

ECE 204 - Bioelectronics (5)

Covers selected case studies in interfacing electronic devices with biological systems from Galvani to neuronal stimulation and electroceuticals. Studies include: the squid giant axon, the pacemaker, deep-brain stimulation, organic bioelectronics, bionanoelectronics and optogenetics, bioenergetics, and bioprotonics electroceuticals. Students are assessed through weekly papers on case studies and through a final presentation. (Formerly EE 204.)

Prerequisite: Enrollment is restricted to graduate students.

ECE 205 - Fundamentals of Nanoelectronics (5)

Covers microscopic theory of electron transport in nanoelectronic devices and transistors. Topics include: ballistic transport; quantum conductance, NEGF-Landauer formalisms; molecular conductors; graphene and carbon nanotubes, quantum resonant tunneling devices; nanotransistors; and spintronics. (Formerly EE 218.)

Prerequisite: Prerequisite(s): ECE 201 or ECE 207. Enrollment is restricted to graduate students. Students with background in basic matrix algebra and MATLAB programming may enroll with permission of instructor.

ECE 207 - Nanomaterials and Nanometer-Scale Devices (5)

Materials controlled at nanometer-scale will revolutionize existing technologies. Course offers opportunities of learning materials that exhibit peculiar physical characteristics at the nanometer scales. Course also includes discussions of unique

device architecture based on materials crafted at the nanometer scale. (Formerly EE 216.)

ECE 210 - Brain-Inspired Machine Learning (5)

Studies how the computational principles of the brain can be applied to build efficient machine learning models in software and hardware. Topics include the neuroscience of deep learning, spiking neural networks, hardware accelerators, and memory circuit design. Taught in conjunction with ECE 110. Students cannot receive credit for this course and ECE 110.

Prerequisite: Enrollment is restricted to graduate students.

ECE 215 - Models of Robotic Manipulation (5)

Theory and application of mathematical models to analyze, design, and program serial kinematic chains (robot arms). Covers models of arbitrary articulated robotic or biological arms and their application to realistic arms and tasks, including the homogeneous coordinate model of positioning tasks; the forward and inverse kinematic models; the Jacobian matrix; trajectory generation;and dynamic models, including Newton-Euler and Lagrangian formulations. (Formerly CMPE 215.)

Prerequisite: Enrollment is restricted to graduate students; and to seniors who have taken ECE 141, and AM 10 or MATH 21; or by permission of instructor.

ECE 216 - Bio-Inspired Locomotion (5)

Presents the principles of biological locomotion and application to robotics problems. Students learn about effective movements in the biological world (slithering, walking, climbing, and flying); extract their underlying principles; and apply them creatively to robotics design. (Formerly CMPE 216.)

Prerequisite: Prerequisite(s): ECE 9 or equivalent. Enrollment is restricted to graduate students, and seniors by permission of instructor.

ECE 218 - Mechatronics (10)

Examines technologies involved in mechatronics (intelligent electro-mechanical systems)and techniques necessary to integrate these technologies. Topics include electronics (A/D, D/A converters, opamps, filters, power devices), software program design (event-driven programming, state machine-based design), DC and stepper motors, basic sensing, and basic mechanical design (machine elements and mechanical CAD). Students learn how to solve engineering problems using C Programming Language. Combines lab component of structured assignments with a large and open-ended team project. Students cannot receive credit for this course and ECE 118.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students.

ECE 220 - Introduction to Imaging Instrumentation: Physics, Engineering, and Application (5)

Lectures covering technologies for different imaging modalities, detectors, and instrumentations with discussion of properties of the signal generation, image reconstruction, and image data quantification.

Prerequisite: Enrollment is restricted to seniors and graduate students.

ECE 221 - Advanced Analog Integrated Circuits (5)

Analog integrated circuit design with emphasis on fundamentals of designing linear circuits using CMOS. Covers MOS devices and device modeling, current mirrors, op-amp design, op-amp compensation, comparators, multipliers, voltage references, sample-and-holds, noise, and an introduction to more complicated systems using these building blocks, such as phase locked loops and analog-to-digital converters. If time permits, integrated circuit layout issues and device/circuit fabrication. Students cannot receive credit for this course and ECE 172. (Formerly EE 221.)

Prerequisite: Prerequisite(s): course ECE 171 or equivalent; ECE 178 or equivalent recommended.

ECE 222 - High-Speed Low-Power Integrated Circuit Design (5)

Digital integrated circuit design covered with an emphasis on high-speed and low-power applications. Covers signaling techniques and circuits including transmitters and receivers, with emphasis on on-chip interconnect, timing fundamentals and timing circuits. Theoretical fundamentals of phase locked loops and design issues of implementation addressed. Course has a project design component. Interview to assess technical skills of student. Enrollment is restricted to electrical engineering and computer engineering graduate students. (Formerly EE 222.)

ECE 222A - Advances in Agriculture Technology (5)

Agricultural technology draws from a wide variety of areas. Topics discussed include agricultural applications of cyber-physical systems and robotics, electronic design of sensor technology, energy harvesting and reliable communication for sensor networks, and signal/image processing techniques for sensor data.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ECE 290, and/or have experience in reading academic research papers. Enrollment is restricted to graduate students; undergraduates may enroll with permission of the instructor.

ECE 223 - Advanced Solid-State Devices (5)

Solid-state devices advance rapidly by employing new materials, new architecture, and new functional principles. Class offers opportunities to learn the latest advancements in solid-state devices (e.g., electronic, optoelectronic, photonic devices, and smart sensors) viewed from various scientific, technological, and engineering aspects, such as energy conversion and computation. (Formerly EE 223.)

ECE 224 - Device Electronics (5)

Reviews the fundamentals of semiconductors and then explores the structure, design, and operation of the most important and widely used semiconductor devices. Topics include the motion of charge carriers in solids, equilibrium statistics, the electronic structure of solids, doping, the pn junction, the junction transistor, the Schottky diode, field-effect transistor, the light-emitting diode, and the photodiode.

Prerequisite: Enrollment is restricted to graduate students.

ECE 225 - Semiconductor Processing and Bandgap Engineering (5)

Addresses principles of semiconductor processing with applications for semiconductor materials engineering, research, and development. The materials fabrication and processing topics include preparation of silicon, III-V compounds, and dielectric thin films, including thin film deposition techniques, diffusion, ion implantation, and standard device fabrication sequences. Applications of these processing principles for semiconductor materials engineering and bandgap engineering in semiconductor heterostructures are discussed for devices, such as LEDs, lasers, photoreceptors, modulators, and high-speed transistors.

Prerequisite: Enrollment is restricted to graduate students.

ECE 226 - CMOS Radio Frequency Integrated Circuit Design (5)

Covers narrowband and high-frequency techniques, noise, distortion, nonlinearities, low-noise amplifiers, power amplifiers, mixers, receivers, and transmitters for wireless communications. Topics are presented in the context of integrated designs in CMOS, but topics are fundamental and widely applicable. (Formerly EE 226.)

Prerequisite: Prerequisite(s): ECE 172 or ECE 221 or permission of instructor.

ECE 227 - Fundamentals of Semiconductor Physics (5)

Semiconductor physics is examined for advanced new materials and devices. Discusses how familiar concepts are extended to new electronics. Intended for students interested in electrical engineering, physics, and materials science applications. Good familiarity with basic electromagnetism and quantum physics is assumed. (Formerly EE 227.)

Prerequisite: Enrollment is restricted to graduate students.

ECE 228 - Engineering of Thin Film Deposition (5)

Covers key processes to build a coherent picture of the deposition of thin films. Offers an opportunity to implement general computing resources in describing the formation of thin films. The deposition of thin films plays a key role in technology due to their unprecedented physical properties. Their deposition depends on such factors as thermodynamics in the deposition environment and kinetics on the solid surfaces where atoms are assembled; therefore, understanding the fundamental processes involved is important. (Formerly EE 217.)

Prerequisite: Students should have a backgroundin solid-state materials that is equivalent to ECE 102. Enrollment is restricted to graduate students.

ECE 229 - Quantum Electronics (5)

Covers basic theory of interaction of electromagnetic radiation with resonant atomic transitions and density matrix treatment; and applications including Rabi oscillations, slow light; nonlinear optics; coherent radiation, and noise in photodetectors and lasers. (Formerly EE 232.)

Prerequisite: Prerequisite(s): ECE 231 or equivalent.

ECE 230 - Optical Fiber Communication (5)

Components and system design of optical fiber communication. Topics include step-index fibers, graded-index fibers, fiber modes, single-mode fibers, multimode fibers, dispersion, loss mechanics, fiber fabrication, light-emission processes in semiconductors, light-emitting diodes, laser diodes, modulation response, source-fiber coupling, photodetectors, receivers, receiver noise and sensitivity, system design, power budget and rise-time budget, fiber-optic networks (FDDI, SONET, etc.), wavelength division multiplexing (WDM). Students cannot receive credit for this course and ECE 130. (Formerly EE 230.)

Prerequisite: Enrollment is restricted to graduate students.

ECE 231 - Optical Electronics (5)

Introduction to phenomena, devices, and applications of optoelectronics. Main emphasis is on optical properties of semiconductors and semiconductor lasers. (Formerly EE 231.)

Prerequisite: Prerequisite(s): ECE 102 and ECE 102L.

ECE 232 - Integrated Biophotonics (5)

Covers use of integrated optics for study of biological material; fluorescence spectroscopy, single molecule detection, optical tweezers, layered dielectric media, hollow-core waveguides, photonic crystals, optofluidics, biophotonic systems, and applications.

Prerequisite: Enrollment is restricted to graduate students.

ECE 236 - Optics and Microscopy (5)

Covers the basic principles of optics and microscopy. Topics include geometrical optics, simple ray tracing, diffraction, Fourier optics, image formation in the human eye, the photographic camera, and different types of microscopes. Hands-on experience is provided in laboratories. Requires basic mathematics. (Formerly EE 266.)

Prerequisite: Enrollment isrestricted to graduate students. Undergraduate students may enroll with permission of the instructor.

ECE 237 - Image Processing and Reconstruction (5)

Fundamental concepts in digital image processing and reconstruction. Continuous and discrete images; image acquisition, sampling. Linear transformations of images,

convolution and superposition. Image enhancement and restoration, spatial and spectral filtering. Temporal image processing: change detection, image registration, motion estimation. Image reconstruction from incomplete data. Applications. (Formerly EE 264.)

Prerequisite: Prerequisite(s): ECE 153 or permission of instructor.

ECE 238 - Medical Image Formation, Presentation, and Assessment (5)

This course covers how modern medical images are generated from raw data, and how they are presented to radiologists and doctors. It also explains key image quality metrics, their evaluation, and how they inform system design.

Prerequisite: Enrollment restricted to graduate students. Undergraduates may enroll with permission of the instructor. Course requires basic knowledge of math, physics such as calculus, linear algebra, and statistics. ECE 80B helpful but not required.

ECE 240 - Introduction to Linear Dynamical Systems (5)

Introduction to applied linear algebra and linear dynamical systems with applications to circuits, signal processing, communications, and control systems. Topics include the following: Least-squares approximations of over-determined equations and least-norm solutions of underdetermined equations. Symmetric matrices, matrix norm and singular value decomposition. Eigenvalues, left and right eigenvectors, and dynamical interpretation. Matrix exponential, stability, and asymptotic behavior. Multi-input multi-output systems, impulse and step matrices; convolution and transfer matrix descriptions. Control, reachability, state transfer, and least-norm inputs. Observability and least-squares state estimation. (Formerly CMPE 240.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll if they have completed ECE 103 and AM 147.

ECE 241 - Introduction to Feedback Control Systems (5)

Graduate-level introduction to control of continuous linear systems using classical feedback techniques. Design of feedback controllers for command-following error, disturbance rejection, stability, and dynamic response specifications. Root locus and frequency response design techniques. Extensive use of Matlab for computer-aided controller design. Course has concurrent lectures with ECE 141.

Prerequisite: Enrollment is restricted to graduate students.

ECE 242 - Applied Feedback Control (5)

Sequel to ECE 141 and ECE 241. After reviewing control design techniques examined in ECE 141 and ECE 241, this course explores state space control, discrete time control, and two case studies in control design. Students design and implement feedback controllers on an inverted pendulum experiment.

Prerequisite: Prerequisite(s): ECE 141 or ECE 241. Enrollment is restricted to juniors, seniors, and graduate students.

ECE 243 - System Identification (5)

Course provides introduction to the construction of linear dynamical models from experimental data using parametric and non-parametric identification techniques. Theoretical and practical aspects of these techniques addressed. (Formerly CMPE 243.)

Prerequisite: Prerequisite(s): ECE 240, or by permission of instructor.

ECE 244 - Digital Control (5)

Teaches the design and analysis of digital control systems. The topics covered are discrete-time system modeling; z-transform; stability, controllability, and observability of discrete-time systems; various design approaches to control design in which sensor, computer hardware, actuation, communication, and user interface are part of the design. Note: knowledge of linear algebra, calculus, basic differential equations, Laplace transform, signals and systems, linear-system control theory, MATLAB, and the use of word-processing software are assumed. (Formerly CMPE 244.)

Prerequisite: Prerequisite(s): ECE 141 or ECE 241. Enrollment is restricted to graduate students, or by permission of the instructor.

ECE 245 - Estimation and Introduction to Control of Stochastic Processes (5)

Provides practical knowledge of Kalman filtering and introduces control theory for stochastic processes. Selected topics include: state-space modeling; discrete- and continuous-time Kalman filter; smoothing; and applications in feedback control. Students learn through hands-on experience. Students cannot receive credit for this course and course 145. (Formerly CMPE 245.)

Prerequisite: Prerequisite(s): ECE 240 or ECE 241. Knowledge of Matlab is expected. Enrollment is restricted to graduate students.

ECE 246 - Hybrid Dynamical Systems (5)

Examines the modeling and analysis of hybrid dynamical systems, including the modeling of hybrid systems, the concept of solutions, Zeno behavior, equilibrium sets, stability, convergence, Lyapunov-based conditions, robustness, and simulation. Students are guided on methods for simulation and encouraged to apply them to several applications. (Formerly CMPE 246.)

Prerequisite: Prerequisite(s): ECE 240 or ECE 241 or ECE 242. Enrollment is restricted to graduate students.

ECE 249 - Introduction to Cyber-physical Systems (5)

Presents the basic concepts and tools for the study of cyber-physical systems, including modeling and analysis tools for continuous-time and discrete-time systems, finite state

machines, stateflow, timed and hybrid automata, concurrency, invariants, linear temporal logic, verification, and numerical simulation. Students are guided on methods for simulation and encouraged to apply them to several applications. The course is self-contained. Students are expected to have a basic background in logic circuits, programming, the mathematical modeling of dynamical systems (ECE 8 is recommended), differential equations, linear algebra, and basic calculus. Knowledge of MATLAB/Simulink is useful. Students cannot receive credit for this course and ECE 149.

Prerequisite: Prerequisite(s): CSE 100 and CSE 100L or equivalent, and ECE 13 or CSE 13E or equivalent.

ECE 250 - Digital Signal Processing (5)

In-depth study of signal processing techniques, including discrete-time signals and systems, the z-transform, sampling of continuous-time signals, transform analysis of linear time-invariant systems, structures for discrete-time systems, the discrete Fourier transform, computation of the discrete Fourier transform, filter design techniques. Students cannot receive credit for this course and course 153. (Formerly EE 250.)

ECE 251 - Principles of Digital Communications (5)

A core course on digital communications theory. Provides an introduction to digital communication, including source coding, characterization of communication signals and systems, modulation and demodulation for the additive Gaussian channel, digital signaling, and over bandwidth constrained linear filter channels and over fading multipath channels. (Formerly EE 251.)

Prerequisite: Prerequisite(s): ECE 151 and ECE 153 and CSE 107.

ECE 252 - Wireless Communications (5)

In-depth study of the physical layer of wireless communications. Wireless propagation channels and their impact on digital communications. Modulation techniques for wireless systems and their performance. Multi-antenna systems and diversity. Multicarrier and spread spectrum. Multi-access methods: FDMA, TDMA, CDMA. The structure of cellular systems. Students cannot receive credit for this course and course 152. (Formerly EE 252.)

Prerequisite: Prerequisite(s): ECE 251.

ECE 253 - Introduction to Information Theory (5)

An introduction to information theory including topics such as entropy, relative entropy, mutual information, asymptotic equipartition property, channel capacity, differential entropy, rate distortion theory, and universal source coding. (Formerly EE 253 and CMPS 250.)

Prerequisite: Enrollment is restricted to graduate students.

ECE 254 - Radar, Synthetic Aperture Radar, and ISAR (5)

Introduces radar signal processing, synthetic aperture radar (SAR), and inverse SAR (ISAR). Focuses on the fundamentals and design principles of modern radar systems. Students use hands-on computer simulations to build a strong background in radar sensor systems that can be applied to a variety of problems, such as medical imaging, ground-penetrating radar imaging for geophysical exploration, and the use of radar sensor systems for satellite-based SAR. (Formerly EE 288.)

Prerequisite: Prerequisite(s): ECE 153. Enrollment is restricted to juniors, seniors, and graduate students.

ECE 255 - Error Control Coding (5)

Covers the following topics: introduction to algebra; linear block code; cyclic codes; BCH code; RS codes; spectral domain study of codes; CRC; and product codes. (Formerly EE 261.)

ECE 256 - Statistical Signal Processing (5)

Covers fundamental approaches to designing optimal estimators and detectors of deterministic and random parameters and processes in noise, and includes analysis of their performance. Binary hypothesis testing: the Neyman-Pearson Theorem. Receiver operating characteristics. Deterministic versus random signals. Detection with unknown parameters. Optimal estimation of the unknown parameters: least square, maximum likelihood, Bayesian estimation. Will review the fundamental mathematical and statistical techniques employed. Many applications of the techniques are presented throughout the course. Note: While a review of probability and statistics is provided, this is not a basic course on this material. (Formerly EE 262.)

Prerequisite: Prerequisite(s): ECE 103 and CSE 107, or permission of instructor.

ECE 258 - Introduction to Inverse Problems (3)

Fundamental approaches and techniques in solving inverse problems in engineering and applied sciences, particularly in imaging. Initial emphasis on fundamental mathematical, numerical, and statistical formulations and known solution methods. Sampling of applications presented from diverse set of areas (astronomical, medical and optical imaging, and geophysical exploration). (Formerly EE 265.)

Prerequisite: Enrollment is restricted to graduate students.

ECE 263 - Small-Scale UAV Theory and Practice (7)

Technologies involved in the modeling and simulation of small-scale unmanned aerial vehicles (UAVs) with an emphasis on control applications, from low-level flight stabilization to higher level path planning and vision-based control. Topics include coordinate frames, aerodynamics, equations of motion, full non-linear simulation, linearized dynamics models and trim states, force and moment balances for steady flight, flight controls by successive loop closure, state space control, path planning and guidance, sensors and estimation. Students enrolled in this class learn how to use the Python programming language to solve engineering problems. Students gain team leadership and project management skills. Taught in conjunction with ECE 163. Students cannot receive credit for this course and ECE 163.

Prerequisite: Prerequisites: Students should have an understanding of Feedback Controls and Programming (Python preferred). It is recommended but not required that students have a background in Sensors, Microcontrollers, Kalman Filtering, and Estimation. Enrollment is restricted to graduate students.

ECE 269 - Electric Machinery and Control (5)

Advanced modeling and analysis of synchronous generators, permanent-magnet ac machines, and dual-fed induction machines. Machine control techniques including droop control, field weakening, multiple reference frame control, and indirect vector control. Taught in conjunction with ECE 169. Students cannot receive credit for this course and ECE 169.

Prerequisite: Enrollment is restricted to graduate students who have taken ECE 176 or an equivalent undergraduate course on classical electric machinery.

ECE 270 - Advanced Power Electronics (5)

Advanced topics in power electronics including SCR circuits, modulation techniques, multilevel power converters, active and current-source rectifiers, magnetic circuit design, state-space averaging, power converter controller design and stability. Taught in conjunction with ECE 170. Students cannot receive credit for this course and ECE 170.

Prerequisite: Prerequisites: Enrollment is restricted to graduate students.

ECE 275 - Energy Market, Policy, and Modeling (5)

The power industry is responsible for a large fraction of the U.S.'s emissions of SO2, NOx, and CO2, as well as much other water, solid waste, and land impacts. Its large environmental as well as economic footprint make it a target of many environmental policies, as well as an inherently interesting sector to study. The recent development of energy and climate policy at the global, the U.S. federal, and state-level has made Energy & Climate Policy an intriguing and dynamic topic for both industries and academia. This course will present fundamental analytical tools (optimization and simulation) for modeling firm and market behavior for the energy sector, with a focus on electric power. However, these models can be used for planning investments in generation, transmission, and energy conservation, and for analysis of public policy.

Prerequisite: Enrollment is restricted to graduate students.

ECE 279 - Optimization and Control for Electric Power Systems (5)

Provides a comprehensive overview of power systems. Students learn how mathematical tools are used for the system planning and operation. Advanced topics include smart grids, electric vehicles and energy data analytics.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates admitted with permission of the instructor.

ECE 280A - Current Topics in Applied Microscopy and Neuronal Imaging (2)

A weekly seminar to discuss current topics in applied microscopy and neuronal imaging. (Formerly EE 280A.)

Prerequisite: Enrollment is restricted to graduate students.

ECE 280B - Seminar on Integrated Bioelectronics (2)

Weekly seminar covering current research in integrated bioelectronics. Enrollment is by permission of the instructor and is restricted to students who have research in bioelectronics. (Formerly EE 280B.)

ECE 280C - Seminar on Control (2)

Weekly seminar series covering topics of current research in theory and application of control to engineering systems. Current research work and literature in these areas discussed. (Formerly CMPE 280C.)

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

ECE 280D - Graduate Research Seminar (2)

Weekly seminar series in topics of current research in information systems and technology management. Enrollment by permission of instructor. (Formerly TIM 280A.)

ECE 280N - Seminar on Nanophotonics and Lab-on-Chip Systems (2)

Weekly series covering current research in nanophotonics and lab-on-chip systems including nanoplasmonic biosensors; nanospectroscopy (Raman and vibrational mid-infrared spectroscopy); nanofabrication; nanophotonics devices for energy conversion and thermoplasmonics; acoustic fluids; and microfluidic integration. Current research work and recent literature are discussed. Enrollment is by permission of the instructor and restricted to graduate students. Sophomores, juniors, and seniors may enroll by permission of instructor. (Formerly EE 280N.)

ECE 280O - Seminar on Applied Optics (2)

Weekly seminar series covering topics of current research in applied optics, including integrated, quantum, nonlinear, and nano-optics. Current research work and literature in these areas are discussed. Enrollment by permission of instructor. (Formerly EE 280O.)

ECE 280Z - Seminar on Smart Grids and Data Analytics (2)

Weekly series covering state-of-the-art research in smart power grids, machine learning, communications, and signal processing. Current research works and recent literature are discussed. Enrollment is by permission of the instructor and is restricted to graduate students. Undergraduates may enroll by permission of the instructor. (Formerly EE 280Z.)

ECE 283 - Special Topics in Electrical and Computer Engineering (3)

Graduate seminar on a research topic in electrical engineering that varies with the particular instructor. Topics may include,

but are not limited to, electromagnetics, antennas, electronics biotechnology, nanotechnology, signal processing, communications, VLSI, MEMS, and radio frequency. Enrollment is restricted to graduate students and consent of instructor. (Formerly EE 283.)

ECE 290 - ECE Graduate Seminar (2)

Leading speakers from academia and industry present their latest research.

Prerequisite: Enrollment is restricted to computer engineering, electrical engineering, and electrical and computer engineering graduate students.

ECE 291 - Tomorrow's Professors, Engineers, and Entrepreneurs (3)

The aim of this course is two-fold: (1) inform, motivate, and prepare graduate students for possible careers in academia and industry; (2) expose graduate students to the professional skills required for possible career options in engineering and science. Enrollment is restricted to graduate students, and by permission of the instructor. Course is for Satisfactory/Unsatisfactory grade only.

Prerequisite: Enrollment is restricted to graduate students, and by permission of the instructor.

ECE 293 - Advanced Topics in Electrical and Computer Engineering (5)

Graduate seminar on a research topic in electrical engineering that varies with the particular instructor. Typical topics include, but are not limited to, electromagnetics, antennas, electronics biotechnology, nanotechnology, signal processing, communications, VLSI, and MEMS.
Prerequisite(s):Enrollment is by permission of the instructor and is restricted to graduate students. In some quarters course will be taught in conjunction with ECE 183. (Formerly EE 293.)

ECE 296 - Master Project (5)

Master project conducted under faculty supervision. Petition on file with sponsor faculty.

ECE 297A - Independent Study or Research (5)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency.

ECE 297B - Independent Study or Research (10)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency.

ECE 297C - Independent Study or Research (15)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency.

ECE 297F - Independent Study or Research (2)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency.

ECE 299A - Thesis Research (5)

Thesis research conducted under faculty supervision. Students submit petition to sponsoring agency.

ECE 299B - Thesis Research (10)

Thesis research conducted under faculty supervision. Students submit petition to sponsoring agency.

ECE 299C - Thesis Research (15)

Thesis research conducted under faculty supervision. Students submit petition to sponsoring agency.

ECON - ECONOMICS

Lower-Division

ECON 1 - Introductory Microeconomics: Resource Allocation and Market Structure (5)

For all interested students as well as prospective economics majors. Examines how markets allocate resources in different kinds of economies. Topics include competitive markets, monopoly, financial markets, income distribution, market failures, the environment, and the role of government.

ECON 2 - Introductory Macroeconomics: Aggregate Economic Activity (5)

For all interested students and prospective economics majors. Examines how the overall level of national economic activity is determined, including output, employment, and inflation. Explores the roles of monetary and fiscal policies in stabilizing the economy and promoting growth, with a focus on contemporary policy debates.

ECON 10A - Economics of Accounting (5)

Introduces students to fundamental accounting principles and practices. Key topics include reviewing the accounting cycle, preparing basic financial statements, and integrating data analysis tools to interpret and analyze financial statement data. Course improves students' financial literacy skills by illustrating how financial statements are used by external parties such as bankers, creditors, investors, and others who have a desire and/or need to learn more about the financial information of business organizations.

ECON 10B - Economics of Accounting (5)

Foundation of accounting course providing students with the concepts, practices, and tools for analyzing, planning, and making managerial accounting decisions for the future with an emphasis on performance measurement using various data analysis tools. Key topics include product and service costing, management decision-making and analysis, planning and controlling processes, CVP analysis, budgeting, variance analysis, and segment reporting.

Prerequisite: Prerequisite(s): ECON 10A.

ECON 20 - Economics for Non-Majors (5)

Designed for non-majors seeking a basic introduction to core economic concepts relevant for social and public policy decision making. Fundamental economic concepts illustrated through their application to a variety of public policy questions.

ECON 22P - Introduction to Python for Data Science (5)

Introduction to programming in Python with emphasis on commands and workflow useful for data science, especially in economics and other social sciences. Data science applications are interwoven with lessons about basic syntax. Topics of study include variables and operations, containers, Pandas dataframes, conditional statements and conditional slicing of dataframes, loops, advanced string processing, file input/output, functions, and data visualization. This course places less emphasis on object-oriented programming and more emphasis on practical data science applications.

Prerequisite: Enrollment is restricted to proposed and declared economics, business management economics, global economics, economics/mathematics combined, and environmental studies/economics combined majors. Restrictions lifted after first pass enrollment.

ECON 30 - Introduction to Entrepreneurship (5)

Provides an overview of the role and importance of entrepreneurship in the economy and society; a framework for approaching entrepreneurship and innovation; and exposure to the core competencies required of all entrepreneurs. The course incorporatescase studies and speakers (often actual entrepreneurs) to provide context for the entrepreneurial topics covered in the course.

ECON 50 - Economics, Science, and Policy of Climate Change (5)

Climate change has become the problem of today rather than a problem of the future, and it is felt as a personal problem by many young people. ;At the same time, the scale of the problem makes it common to feel resigned, depressed, and powerless. This course is designed to introduce students to accurate facts about climate change and to potential and existing climate solutions and ways students can contribute to these solutions in their personal and professional lives.

ECON 99 - Tutorial (5)

Upper-Division

ECON 100A - Intermediate Microeconomics (5)

Covers major theoretical issues arising in the study of resource allocation, the function of markets, consumer behavior, and the determination of price, output, and profits in competitive, monopolistic, and oligopolistic market structures. Also considers issues of welfare and public policy. Students cannot receive credit for this course and course 100M.

Prerequisite: Prerequisite(s): ECON 1 and ECON 2; and AM 11B or ECON 11B or MATH 22 or MATH 23A or AM 30.

ECON 100B - Intermediate Macroeconomics (5)

Covers major theoretical issues arising in the study of income, employment, interest rates, and the price level. Examines the role of monetary and fiscal policy in economic stabilization. Also considers these issues as they relate to the global economy. Students cannot receive credit for this course and course 100N.

Prerequisite: Prerequisite(s): ECON 1 and ECON 2; and AM 11B or ECON 11B or MATH 22 or MATH 23A or AM 30.

ECON 100M - Intermediate Microeconomics, Math Intensive (5)

Mathematically sophisticated version of course 100A. Provides analytically rigorous treatment of the subject using a calculus-intensive presentation of microeconomic theory. For specific topics, see course 100A. Students cannot receive credit for this course and course 100A.

Prerequisite: Prerequisite(s): ECON 1 and ECON 2; and AM 11B or ECON 11B or MATH 22 or MATH 23A.

ECON 100N - Intermediate Macroeconomics, Math Intensive (5)

Provides rigorous, mathematical-intensive treatment of topics covered in course 100B. Core is devoted to model-based analysis of questions in macroeconomics. Use of mathematical tools allows study of advanced topics and data-intensive applications. See course 100B for specific topics. Students cannot receive credit for this course and course 100B.

Prerequisite: Prerequisite(s): ECON 1 and ECON 2; and AM 11B or ECON 11B or MATH 22 or MATH 23A.

ECON 101 - Managerial Economics (5)

Analysis of the theory and practice of decision making in business firms, applying the concepts and techniques of microeconomics. Topics may include pricing schemes, non-price competition, internal organization of firms, incentive contracts, asymmetric information, and game theory. Case studies are used to illustrate some topics.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113.

ECON 104 - Is There Truth in Numbers: The Role of Statistics in Economics (5)

Applies the techniques of econometrics and experimental economics to the understanding of economics. A hands-on course where real economic data is used in an interactive way so that students develop the art of empirical analysis.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113, and Entry Level Writing and Composition requirements.

ECON 105 - Topics in Macroeconomics (5)

Covers topics in macroeconomics. Course builds on the tools of macroeconomics developed in ECON 100B and ECON

100N to explore topical macroeconomic issues. Possible topics include economic growth, business cycles, financial crises, unemployment, inflation, inequality, and the global economy.

Prerequisite: Prerequisite(s): ECON 100B or ECON 100N; and ECON 113.

ECON 110 - Managerial Cost Accounting and Control (5)

Focuses on how cost data are used by managers in the planning and control of both private- and public-sector organizations. Specific topics include organization of the management and control function, use of cost data for the pricing of goods and services, the effect of cost systems on management performance, and capital budgeting.

Prerequisite: Prerequisite(s): ECON 10B.

ECON 111A - Intermediate Accounting I (5)

Principles, control, and theory of accounting for assets; accounting as an information system; measurement and determination of income. Projects involving spreadsheet software are required.

Prerequisite: Prerequisite(s): ECON 10B.

ECON 111B - Intermediate Accounting II (5)

Covers the principles, control, the theory of accounting for liabilities and property; plant and equipment, the preparation and analysis of investments,and review and analysis of bonds and leases.

Prerequisite: Prerequisite(s): ECON 111A.

ECON 111C - Intermediate Accounting III (5)

Covers the principles of control, the theory of accounting for pensions and income taxes; the determination of share-based compensation and earnings per share, the calculation of shareholder's equity, and advanced topics in intermediate accounting.

Prerequisite: Prerequisite(s): ECON 111A.

ECON 112 - Auditing and Attestation (5)

For business management economics majors interested in careers that emphasize accounting, finance, or technology management. Also for students who intend to take the CPA exam. Covers audit techniques, risk analysis, and development of control structures for major financial processes including cash, investments, accounts receivable, inventories, accounts payable, debt, equity capital, and related information systems security.

Prerequisite: Prerequisite(s): ECON 10B.

ECON 113 - Introduction to Econometrics (5)

Practical methods for organizing and analyzing economic data, testing economic hypotheses, and measuring economic relationships. Regression analysis is the main empirical method, and basic statistical and probability theory is included. Students gain hands-on computer experience with an econometric software package.

Prerequisite: Prerequisite(s): ECON 1 and ECON 2; STAT 7 and STAT 7L or STAT 17 and STAT 17L; and one of the following: AM 11B, ECON 11B, MATH 22, or MATH 23A, or AM 30. ECON 100A or ECON 100B strongly recommended as preparation.

ECON 114 - Advanced Quantitative Methods (6)

Application of statistical methods to estimating and testing economic relationships, i.e., econometric techniques. Topics include the effects of misspecification, choice of functional form, serial correlation, heteroscedasticity, limited dependent variables, and simultaneous equations. Includes discussion of existing empirical work and econometric projects by students.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M, and ECON 113.

ECON 115 - Introduction to Management Sciences (5)

The scientific study of management decision making. Topics include linear, integer, and non-linear programming. Special emphasis on a wide variety of practical applications, including production scheduling, optimal transportation assignments, and optimal inventory policy.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 116 - Advanced Topics in Accounting and Ethics (5)

Covers topics in accounting and ethics. Builds a strong accounting foundation; develops critical thinking skills; and explores ethical standards in accounting, forensic accounting, international financial recording standards, and accounting for sustainability. Meets the California state educational ethics requirement for certified public accountant (CPA) licensure.

Prerequisite: Prerequisite(s): ECON 111A and ECON 111B. Enrollment is restricted to economics, business management economics, global economics, and the combined economics and environmental studies and mathematics majors.

ECON 117A - Income Tax Factors for Individuals (5)

Introduces federal taxation for individuals. Topics for study include taxable income, gross income exclusions and inclusions, capital gains, depreciation, business and itemized deductions, personal and dependency exemptions, passive activity losses, tax credits, and methods of accounting.

Prerequisite: Prerequisite(s): ECON 10A.

ECON 117B - Tax Factors of Business and Investment (5)

Focuses on various tax subjects providing a strong foundation in tax concepts and preparation for work in either public or corporate accounting. Topics include historical perspective of the U.S. tax system, introduction to estate and gift taxes, employment and self-employment taxes, tax concepts and laws, business expenses, capital recovery, tax credits, capital gains and losses, capital investments, and corporate operations.

Prerequisite: Prerequisite(s): ECON 10B.

ECON 119 - Advanced Accounting (5)

Accounting for business organizations; partnerships; government and non-profit organization funds; branches, consolidations, and installment sales. Projects involving spreadsheet software required.

Prerequisite: Prerequisite(s): ECON 111A or ECON 111B.

ECON 120 - Development Economics (5)

Studies the microeconomics of development. Topics may include health and nutrition, education, intra-household economics, formal and informal risk-coping mechanisms, savings, credit, agriculture, institutions, and service delivery and corruption. Focuses on empirical methods. Problem sets require statistical software such as Stata. (Formerly Economic Development.)

Prerequisite: Prerequisite(s): ECON 1; STAT 17 and STAT 17L.

ECON 121 - Economic Growth (5)

Studies economic growth from theoretical, empirical, and historical perspectives. Topics include: theories of economic growth and their empirical importance, technology and innovation, social institutions and growth, and competing explanations of the global distribution of wealth.

Prerequisite: Prerequisite(s): ECON 1, ECON 2, ECON 11A or AM 11A, and ECON 11B or AM 11B (or the equivalent); ECON 100B is strongly recommended.

ECON 124 - Machine Learning for Economists (5)

Introduction to machine learning from the perspective of economics. Students introduced to modern estimation methods for high-dimensional data, which is illustrated through applications to causal inference and prediction problems in economics, business, and related fields. Students gain experience working with these methods through programming assignments. Course focuses on methodology and its practical application and culminates in an empirical project in which students apply course concepts to real-world data.

Prerequisite: Prerequisite(s): ECON 113 or ECON 216. Enrollment is restricted to undergraduate majors in economics, business management economics, global economics, and economics combined programs and master's students in the quantitative economics and finance (formerly applied economics and finance) program.

ECON 125 - Economic History of the U.S (5)

The development of the American economy from colonial times to the present, with emphasis on the interaction between institutional structure and economic development. Topics include the economics of slavery, the rise of big business, and the causes of the Great Depression.

Prerequisite: Prerequisite(s): ECON 1 and ECON 2. Related coursework in history also helpful. Enrollment is restricted to juniors and seniors.

ECON 128 - Poverty and Public Policy (5)

Studies the causes, consequences, and governmental response to urban poverty in the U.S. Topics include how public policy, the macroeconomy, race, gender, discrimination, marriage, fertility, child support, and crime affect and are affected by urban poverty. Emphasizes class discussion and research.

Prerequisite: Prerequisite(s):ECON 100A or ECON 100M; and ECON 113. Enrollment is restricted to economics, business management economics, global economics, legal studies, or economics combined majors.

ECON 130 - Money and Banking (5)

Examines the nature of money, financial intermediation, financial asset pricing, and markets; banking business and the banking industry; financial and banking crises, especially the 2007-09 crisis in the U.S. and abroad; the evolving nature of financial regulation and supervision of banking and financial institutions and markets; history and functions of the U.S. central bank (Federal Reserve); the role of the central bank in providing liquidity, credit, and creating money; central bank emergency lending in crises; institutional design of central banks and macroeconomic policy.

Prerequisite: Prerequisite(s): ECON 100B or ECON 100N; and ECON 113.

ECON 131 - International Financial Markets (5)

International financial management analyzes the key financial markets and instruments that facilitate trade and investment activity on a global scale. Inquiry spans two areas: (1) economic determinants of prices in international financial markets; and (2) decisions facing private individuals and enterprises, with topics including capital financing, investment, and risk management.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 100B or ECON 100N.

ECON 133 - Security Markets and Financial Institutions (5)

An examination of all major financial markets: equities, bonds, options, forwards, and futures. Uses modern financial theory, including asset pricing models such as CAPM and APT.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M, and ECON 113.

ECON 135 - Corporate Finance (5)

An analysis of financial policies of business enterprises. Topics include cash flow analysis, stock and bond valuation, asset pricing models, capital budgeting, financial market institutions, and financial planning.

Prerequisite: Prerequisite(s): ECON 10A; and ECON 100A or ECON 100M; and ECON 113.

ECON 136 - Business Strategy (5)

The strategic management process, techniques for analyzing single-business and diversified companies, implementing strategy, organization, business planning, financial strategy, competitive analysis, entrepreneurial skills.

Prerequisite: Prerequisite(s): ECON 10A; and ECON 100A or ECON 100M.

ECON 138 - The Economics and Management of Technology and Innovation (5)

Examines the analytics of issues in technology and innovation, including cooperation in research and development (RD), standardization and compatibility, patents and intellectual property rights, and strategic management, using economic models and firm case studies.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M, or permission of instructor.

ECON 139A - The Economics of Electronic Commerce (5)

An analysis of the broad spectrum of issues affecting commercial uses of the Internet and the next-generation information infrastructure. Uses economics to examine market structure, pricing quality, intellectual property rights, security, electronic payments and currencies, and public policy implications.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M, or permission of instructor.

ECON 139B - E-Commerce Strategy (5)

Review of economic principles and trends in e-commerce, including online retailing of physical products, digital products and services, financial services, business-to-business transactions, e-business, and e-marketing. Business-to-business and business-to-consumer business models are explored both in terms of strategy and implementation. Topics include how and why successful companies deploy e-business strategies and how these evolve in fast-changing technological and business environments..

Prerequisite: Prerequisite(s): ECON 139A or ECON 161A.

ECON 140 - International Trade (5)

The theory of international production and trade. The effects of tariffs and quantitative trade restrictions; the nature of economic integration; multinational firms; effects of trade and protection on economic stability and welfare.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 141 - International Finance (5)

Topics include national accounting, balance of payments theories, parity conditions in international finance, exchange rate determination models, forward-looking financial instruments, international monetary systems, country interdependence and exchange rate regimes, international monetary integration, and Eurocurrency market.

Prerequisite: Prerequisite(s): ECON 100B or ECON 100N.

ECON 142 - Advanced Topics in International Economics (5)

Selected issues in contemporary international economics: theory, empirical evidence, and public policy. Seminar emphasizing discussion and individual research.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and ECON 100A or ECON 100M; and ECON 100B or ECON 100N; and ECON 140 or ECON 141.

ECON 143 - Policy Issues in the International Economy (5)

Covers selected issues concerning the international economy. Topics include: U.S. competitiveness; U.S. trade policy; immigration; trade and the environment; developing countries; foreign investment; foreign exchange markets; and international economic institutions.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 149 - The Economies of East and Southeast Asia (5)

Examines the pattern of international trade, investment, and industrial structure in Asia. Examines competing explanations of rapid growth of Japan, Korea, and Taiwan; presents an overview of economic developments in China, Hong Kong, and Taiwan. Concludes with an analysis of high technology trade and multinationals in Asia in 2000 and beyond.

Prerequisite: Prerequisite(s): ECON 1 and ECON 2.

ECON 150 - Public Finance (5)

Economics of taxation, including incidence, equity issues, efficiency, and supply side effects. Close attention to taxes in the U.S. system and tax-reform issues. Students cannot receive credit for this course and course 250.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 100B or ECON 100N.

ECON 156 - Health Economics and Policy (5)

Health economics theory and review of empirical studies how we value and produce health, including current topics. Studies the intersection of health and the environment, and the consequences of imperfect information for health and health policy. (Formerly offered as Health Care and Medical Economics.)

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113.

ECON 159 - The Economics of Organizations (5)

Uses an economic approach to shed light on questions such as why and how organizations are formed, and what consequences they may have on the adoption of different types of organizations for economic performance. Also emphasizes differences between the internal markets within organizations and market transactions.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 160A - Industrial Organization (5)

The structure and conduct of American industry with strong emphasis on the role of government, regulation, anti-trust, etc. The evolution of present-day industrial structure. The problems of overall concentration of industry and of monopoly power of firms. Pricing, output decisions, profits, and waste. Approaches include case study, theory, and statistics.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 160B - Government and Industry (5)

The influence of government regulation on industry and the allocation of resources is rigorously examined using theory and statistics. Areas of regulation include transportation and power, pollution and congestion, rent control, and liability insurance regulation. Both optimal and actual regulation are examined from the point of view of effectiveness, efficiency, social welfare, and re-distribution.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 161A - Marketing (5)

The evolution of markets and marketing; market structure; marketing cost and efficiency; public and private regulation; the development of marketing programs including decisions involving products, price, promotional distribution.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; First-pass enrollment restricted to declared business management economics majors.

ECON 161B - Marketing Research (5)

Prepares students to conduct market research and use it in solving real management problems. Students work with a company to solve marketing-based problems. Students conduct research, process data, and make a presentation to the company's management. Course work involves marketing, statistics, and communications; material is both qualitative and quantitative.

Prerequisite: Prerequisite(s): ECON 113 and ECON 161A.

ECON 162 - Legal Environment of Business (5)

A study of law and the legal process, emphasizing the nature and function of law within the U.S. federal system. Attention is given to the legal problems pertaining to contracts and related topics, business association, and the impact of law on business enterprise.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 164 - Economics and the Telecommunications Industry (5)

Covers the economics of the telecommunications industry including telephone, cellular telephone, and data communications. Particular emphasis on the Internet, satellite, paging, cable television, radio and television broadcasting. Examines the industry structure and implications of moving from a regulated environment to competition. Topics examined from a competitive strategic standpoint as well as public policy perspective.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113.

ECON 165 - Economics as an Experimental Science (5)

The design, execution, and analysis of laboratory experiments in economics. Students study experimental methodology, critically survey the published literature, and design an experiment. Literature includes lab studies of investigations in auctions, markets, social choice theory, and game theory.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.; and ECON 113.

ECON 166A - Game Theory and Applications I (5)

Introduces modern game theory, including applications in social science, biology, and engineering. Topics include extensive form, strategic form, mixed strategies, incomplete information, repeated games, evolutionary games, and simulation techniques.

Prerequisite: Prerequisite(s): STAT 5, STAT 7, STAT 17 or ECON 113; and AM 11B or ECON 11B, or MATH 11B, MATH 19B, STAT 131 or CSE 107. Enrollment is restricted to juniors and seniors.

ECON 166B - Game Theory and Applications II (5)

Explores research frontiers in game theory, emphasizing applications in social science, biology, and engineering. Each interdisciplinary team develops a topic, and presents it to the class in oral and written reports and demonstrations. Students must have shown a strong performance in course 166A or equivalent. Students cannot receive credit for this course and ECON 272, CSE 209, or BIOE 274.

Prerequisite: Prerequisite(s): ECON 166A or CSE 166A; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to juniors and seniors.

ECON 169 - Economic Analysis of the Law (5)

The application of the theories and methods of neoclassical economics to the central institutions of the legal system, including the common law doctrines of negligence, contract, and property; bankruptcy and corporate law; and civil, criminal, and administrative procedure.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M or permission of instructor.

ECON 170 - Environmental Economics (5)

Economic analysis of environmental issues. Environmental pollution and deterioration as social costs. Economic policy and institutions for environmental control. Influences of technology, economic growth, and population growth on environmental quality.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113.

ECON 171 - Natural Resource Economics (5)

The application of economic analysis to the use of renewable and nonrenewable natural resources. Efficiency and distributional aspects of natural resource scarcity. Measurement of the benefits and costs. Optimal extraction or use policies. Common property and externalities. Government policies.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 175 - Energy Economics (5)

Applications of micro, welfare, and international economic theory and methodology to the energy field. Questions considered include optimal allocation of natural resources; pricing and investment; regulations and taxes; import and export control; redistributional policies.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M.

ECON 180 - Labor Economics (5)

A study of topics in modern labor economics with an emphasis on data analysis and econometrics. Topics include labor supply, labor demand, human capital, minimum wage, employment and wage discrimination, immigration, self-employment, earned income tax credit, and unemployment insurance.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113.

ECON 182 - Unemployment (5)

Presents facts about the labor market and unemployment, models to describe unemployment, and policies to tackle unemployment. The course addresses several questions: Why does unemployment exist? Why does unemployment vary over the business cycle? What is the socially optimal rate of unemployment? How should policies respond to fluctuations in unemployment? The course relies on basic mathematical methods such as unconstrained and constrained optimization, and linear and nonlinear differential equations—including phase diagrams.

Prerequisite: Prerequisite(s): ECON 100B. Enrollment is restricted to juniors, seniors, and graduate students.

ECON 183 - Women in the Economy (5)

Study of gender roles in economic life, past and present. Topics include occupational structure, human capital acquisition, income distribution, poverty, and wage differentials. The role of government in addressing economic gender differentials is examined.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113 is strongly recommended.

ECON 186 - Mathematical Methods for Economic Analysis (5)

Presents mathematical methods commonly used in graduate-level economic analysis: basic matrix algebra, real analysis, functions, continuity concepts, differentiation, Taylor expansions, and implicit function theorem and optimization.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 188 - Management in the Global Economy (5)

An overview of how firms do business in the global economy. The focus is on the motivations of firm behavior, but also explores the impact of corporate decision-making on national welfare. Includes a mix of business case studies, applied economic theory, and empirical applications.

Prerequisite: Prerequisite(s): ECON 113 and either ECON 100A or ECON 100M.

ECON 190 - Senior Proseminar (5)

Courses focus on problems of interest to advanced students of economics. They offer a flexible framework, so those interested in specific issues can read, present papers, and develop their ideas.

ECON 191 - Economics Teaching Practicum (5)

Each student serves as facilitator for small discussion group in connection with core economics courses. Facilitators complete course readings and meet with instructor as a group to discuss the teaching process. May not be counted toward upper-division major requirements.

ECON 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar, course 42, under faculty supervision. May *not* be counted toward the upper-division major requirements. Students submit petition to sponsoring agency.

ECON 193 - Field Study (5)

Provides for department-sponsored individual field study experience in an area connected with economics or business. Students work 12-14 internship hours per week. May not be counted toward the upper-division major requirements. Prerequisite(s): ECON 100A, ECON 100B, and ECON 113. Students submit petition to sponsoring agency.

ECON 193F - Field Study (2)

Provides for department-sponsored individual field study experience in an area connected with economics or business under the direct supervision of a faculty sponsor. Students work five-six hours internship hours per week. May not be counted toward the upper-division major requirements. Prerequisite(s): ECON 100A, ECON 100B and ECON 113. Students submit petition to sponsoring agency.

ECON 194 - Advanced Topics in Management (5)

Honors course providing detailed analysis of specialized topics in management. Possible topics include: venture capital, the financial services industry, e-business, behavioral finance, advanced consumer behavior, entrepreneurship, high-tech marketing, risk management, and option value approaches to business strategy. Students cannot receive credit for this course and ECON 194F. Prerequisite(s): ECON 100A or ECON 100M, ECON 100B or ECON 100N, and

ECON 113. Enrollment is by permission of instructor, and review of performance in economics courses. Enrollment is restricted to junior and senior business management economics majors.

ECON 194B - Advanced Topics in Business and Professional Development (2)

Enhances students' marketability, strengthens verbal and written communication skills, teaches appropriate business etiquette, improves networking skills, and helps students determine how to become an integral part of an organization's intellectual capacity. Business professionals provide guest presentations.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors economics, business management economics, global economics majors and combined majors with mathematics and environmental studies.

ECON 194F - Advanced Topics in Management and Finance (2)

Detailed analysis of specialized topics in management. Possible topics include: venture capital, the financial services industry, e-business, behavioral finance, advanced consumer behavior, entrepreneurship, high-tech marketing, risk management, and option value approaches to business strategy. Formerly, Advanced Topics in Management and Finance.

Prerequisite: Prerequisite(s): ECON 100A or ECON 100M; and ECON 113; ECON 133 or ECON 135 strongly recommended. Enrollment is restricted to junior and senior business management economics majors.

ECON 195 - Senior Thesis (5)

A supervised research project. If the project is of unusual scope, the course may be repeated for credit. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, students submit petition to sponsoring agency.

ECON 197 - Economic Rhetoric: Using Economic Theory and Empirical Evidence in Arguing Policy (5)

Economics students are expected to learn to effectively communicate economic theory and evidence relating to economic policy to audiences that do not have economics degrees. The skills to be learned are both written and oral communication. Students learn to present convincing policy arguments in position papers, executive summaries, and in oral presentation that may include charts and other means of communication.

Prerequisite: Prerequisite(s): Entry Level Writing and Composition requirements; ECON 100A or ECON 100M. ECON 100B or ECON 100N and ECON 113 strongly recommended. Restricted to sophomore, junior, and senior economics, business-management economics, global economics and combined economics/math majors.

ECON 199 - Tutorial (5)

May be repeated for credit, but may be counted only once toward the upper-division major requirements. Undergraduates may not take graduate courses for credit as ECON 199. Students submit petition to sponsoring agency.

ECON 199F - Tutorial (2)

Specialized study with individual faculty. May not be applied toward the major requirements. Students submit petition to sponsoring agency.

Graduate

ECON 200 - Microeconomic Analysis (5)

Survey of partial equilibrium analysis, market distortions, consumer choice and production and trade theory, perfect and imperfect competition, price discrimination, and intertemporal choice theory.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 201 - Applications in Microeconomics (5)

Applies concepts and tools developed in ECON 200 to problems encountered in private- and public-sector output and labor markets. The focus is empirical; topics include analysis of labor supply and labor demand and the role of government labor market policies, analysis of pricing policies and regulation, estimation of the returns to schooling, estimation of demand and cost functions, and the role of unions in the economy. ECON 200 is strongly recommended as preparation.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 202 - Macroeconomic Analysis (5)

Aggregate economic analysis: determinants of aggregate expenditures and output, the roles of monetary and fiscal policy, recent developments in macro theory; macro policy issues.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 204A - Advanced Microeconomic Theory I (5)

Economic theory of individual and market behavior, including constrained optimization, duality, theory of the consumer, theory of the producer, dynamic optimization, behavior under uncertainty, intertemporal choice, asymmetric information, game theory, partial and general equilibrium, pure and applied welfare economics, public goods and externalities. ECON 204A, ECON 204B, and ECON 204C must be taken in sequence.

Prerequisite: Enrollment is restricted to Ph.D. students in economics or by permission of the instructor.

ECON 204B - Advanced Microeconomic Theory II (5)

Economic theory of individual and market behavior, including constrained optimization, duality, theory of the consumer, theory of the producer, dynamic optimization, behavior under uncertainty, intertemporal choice, asymmetric information, game theory, partial and general equilibrium, pure and applied welfare economics, public goods and externalities. Courses must be taken in sequence.

Prerequisite: Prerequisite(s): ECON 204A.

ECON 204C - Advanced Microeconomic Theory III (5)

Economic theory of individual and market behavior, including constrained optimization, duality, theory of the consumer, theory of the producer, dynamic optimization, behavior under uncertainty, intertemporal choice, asymmetric information, game theory, partial and general equilibrium, pure and applied welfare economics, public goods and externalities. Courses must be taken in sequence.

Prerequisite: Prerequisite(s): ECON 204B.

ECON 205A - Advanced Macroeconomic Theory I (5)

Modern macroeconomic theory: theories of growth and business cycle fluctuations; theories of household and firm behavior; models of financial markets and labor markets; recent developments in the analysis of macroeconomic policy. ECON 205A, ECON 205B, and ECON 205C must be taken in sequence.

Prerequisite: Enrollment is restricted to Ph.D. students in economics or by permission of instructor.

ECON 205B - Advanced Macroeconomic Theory II (5)

Modern macroeconomic theory: theories of growth and business cycle fluctuations; theories of household and firm behavior; models of financial markets and labor markets; recent developments in the analysis of macroeconomic policy. Courses must be taken in sequence.

Prerequisite: Prerequisite(s): ECON 205A.

ECON 205C - Advanced Macroeconomic Theory III (5)

Modern macroeconomic theory: theories of growth and business cycle fluctuations; theories of household and firm behavior; models of financial markets and labor markets; recent developments in the analysis of macroeconomic policy. Courses must be taken in sequence.

Prerequisite: Prerequisite(s): ECON 205B.

ECON 210A - Mathematical Methods for Economic Analysis (5)

Mathematical methods commonly used in economic analysis are discussed. Covers basic matrix algebra, real analysis, functions, continuity concepts, differentiation, Taylor expansion, implicit function theorem, and optimization. Prerequisite(s): qualifications as determined by instructor; inquire at department office.

ECON 210B - Mathematical Methods for Economic Analysis (5)

A course in introductory mathematical economics which covers standard optimization problems, difference and differential equations, optimal control theory, decisions under uncertainty, game theory, and stochastic calculus. ECON 210A or equivalent is strongly recommended as preparation. Enrollment is restricted to Ph.D. students in economics or by permission of the instructor.

Prerequisite: Enrollment is restricted to Ph.D. students in economics or by permission of the instructor.

ECON 211A - Advanced Econometrics I (5)

Introduces advanced econometric methods. Topics include probability theory, hypothesis testing, linear regression analysis, heteroscedasticity, serial correlation, instrumental variables, and panel data models.

Prerequisite: Enrollment is restricted to economics Ph.D. students or by permission of the instructor.

ECON 211B - Advanced Econometrics II (5)

Focuses on the use of econometric methods for causal inference. Research designs covered include: OLS regression, non-parametric regression, propensity score, panel models, synthetic control, instrumental variables, and regression discontinuity.

Prerequisite: Prerequisite(s): ECON 211A. Enrollment is restricted to graduate students.

ECON 211C - Advanced Econometrics III (5)

Covers the asymptotic theory of m-estimators, resampling methods, nonparametric estimation, and statistical (machine) learning methods commonly used in industry. Emphasis is on theory but students also have the chance to implement some of the methods on real datasets.

Prerequisite: Prerequisite(s): ECON 211A. Enrollment is restricted to graduate students.

ECON 212 - Empirical Project in Econometrics (2)

Empirical project or paper in econometrics to demonstrate student's ability to conduct applied econometric analysis. Ph.D. requirement to be completed by beginning of student's third year of study. Prerequisite(s): ECON 211A and ECON 211B.

ECON 216 - Applied Econometric Analysis I (5)

The use of statistical techniques for the testing of economic hypotheses and the estimation of parameters, with emphasis on regression analysis. Includes methods of dealing with serial correlation, errors in variables, multicollinearity, and heteroscedasticity. Experience with common statistical packages.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 217 - Applied Econometric Analysis II (5)

Covers discrete and limited dependent variable models, nonparametric estimation methods, resampling methods, as well as statistical (machine) learning methods commonly used in industry. Students learn the theoretical foundations behind the methods and also how to apply them in practice.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 220A - Development Economics I (5)

Studies the microeconomics of development. Topics may include health and nutrition, education, intra-household economics, formal and informal risk-coping mechanisms, savings, credit, agriculture, institutions, and service delivery, and corruption.

Prerequisite: Enrollment is restricted to graduate students.

ECON 220B - Development Economics II (5)

Methodological class covering how to build a good theoretical model, how to derive a convincing test of a model, and how to structurally estimate a model. Examples drawn largely (though not exclusively) from the study of economic development.

Prerequisite: Enrollment is restricted to graduate students.

ECON 221A - Advanced Methods in Macroeconomics I (5)

Covers major issues in monetary economics, focusing on the core theoretical models employed in monetary economics. Topics include: money in general equilibrium; money-in-the-utility function approaches; cash-in-advance models; search-based models; welfare costs of inflation; optimal inflation tax; informational frictions in monetary economies; financial and credit frictions; nominal price and wage frictions; time-dependent and state-dependent models of price adjustment; and money in new Keynesian models.

Prerequisite: Prerequisite(s): ECON 205A, ECON 205B, and ECON 205C, or by permission of instructor. Enrollment is restricted to graduate students.

ECON 221B - Advanced Methods in Macroeconomics II (5)

Covers major issues in business-cycle macroeconomics, focusing on structural vector auto-regressions (VARs); solution and estimation of dynamic stochastic general equilibrium (DSGE) models; and solution and estimation of other models—including with slack and unemployment. Topics include: recursive identification; long-run restrictions; sign restrictions; Bayesian estimation; model comparisons; non-linear solution methods; particle filters; and other advanced topics related to business-cycle macroeconomics.

Prerequisite: Prerequisite(s): ECON 205C, or by permission of instructor. Enrollment is restricted to graduate students.

ECON 221C - Advanced Methods in Macroeconomics (5)

Focuses on the use of disaggregated data on firms, establishments, workers, and households in macroeconomic research. Students learn about commonly used administrative records, survey data, quasi-experiments, etc., and their use to answer questions of interest to macroeconomists.

Prerequisite: Prerequisite(s): ECON 204C, ECON 205C, ECON 211C. Enrollment is restricted to economics graduate students.

ECON 222 - Data Science and Applied Microeconomics (5)

Technological advances are creating new opportunities and challenges in the observation of economic behavior and changing the scope of empirical economics. This course exposes students to a variety of approaches to “large n” and “large p” problems and familiarizes students with recent research that has used big data to push the cutting-edge of applied microeconomics and finance. Through a combination of assignments (labs) and work on an independent project, students acquire the statistical and computational tools needed for making use of big data in empirical research.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 224 - Economic Applications of Machine Learning (5)

Introduces machine learning methods and their application to econometrics and applied economics. Covers the traditional use of machine learning for solving prediction problems and recent research applying the methods to causal inference and counterfactual prediction. Students learn the basic theory justifying the use of these methods and gain experience implementing them in R using economic data. Through class discussions, students study examples of applied economic research utilizing machine learning methods.

Prerequisite: Prerequisite(s): ECON 211A, ECON 211B and ECON 211C, or ECON 216 and ECON 217. Recommended prerequisites: M.S. APEF students should have A’s in the econometrics sequence and be comfortable with linear algebra. Experience with R, MATLAB, Python, or related programming language is very strongly recommended, as the course will not teach basic programming.

ECON 231 - International Financial Management (5)

Equips students with the analytical tools they need to make informed financial decisions and manage the risks that businesses face in today's competitive global environment. Covers the fundamental theories and real-world examples in international financial markets.

Prerequisite: Prerequisite(s): ECON 233. Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 234 - Financial Institutions and Markets (5)

Examines various aspects of financial institutions and markets, with emphasis on financial stability and

sustainability. Topics include the role banks and other financial intermediaries play in achieving ESG sustainability goals and minimizing systemic risks. The course also discusses the structure of financial regulation and its role in achieving stability and sustainability goals.

Prerequisite: Prerequisite(s): ECON 233.

ECON 235 - Corporate Finance (5)

Application of modern financial theory to corporate decision making. Topics covered include capital budgeting and the firm's investment decision, capital structure, dividend policies, and the implications of corporate governance for enterprise financial goals.

Prerequisite: Prerequisite(s): ECON 233.

ECON 236 - Financial Engineering (5)

This course surveys the financial risks faced by corporation, banks, and other financial institutions that arise from changes in interest rates, foreign exchange rates, commodity prices, and stock prices. It examines the characteristics, payoffs, and pricing of financial derivatives and other instruments for managing risk, including options, forwards, futures, swaps, structured notes, and asset-backed securities. Several cases will be used to illustrate how actual firms solve financial risk management problems.

Prerequisite: Prerequisite(s): ECON 233. Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 238 - Market Design: Theory and Pragmatics (5)

Surveys the principles of mechanism design and applies them to a variety of 21st Century markets, e.g., for energy, spectrum, finance, online ads, and predictions. Student teams develop new applications.

Prerequisite: Enrollment is restricted to graduate students.

ECON 239 - Current Topics in Finance (5)

Topics in finance selected by the instructor.

Prerequisite: Prerequisite(s): ECON 233.

ECON 240A - International Trade I (5)

The theory of international trade and commercial policy. Both traditional analyses and recent developments are covered. Topics include both normative and positive theoretical analyses, as well as empirical testing of theory.

Prerequisite: Enrollment is restricted to graduate students. ECON 204A, ECON 204B, and ECON 204C are strongly recommended as preparation.

ECON 240B - International Trade II (5)

The second quarter of a two-quarter sequence which focuses on advanced research topics in trade and its intersection with applied microeconomics. The course is theoretical and empirical, and designed to acquaint students with recent developments in the field. Research topics include: trade and development; political economy of trade policies; trade and labor markets; trade and environment; theories, determinants, and implications of foreign direct investments; economic geography; and spatial/urban economics.

Prerequisite: Prerequisite(s): ECON 204C.

ECON 241A - Advanced International Finance I (5)

Covers the foundations of international macroeconomics. Topics include international borrowing and lending, the role of international financial markets, exchange rate economics, wealth and income in open economies, and macroeconomic policy interdependence.

Prerequisite: Prerequisite(s): ECON 204C, and ECON 205C, and ECON 211C. Enrollment is restricted to graduate students.

ECON 241B - Advanced International Finance II (5)

Covers major topics in international finance and open economy macroeconomics, focusing on contemporary theoretical and empirical analysis. Topics include: international capital flows, financial crises, exchange rate economics, financial policy intervention, and fiscal and monetary policies in open economies.

ECON 241C - Advanced International Finance III (5)

Covers contemporary research topics in international macroeconomics and finance, including advances in both theoretical analysis and empirical methods. Specific topics on international macroeconomics, finance, and policy vary.

Prerequisite: Prerequisite(s): ECON 204C, ECON 205C, and ECON 211C. Enrollment is restricted to graduate students.

ECON 249A - International Trade and Development Policy I (5)

Focuses on a range of real-life issues in international trade and development. Topics include North American Free Trade Agreement (NAFTA), the semiconductor industry, the Boeing-Airbus aircraft trade problems, the World Trade Organization (WTO) and developing countries, U.S./Japan trade, trade and the environment, and U.S./China trade.

Prerequisite: Enrollment is restricted to graduate students.

ECON 249B - International Trade and Development Policy II (5)

Emphasizes government policies to promote growth. Topics include the Washington Consensus, the East Asian model, and recent policy changes in East Asia, Latin America, Eastern Europe, and the former Soviet Union.

Prerequisite: Prerequisite(s): ECON 249A. Enrollment is restricted to graduate students.

ECON 250A - Applied Microeconomics I (5)

Theory of the role of public sector expenditures and taxes in market economies. Analyzes efficiency and equity arguments for government intervention. Topics include the role of public

debt and deficits in economies, international effects of tax and spending policies, and economic theories of public sector decision making. ECON 204A and ECON 205A are strongly recommended as preparation. Students cannot receive credit for this course and ECON 150.

Prerequisite: Enrollment is retricted to Ph.D. students in economics or by permission of instructor.

ECON 250B - Applied Microeconomics II (5)

Covers topics in applied microeconomics, including public, labor, education, environmental, and health. Discusses advanced econometric techniques used to establish causal identification. Students read and evaluate current research and develop an independent research agenda.

ECON 250C - Applied Microeconomics III (5)

Covers topics in applied microeconomics, with an emphasis on labor topics not covered in 250A and 250B. Students read and evaluate current research, discuss applications of advanced econometric techniques for causal identification, and develop an independent research agenda.

Prerequisite: Prerequisite(s): ECON 204C and ECON 211C. ECON 250A and ECON 250B are strongly recommended as preparation. Enrollment is restricted to economics Ph.D. students.

ECON 259A - Cost-Benefit Analysis (5)

Applications of economic analysis in public finance, largely from the revenue side: taxation. The issues considered include the effects of taxation on consumer welfare, consumption, labor, capital, production, growth. Course 200 is strongly recommended as preparation. Students cannot receive credit for this course and course 153.

ECON 259B - Public Policy Analysis (5)

Applications of welfare and microeconomic theory and methodology to the public expenditure question: cost-benefit. Examines the effects of the taxes discussed in course 259A and sophisticated tools used in the face of these and other distortions with regard to measurement of benefits, costs, and the discount rate. ECON 200 and ECON 216 are strongly recommended as preparation. Enrollment is restricted to applied economics and finance graduate students.

Prerequisite: Enrollment is restricted to graduate students in the master's degree program in quantitative economics and finance (formerly applied economics and finance) or by permission of the instructor.

ECON 270A - Advanced Topics in Microeconomics I (5)

Advanced topics and current research in microeconomic theory and applications, including topics on decision theory, game theory, behavioral economics, and general equilibrium analysis. (Formerly ECON 270, Advanced Topics in Applied Microeconomics.)

ECON 270B - Advanced Topics in Microeconomics II (5)

Course on microeconomic theory for second-year Ph.D. students in the Economics Department. Covers selected topics in applied theory, especially those related to information economics, mechanism design, and industrial organization. Students are directed to the research frontier of economic theory, and facilitate use of theory to implement a structural approach to empirical work.

Prerequisite: Prerequisite(s): ECON 204C. Enrollment is restricted to graduate students.

ECON 272 - Evolutionary Game Theory (5)

Reviews static equilibrium concepts, games of incomplete information, and the traditional theory of dynamic games in discrete time. Develops recent evolutionary game models, including replicator and best reply dynamics, and applications to economics, computer science, and biology. Prerequisite(s): upper-division math courses in probability theory are strongly recommended. Cannot receive credit for this course and ECON 166B or CSE 166B.

ECON 274 - Macroeconomics Workshop (3)

For Ph.D. students in economics who are at the early stages of their research careers as well as for those who are engaged in dissertation work in macroeconomics and monetary economics. Students present original research in progress. (Formerly Workshop in Macroeconomics and Monetary Economics.)

Prerequisite: Prerequisite(s): ECON 204C, ECON 205C, and ECON 211C, or by consent of instructor. Enrollment is restricted to graduate students.

ECON 275 - Applied Microeconomics Workshop (3)

For Ph.D. students in economics who are at the early stages of their research careers as well as for those who are engaged in dissertation work in applied microeconomics or other empirical work. Students present original research in progress. (Formerly Workshop in Applied Microeconomics.)

Prerequisite: Prerequisite(s): ECON 204C, ECON 205C, and ECON 211C, or by consent of instructor. Enrollment is restricted to graduate students.

ECON 276 - Behavioral, Experimental, and Theoretical Economics Workshop (3)

For economics doctoral students who are at early stages of their research careers as well as those engaged in dissertation research in behavioral, experimental and theoretical economics using laboratory experiments and related techniques. Students present original research in progress. (Formerly offered as Workshop in Experimental Economics.)

Prerequisite: Prerequisite(s): ECON 204C, ECON 205C, and ECON 211C, or by consent of instructor. Enrollment is restricted to graduate students.

ECON 280A - Applied Economics Seminar (2)

Weekly seminar designed to present students with current working applications in various fields of applied economics. (Formerly ECON 294D.)

Prerequisite: Enrollment is restricted to economics Ph.D. students.

ECON 280G - Economics Guest Seminar Series (1)

Bi-weekly seminars by visiting faculty and industry leaders who are experts in their fields provide in-depth insight on topics relevant to graduate students in economics. (Formerly ECON 294C.)

Prerequisite: Enrollment is restricted to graduate students.

ECON 290 - Topics in International Economics (5)

Covers several advanced topics in the history of international economics, international trade, and international finance. Topics include imperfect competition and trade, strategic trade policies, increasing returns, and the pattern of trade, economic geography, exchange rate target zones, and balance of payment crises. Topics vary from year to year. Courses 204A-ECON 204B-ECON 204C and ECON 205A-ECON 205B-ECON 205C are strongly recommended as preparation.

ECON 291 - Workshop in Applied Economics (5)

Experience in applied projects, report writing and presentation, drawing on previous coursework.

ECON 293 - Field Study (5)

Students will undertake analytical projects in public or private institutions. The material covered must be different from that of the thesis topic.

ECON 294A - Applied Economics and Finance Laboratory (2)

Practical experience in managing computerized data sets and running statistical packages. Covers STATA and R.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 294B - Applied Economics and Finance Seminar (2)

Bi-weekly seminars designed to present students with current working applications in various fields of applied economics and finance.

Prerequisite: Enrollment is restricted to quantitative economics and finance (formerly applied economics and finance) graduate students.

ECON 295 - Directed Reading (5)

Reading in research area of student interest, with faculty supervision through weekly discussion. Students submit petition to sponsoring agency.

ECON 296A - Third Year Ph.D. Seminar (5)

Student presentations of literature and/or original research in areas of student research interest. Student discussion of presentations under faculty supervision.

Prerequisite: Prerequisite(s): ECON 204C, ECON 205C, ECON 211B, ECON 240A, ECON 240B, ECON 241A, and ECON 241B.

ECON 297A - Independent Study (5)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

ECON 297B - Independent Study (10)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

ECON 297C - Independent Study (15)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

ECON 297H - Independent Study (1)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

ECON 298A - Master's Thesis Research (5)

May be taken once to meet course requirements for the master's degree. Students submit petition to sponsoring agency.

ECON 298B - Master's Thesis Research (10)

May be taken once to meet course requirements for the master's degree. Students submit petition to sponsoring agency.

ECON 298C - Master's Thesis Research (15)

May be taken once to meet course requirements for the master's degree. Students submit petition to sponsoring agency.

ECON 299A - Doctoral Thesis Research (5)

Research toward Ph.D. dissertation under faculty supervision. Prerequisite(s): advancement to candidacy and students submit petition to sponsoring agency. (Formerly, course 298 Dissertation Research)

ECON 299B - Doctoral Thesis Research (10)

Research toward Ph.D. dissertation under faculty supervision. Prerequisite(s): advancement to candidacy and students submit petition to sponsoring agency. (Formerly, course 298 Dissertation Research)

ECON 299C - Doctoral Thesis Research (15)

Research toward Ph.D. dissertation under faculty supervision. Prerequisite(s): advancement to candidacy and students submit petition to sponsoring agency. (Formerly, course 298 Dissertation Research)

EDUC - EDUCATION

Lower-Division

EDUC 10 - Introduction to Learning (5)

Survey course exploring the foundational perspectives on learning, especially when considering learners from non-dominant communities, how those views of learning are reflected in what and how students learn in school and out of school, and how those views of learning can impact teaching practices.

EDUC 50A - CAL Teach 1: Science and Mathematics (2)

Introductory seminar exploring secondary students, teaching, and schools in the context of science and/or mathematics instruction. Concurrent participation in a secondary school internship required. Course material supports and enhances students' placement experiences. Prerequisite(s): Acceptance into CAL Teach and concurrent participation in a secondary school internship in a science or math classroom.

EDUC 50B - CAL Teach 1: Mathematics (2)

Introductory seminar exploring secondary students, teaching, and schools in the context of mathematics instruction. Concurrent participation in a secondary school internship required. Course material supports and enhances students' placement experiences. Prerequisite(s): Acceptance into CAL Teach and concurrent participation in a secondary school internship in a math classroom.

EDUC 50C - CAL Teach 1: Science (2)

Introductory seminar exploring secondary students, teaching, and schools in the context of science instruction. Concurrent participation in a secondary school internship required. Course material supports and enhances students' placement experiences. Prerequisite(s): Acceptance into CAL Teach and concurrent participation in a secondary school internship in a science classroom.

EDUC 60 - Schooling, Democracy, and Justice (5)

Survey course exploring the foundations of public education in the United States, including: the social and political forces within schools and school systems in the U.S. the history and formation of the system and the educational policies and practices in our culturally and linguistically diverse nation. (Formerly Introduction to Education: Learning, Schooling, and Society.)

EDUC 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

EDUC 100A - Cal Teach 2: Science and Mathematics (2)

Examines students, schools, and science and/or mathematics instruction with emphasis on developing an instructional project aligned with state-mandated content standards. Concurrent participation in a secondary school internship required. Course content supports and enhances students' internship experience.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; EDUC 50A, EDUC 50B, or EDUC 50C; and acceptance into the Cal Teach program. Enrollment is restricted to sophomores, juniors, and seniors.

EDUC 100B - Cal Teach 2: Mathematics (2)

Examines students, schools, and mathematics instruction with emphasis on developing an instructional project aligned with state-mandated content standards. Concurrent participation in a secondary school internship required. Course content supports and enhances students' internship experience.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; EDUC 50A, EDUC 50B, or EDUC 50C; and acceptance into the Cal Teach program. Enrollment is restricted to sophomores, juniors, and seniors.

EDUC 100C - Cal Teach 2: Science (2)

Examines students, schools, and science instruction with emphasis on developing an instructional project aligned with state-mandated content standards. Student must concurrently participate in a K-12 school internship. Concurrent participation in a secondary school internship required. Course content supports and enhances students' internship experience.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; EDUC 50A, EDUC 50B, or EDUC 50C; and acceptance into the Cal Teach program. Enrollment is restricted to sophomores, juniors, and seniors.

EDUC 102 - Education, Media, and Society (5)

Focusing on ways the media (both news and the entertainment industry) portrays schools, teachers, and students to the public, investigates the way society views education, the way education is presented in the media, and the way education is influenced by society.

Prerequisite: Enrollment is restricted to declared EDJ majors or education minors or by permission of instructor.

EDUC 104 - Ethical Issues and Teaching (5)

Emphasizes a philosophical exploration of the moral complexities of teaching. Students read theoretical investigations of these complexities, and examine case studies that pose difficult moral questions and illuminate the dilemmas of everyday life in classrooms. Course is grounded in a dialogical approach to learning.

Prerequisite: Enrollment is restricted to junior and senior education, democracy and justice majors; science education majors; and STEM and EDUC minors, or by permission of instructor.

EDUC 105 - Cal Teach: Establishing Effective Classroom

Communities (2)

Provides guided field experiences for prospective math and science teachers to explore how teachers establish effective classroom communities. Course is scheduled to overlap with early weeks of the K-12 academic year. Concurrent participation in a field placement in a secondary math or science classroom is required. Course content supports and enhances students' internship experiences. Prerequisite(s): EDUC 50B, EDUC 50C, EDUC 180, or similar experience. Enrollment is by instructor consent. Participants must be admitted to and in good standing in the Cal Teach program at UCSC (apply at calteach.ucsc.edu) or another UC campus.

EDUC 110 - Popular Education, Democracy, and Social Movements (5)

Examines transformative learning and action at the heart of movements for social justice. Investigates principles and practices of "popular education" and other grassroots education traditions that have emerged from struggles for liberation and democracy. Topics include: abolition-democracy, critical consciousness, humanization, critical literacy, problem-posing, praxis, counter-narrative, participatory action research, and cultural organizing.

Prerequisite: Prerequisite(s): satisfaction of the Entry-Level Writing and Composition requirements and EDUC 60. Enrollment is restricted to education, democracy and justice majors, science education majors, STEM education minors, and education minors, or by permission of instructor.

EDUC 115 - K-12 Student Assessment (5)

Provides an overview of educational testing. Appropriate use and interpretation of standardized, classroom achievement and special needs assessments are examined. Issues on fair testing of diverse populations of students are discussed within each topic area.

Prerequisite: Enrollment is restricted to declared education, democracy and justice majors, science or math education major, STEM ED or EDUC minor, or by permission of instructor.

EDUC 120 - The Arts in Schools: Aesthetic Education Theory and Practice (5)

Explores the historical legacy of the arts within education; considers aesthetic education as an inter-arts philosophical and practical endeavor; studies alternatives to the current situation of the arts in education; develops theory, curricula and methods necessary to teach the arts. Addresses both elementary and secondary teaching in the arts. Meets third-course requirements.

Prerequisite: Enrollment is restricted to junior and senior education minors; STEM education minors; education, democracy and justice majors; science education majors; or by permission of instructor.

EDUC 125 - Multicultural Children's Literature for Elementary Classrooms (5)

Offers opportunities for undergraduate and graduate students to learn about fundamental aspects of children's literature, increase their knowledge of range and quality of children's literature, enhance their understanding of multicultural children's literature, and develop ways to integrate children's literature into elementary- and middle-school curriculum areas.

Prerequisite: Enrollment is restricted to junior and senior education democracy and justice majors, education minors, and STEM education minors, or by permission of instructor.

EDUC 126 - Foundations of Literacy Learning: Contemporary Perspectives (5)

Offers an overview of historical and contemporary perspectives regarding literacy learning in America. Using a socio-cultural lens and research findings to analyze instructional practices, it provides foundational knowledge for potential teachers and policy makers regarding literary education.

Prerequisite: Prerequisite(s): EDUC 60 and EDUC 180.

EDUC 128 - Immigrants and Education (5)

Research and theory on the education of immigrant students. Major topics include the Americanization movement and America's changing demography, identity maintenance and change, home-school relations, and educators' roles in meeting the needs of culturally and linguistically diverse student populations.

Prerequisite: Enrollment is restricted to junior and senior education, democracy and justice majors; science education majors; and STEM and EDUC minors, or by permission of instructor.

EDUC 135 - Gender and Education (5)

Addresses the changing but continuing patterns of unequal expectations, opportunities, and treatment throughout the educational system for all students, female and male, who do not match a standard model of gender performance.

Prerequisite: Enrollment is restricted to education or STEM minors, physics education majors, or students with math education concentration or Earth sciences science education concentration, or biology B.A. bioeducation, or by permission of instructor.

EDUC 140 - Language, Diversity, and Learning (5)

Explores the intersection between language, diversity, and education to examine the education of youth who have been historically underserved by schools. Topics include dialect and register variation; language policy; and sociocultural perspectives on learning/teaching of language.

Prerequisite: Enrollment is restricted to junior and senior education, democracy and justice majors; science education majors; and STEM and EDUC minors, or by permission of instructor.

EDUC 141 - Bilingualism and Schooling (5)

Introduces participants to issues related to the schooling of students who speak languages other than or in addition to English. Uses a multidisciplinary perspective to understand the circumstances these students face in schools and considers approaches and policies that best meet their needs.

Prerequisite: Enrollment is restricted to education or STEM minors, physics education majors, or students with math education concentration or Earth sciences science education concentration, or biology B.A. bioeducation, or by permission of instructor.

EDUC 160 - Issues in Educational Reform (5)

Explores a variety of perspectives on key educational policy issues including desegregation, bilingual education, affirmative action, charter schools, national and state curriculum standards, student assessment and the assessment and certification of teachers.

Prerequisite: Enrollment is restricted to education or STEM minors, physics education majors, or students with math education concentration or Earth sciences science education concentration, or biology B.A. bioeducation, or by permission of instructor.

EDUC 162 - Critical Youth Studies in Education (5)

Examines youth as a social construction, relation, and achievement to understand the everyday lives, experiences, learning, and education of youth. Explores the development, histories, cultures, politics, and resistance of youth in education, focusing on race, gender/sexuality, class, and their intersections.

Prerequisite: Enrollment restricted to junior and senior education minors.

EDUC 164 - Urban Education (5)

Focuses on urban schooling through critical readings, fieldwork, group projects, and extensive writing. Students explore how socialization, marginalization, and assimilation impede or support academic success, how class intersects with race, and how culture affects one's orientation to education.

Prerequisite: Enrollment is restricted to junior and senior education, democracy and justice majors; science education majors; critical race and ethnic studies majors; and STEM, EDUC and Black studies minors, or by permission of instructor.

EDUC 166 - Technology and Education (5)

Explores the history of technology in education from approximately 1950 to the present, addressing the interpersonal, epistemological, and pedagogical differences between digital and analog learning. Although no programming experience is required, participants will create an instructional application.

Prerequisite: Enrollment is restricted to junior and senior education minors, STEM education minors, education democracy and justice majors, science education majors, or by permission of instructor.

EDUC 173 - Seminar in Critical Pedagogy (5)

Philosophical and pedagogical exploration of relationships among oppression, power, society, education, and change. Examines how history, power, economics, and discrimination shape societal perspectives and schooling practices, and considers ways to transform education.

Prerequisite: Enrollment is restricted to education or STEM minors, physics education majors, or students with math education concentration or Earth sciences science education concentration, or biology B.A. bioeducation, or by permission of instructor.

EDUC 174 - Ethnographic Research in Schools and Communities (5)

Explores ethnographic research as an important path for future teachers in understanding how diverse communities provide and support schooling at all levels.

Prerequisite: Prerequisite(s): EDUC 60 and EDUC 180.Enrollment is restricted to junior and senior education or STEM minors or by permission of instructor.

EDUC 177 - Teaching Linguistically Diverse Students (5)

Examines equity issues in the learning and teaching of math and science in culturally and linguistically diverse school settings. Draws on multicultural, bilingual, and math/science education perspectives. Intended for undergraduate majors considering a K-12 teaching career. Satisfies an elective requirement for the minor in education program. Prior completion of EDUC 180 is advised. (Formerly Teaching Culturally and Linguistically Diverse Students Math and Science.)

Prerequisite: Enrollment is restricted to education or STEM minors, science education majors, or students with math education concentration, or by permission of instructor.

EDUC 178 - Special Topics in Education (5)

Taught on a rotating basis by various faculty members. The precise focus of each year's course will vary according to the instructor. Please contact the department for information on the current topic. Individual topics may be applied only once to the education minor, STEM minor or education major. (Formerly Advanced Educational Studies.)

Prerequisite: Enrollment is restricted to junior and senior education and STEM minors, education, democracy, and justice, science education, and sociology majors or by permission of instructor.

EDUC 180 - Introduction to Teaching (5)

Designed to encourage students to think about teaching in new ways. Assumptions about teaching and schooling are examined as well as considering what it takes to teach so that children learn and understand. Not a course in how to teach, but an opportunity to reconsider what teaching should try to

accomplish and what kinds of learning teachers should foster. Practicum in the schools of 30 hours per quarter required.

Prerequisite: Prerequisite(s): Entry Level Writing and Composition requirements; and EDUC 60. Enrollment is restricted to education, democracy and justice majors, science education majors, STEM education minors, and education minors, or by permission of instructor.

EDUC 181 - Race, Class, and Culture in Education (5)

Examines the schooling experience and educational attainment of racial/ethnic minority students in the U.S. Focuses primarily on domestic minorities. Addresses issues of variability between and within minority groups and the role of cultural, structural, and psychological factors in the educational attainment of these students.

Prerequisite: Enrollment is restricted to education or STEM minors, physics education majors, or students with math education concentration or Earth sciences science education concentration, or biology B.A. bioeducation, or by permission of instructor.

EDUC 182 - Social and Political Contexts of Teachers' Work (5)

Explores the social, cultural, historical, and policy context of teachers' work in the United States. Examines the historical evolution and development of the teaching profession, explores contemporary images of teachers, analyzes demographics of the teaching workforce, and investigates the sources of teacher motivation, satisfaction and frustration. In particular, students examine student, cultural, media, teacher and policy representations of teachers and their work. Whenever possible, students will engage with what teachers' themselves say about their work, rather than relying on second-hand accounts with the aim of building a picture of the complexity of teachers' work. (Formerly American Teacher.)

Prerequisite: Enrollment is restricted to junior and senior education or STEM minors, education, democracy and justice, science education, sociology, and critical race and ethnic studies majors, or by permission of instructor.

EDUC 183 - Children's Mathematical Thinking (5)

Provides an introduction to children's mathematical thinking and an overview of major themes, issues, and questions that researchers in mathematics education have studied in relation to children's mathematical thinking.

Prerequisite: Prerequisite(s): EDUC 60. Enrollment is restricted to education or STEM minors; physics education majors; students with math education concentration; Earth Sciences science education concentration; biology B.A. bioeducation; or by instructor permission.

EDUC 185B - Introduction to Mathematics Education (5)

Provides an introduction to principles and practices for mathematics education; examines how research on learning and teaching mathematics informs approaches to teaching mathematics; provides an introduction to national and state standards, mathematics curricula, and other current issues in mathematics education.

Prerequisite: Prerequisite(s): MATH 11A and MATH 11B, or MATH 19A and MATH 19B; or MATH 20A and MATH 20B; or AM 11A and AM 11B; or equivalent courses (by instructor approval); or by permission of the instructor.

EDUC 185C - Introduction to Teaching Science (5)

An introduction to the principles and practices for teaching science in secondary classrooms. Course examines theoretical and practical approaches to teaching science, provides an introduction to national and state standards and an overview of science curricula and current issues in science teaching.

Prerequisite: Enrollment is restricted to junior and senior education, democracy and justice majors, science education majors, STEM education minors, and education minors, or by permission of instructor.

EDUC 185L - Introduction to Teaching: Cal Teach 3 (3)

Supplements theoretical and practical introduction to the teaching of science or mathematics with subject-pedagogical approaches. Concurrent participation in an advanced Cal Teach internship provides context to apply theory and practical techniques. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; EDUC 50A, EDUC 50B, or EDUC 50C; EDUC 100A, EDUC 100B, or EDUC 100C; EDUC 185B or EDUC 185C. Enrollment restricted to juniors and seniors or education minors, or by permission of instructor.

EDUC 187 - Cognition and Instruction (5)

Addresses the question, How do people learn? by examining theories of learning and research on cognition, learning, and instruction.

Prerequisite: Enrollment is restricted to juniors, seniors, or education minors, or by permission of instructor.

EDUC 190 - Senior Seminar Capstone (5)

Senior seminars focus on advanced topics in education. The pedagogical goals vary by instructor but often emphasize at least one of the following: critical and analytical thinking, field research, advanced research methods (qualitative or quantitative), or advanced theory. Satisfies senior capstone requirement.

Prerequisite: Prerequisite(s): Entry Level Writing and Composition requirements. EDUC 10 and EDUC 60; EDUC 110 or EDUC 180. Enrollment is restricted to education, democracy and justice majors, or by permission of instructor.

EDUC 194 - Group Projects (5)

Students submit petition to sponsoring agency.

EDUC 194F - Group Projects (2)

Students submit petition to sponsoring agency.

EDUC 197A - Cal Teach Special Project (1)

Work with K-12 students on science or math projects, ideally involving inquiry-based learning. Site supervision provided by a credentialed teacher. Project-dependent reading and writing assignments negotiated with instructor. Projects will be offered as available or initiated by student. Enrollment is by interview only. Prerequisite(s): EDUC 50A, EDUC 50B, or EDUC 50C. Enrollment is restricted to majors in the physical and biological sciences and majors in the school of engineering or by permission of instructor.

EDUC 197B - Cal Teach Special Project (2)

Work with K-12 students on science or math projects, ideally involving inquiry-based learning. Site supervision provided by a credentialed teacher. Project-dependent reading and writing assignments negotiated with instructor. Projects will be offered as available or initiated by student. Enrollment is by interview only. Prerequisite(s): EDUC 50A, EDUC 50B, or EDUC 50C. Enrollment is restricted to majors in the physical and biological sciences and majors in the school of engineering or by permission of instructor.

EDUC 197C - Cal Teach Special Project (3)

Work with K-12 students on science or math projects, ideally involving inquiry-based learning. Site supervision provided by a credentialed teacher. Project-dependent reading and writing assignments negotiated with instructor. Projects will be offered as available or initiated by student. Enrollment is by interview only. Prerequisite(s): course 50A, 50B, or 50C. Enrollment is restricted to majors in the physical and biological sciences and majors in the school of engineering or by permission of instructor.

EDUC 198 - Independent Field Study (5)

Students submit petition to sponsoring agency.

EDUC 198F - Independent Field Study (2)

Students submit petition to sponsoring agency.

EDUC 199 - Tutorial (5)

Students submit petition to sponsoring agency.

EDUC 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

EDUC 200 - Beginning Student Teaching (5)

A required course that introduces students to the diverse cultural and linguistic settings of today's classrooms. Classroom practices, instructional strategies, and analysis are emphasized. First course in the student teaching placement series. Placements are used to examine and apply teaching methods while developing classroom management skills. Class meetings include discussion and demonstration of teaching methods.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 201 - Intermediate Student Teaching (5)

Designed to provide students enrolled in the UCSC teacher education program a coherent, integrated, pre-professional experience in public school classrooms. Students assume part-time student teaching responsibilities totalling 14–16 hours per week under the direct supervision of an exemplary classroom teacher. Weekly seminars and ongoing supervision by department staff are required.

Prerequisite: Prerequisite(s): EDUC 200. Enrollment is restricted to MA/credential students.

EDUC 201A - Intermediate Student Teaching: Single Subject (5)

Provides advanced pre-professional experience for single subject teaching candidates who progressively assume full-time responsibility for public school student teaching beginning in winter quarter. Taken concurrently with EDUC 201. Weekly supervision and seminars with teacher supervisors are required.

Prerequisite: Prerequisite(s): EDUC 200. Enrollment is restricted to MA/credential students.

EDUC 202A - Advanced Student Teaching (5)

Designed for students who have extensive field and course experience in education, and who wish to qualify for the single-subject or multiple-subject teaching credential by undertaking a quarter of full-time, supervised student teaching.

Prerequisite: Prerequisite(s): EDUC 201. Enrollment is restricted to M.A./credential students.

EDUC 202B - Advanced Student Teaching (5)

Designed for students who have extensive field and course experience in education, and who wish to qualify for the single-subject or multiple-subject teaching credential by undertaking a quarter of full-time, supervised student teaching.

Prerequisite: Prerequisite(s): EDUC 201. Enrollment is restricted to M.A./credential students.

EDUC 202C - Advanced Student Teaching (5)

Designed for students who have extensive field and course experience in education, and who wish to qualify for the single-subject or multiple-subject teaching credential by undertaking a quarter of full-time, supervised student teaching.

Prerequisite: Prerequisite(s): EDUC 201. Enrollment is restricted to M.A./credential students.

EDUC 203 - Teaching English Language Development:

Foundations, Approaches, and Strategies (5)

This course will help future educators develop a practical theory for teaching English as a second language in K-5 schools. Topics include the theoretical foundation for language acquisition; current trends and research in the field; the role of culture in teaching English learners; language assessment; and the design of instructional units. Also focuses on teaching social studies to English learners. Enrollment restricted to M.A./credential students.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 204 - Methods of English Language Development: Single Subject (5)

Course helps future educators develop a practical theory for teaching English in the elementary and secondary schools to students who speak other languages. Topics include current trends in the field, language assessment, and the design of instructional units.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 205 - Teaching, Learning, and Schooling in a Diverse Society (5)

Required for master's students in education other than those in an approved 4+1 pathway who have the option to waive the course; offered in summer. Three basic units comprise the subject matter: teaching/learning, with such topics as development, learning, pedagogy, and socialization theories; schooling, as the context of teaching/learning both in its existent structures and its reform movements; and the sociocultural context in which educational institutions exist, topics such as cultural and historical forces, political and economic condition, family, and community structures.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 206 - Teaching, Learning, and Schooling: Single Subject (5)

Required for master's students in education; offered in summer. Three basic units comprise the subject matter: teaching/learning, with such topics as development, learning, pedagogy, and socialization theories; schooling, as the context of teaching/learning both in its existent structures and its reform movements; and the sociocultural context in which educational institutions exist, including topics such as cultural and historical forces, political and economic conditions, family, and community structures.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 207 - Social Foundations of Education (5)

Offered in summer. A sustained inquiry into the social, political, economic, and historical foundations of schools with an emphasis on community attitudes toward education. Student narratives of engagement and resistance will provide a basis for insights and interventions useful to educators.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 208 - Portfolio Development (2)

Offered in summer. Provides student and faculty adviser with time to confer over the completion of the required portfolio.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 210 - Health, Safety, and Community (2)

Offered in summer. Addresses the preparation of teachers for creating a supportive, healthy environment for student learning. Covers topics related to physical, emotional, and social health.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 211 - Teaching Special Populations in the General Education Classroom (2)

Addresses the preparation of teachers for meeting needs of special populations within the general education setting. Covers basic knowledge, skills, and strategies. (Formerly Topics in Elementary Education: Teaching Special Populations.)

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 212A - Bilingualism and Biliteracy: History, Politics, Theory, and Practice (2)

Taught in Spanish. Prepares future bilingual teachers to be knowledgeable about history, politics, theory, and practices related to bilingual instructional programs. Topics: second-language acquisition, bilingual-program models, equity pedagogy.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 212B - Bilingualism and Biliteracy: Language, Literacy and Content Instruction (2)

Taught in Spanish. Prepares future bilingual teachers to teach language, literacy, and the content areas in ways that address the needs of culturally and linguistically diverse students. Topics: literacy in two languages; academic language; assessment.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 212C - Bilingualism and Biliteracy: Community and School Partnerships (2)

Taught in Spanish. Provides opportunities for future bilingual teachers to develop culturally relevant practices that build collaboration between the school, students' families, and

community. Topics: Latino culture and history, school-parent communication.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 213 - Child and Adolescent Development for Educators (2)

Offered in summer. Addresses theories of child and adolescent development and how these theories apply to student success in school. Topics include: cognitive, social, emotional, and physical development, and how this knowledge influences decisions teachers make about instruction and their interaction with students.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 214 - Contemporary Issues in Education (2)

Addresses current issues in California's educational landscape. Potential topics include the teaching of LGBTQ curricula, understanding youth gang participation, the initiation of ethnic studies courses, school funding and school district budgets, and new technologies for student assessment.

Prerequisite: Enrollment is restricted to MA/Credential graduate students.

EDUC 217 - Topics in Elementary Education: Physical Education (2)

Examines pedagogical understanding in teaching physical education. Introduces candidates to theoretical and research basis in physical education and content standards and frameworks. Also investigates and presents instructional practices.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 218 - Topics in Elementary Education: Visual Arts (2)

Examines pedagogical understanding in teaching visual arts. Introduces candidates to theoretical and research basis for teaching visual arts and content standards and frameworks. Also investigates and presents instructional practices.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 219 - Topics in Elementary Education: Performing Arts (2)

Examines pedagogical understanding in teaching performing arts. Introduces candidates to theoretical and research basis for teaching performing arts and content standards and frameworks. Also investigates and presents instructional practices.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 220 - Reading and Language Arts for Elementary Classrooms (5)

This course provides both a theoretical and practical foundation for literacy instruction, emphasizing reading and language arts instruction in grades K–8. Interactive instruction and field experience will be used to examine curricula, methods, materials, and literacy evaluation.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 221 - Science Learning and Teaching in Elementary Classrooms (5)

Examines constructivist and sociocultural approaches to the learning and teaching of science in elementary classrooms, including beliefs about the nature of science and theories of how children learn science. Provides a critical overview of curricula, instructional theories, and multiple approaches to teaching the big ideas in elementary science.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 222 - Mathematics Learning and Teaching in Elementary Classrooms (5)

This course is required for the multiple subject credential. Examines constructivist and sociocultural approaches to the learning and teaching of mathematics in elementary classrooms, including the nature of mathematics and theories of how children learn mathematics. Provides an introduction to mathematics teaching standards and a critical overview of curricula, instructional theories, and multiple approaches to teaching the big ideas in elementary mathematics.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 225 - Reading Across the Curriculum in Middle School and Secondary (5)

Provides a theoretical and practical foundation for teaching reading within content area instruction in middle school and secondary classrooms. Field experiences and interactive instruction will facilitate learning about strategies, curricula, methods, materials, and observation. Intended for students pursuing a single subject credential.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 226 - English Teaching: Theory and Curriculum (5)

Required for the single subject English credential student. Examines sociocultural approaches to the learning and teaching of English in secondary classrooms, including theories of how children learn English language, literature, and composition.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 227 - English Teaching for Secondary Classrooms (5)

Prepares English single subject credential candidates for student teaching in winter and spring. Course focuses on developing curricula and strategies in the content area. Through classroom placements, students observe and apply techniques to develop curriculum units used in student teaching.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 228 - Math Education: Research and Practice (5)

Examines research on the learning and teaching of mathematics. Topics include the nature of mathematics cognition and learning, how children learn mathematics, mathematical discourse, and perspectives on addressing diversity in mathematics classrooms. Course is required for M.A./credential students in secondary (single subject) mathematics and of Ph.D. students in mathematics education.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 229 - Teaching Mathematics in the Secondary Classroom (5)

Examines constructivist and sociocultural approaches to teaching mathematics in the secondary classroom. Course will provide an introduction to mathematics teaching standards and a critical overview of curricula, instructional theories, and multiple approaches to teaching the big ideas in secondary mathematics. Required for mathematics secondary credential.

Prerequisite: Prerequisite(s): EDUC 228. Enrollment is restricted to MA/credential students.

EDUC 230 - Science Education: Research and Practice (5)

Examines theoretical approaches to the learning and teaching of science including the nature of scientific knowledge, theories of how children learn science, approaches to scientific discourse, and perspectives on addressing diversity in science classrooms. Course is required for single subjects science credential.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 231 - Teaching Science in the Secondary Classroom (5)

Examines constructivist and sociocultural approaches to teaching science in secondary classrooms. Course will provide a critical overview of curricula, instructional theories, and multiple approaches to teaching the big ideas in science.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 232 - Social Science: Theory and Curriculum (5)

Required for the single subject social science credential student. Tracks both the implicit and explicit connections between theory and practice, illustrating that theory suggests best practice while practice informs theory-formation and testing.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 233 - Social Science Teaching for Secondary Classrooms (5)

Prepares social science single subject credential candidates for student teaching in winter and spring. Course focuses on developing curricula and strategies in the content area. Through classroom placements, students observe and apply techniques to develop curriculum units that are used in student teaching.

Prerequisite: Enrollment is restricted to MA/credential students.

EDUC 235 - Introduction to Educational Inquiry (5)

Addresses foundational knowledge needed to understand and conduct educational inquiry and research. Topics include epistemology in the human sciences, philosophical foundations of modern research strategies, and general classes of research investigations in education.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 236 - Quantitative Research Methods (5)

Provides an introductory-level knowledge of quantitative research methods in educational settings. Students learn the foundations of quantitative data theory, general logic behind statistical inference, and specific methods of data analysis in educational contexts.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 237 - Qualitative Research Methods (5)

Graduate level introduction to qualitative methods, with special attention to ethnographic research on schooling. Moves from overview of different methods, through examination of selected studies, to discussion of issues in research design, data collection, analysis, and writing.

Prerequisite: Enrollment is restricted to graduate students; priority is given to graduate students in education.

EDUC 250 - Teaching and Teachers (5)

Examines the historical, socio-political, and research contours of the teaching profession. Investigates histories of teaching and teacher's work in the 19th and 20th centuries. Analyzes the contemporary era of teachers and teaching in the United States.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 251 - Analysis of Activity and Interaction in Educational Settings (5)

Analyzes topics, which vary systematically from year to year, including analysis of classroom interaction, video recording and transcription, coding and analysis of discourse data, and software programs for qualitative analysis.

Prerequisite: Prerequisite(s): EDUC 237. Enrollment is restricted to graduate students.

EDUC 252 - Hermeneutics of Education (5)

Investigates philosophical hermeneutics to deeply interrogate education. Addresses such questions as: What is hermeneutics? How is education an hermeneutic enterprise? How does knowing hermeneutics deepen the ability to engage in education research?

Prerequisite: Enrollment is restricted to graduate students.

EDUC 253 - Research Design in Mathematics and Science Education (5)

Examines multiple approaches to designing research studies in mathematics and science education. Introduces multiple types of research designs and principles used by education researchers examining mathematics/science learning and teaching.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 254 - Critical and Alternative Paradigms in Education Research (5)

Examines theoretical foundations of critical and alternative research paradigms commonly used in education, including critical ethnography, participatory research, counter-storytelling, and social-design experiments. Examines critiques of qualitative/quantitative research from feminist and critical theory; surveys how such critiques have informed the development of new paradigms in education research; and explores the benefits and limits of selected alternative paradigms.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 255 - Intermediate Quantitative Methods (5)

Focuses on the applied statistical modeling and analysis of educational data (large-scale data sets), not on the mathematical foundations of science. Students learn to address quantitative research questions using general linear model (GLM) statistical methods. GLM includes regression analysis, analysis of variance (ANOVA), and analysis of covariance (ANCOVA). Students learn statistics by doing statistics.

Prerequisite: Prerequisite(s): introductory statistics course (EDUC 236 or equivalent). Enrollment is restricted to graduate students.

EDUC 256 - Intermediate Qualitative Analysis (5)

Emphasizes the analysis of qualitative data in education research and introduces interpretive analytical approaches for its use with empirical data, the use of coding software for ethnographic analysis, and video recording and transcription.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 260 - The Teacher and The School: An Investigation of Related Practice, Reform, and Research (5)

Explores empirical and theoretical interconnections between teachers and teaching on the one side, and schools as situated organizations on the other. The course examines these various interconnections in relation to contemporary educational research, practice, and policy reform.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 261 - Thinking and Learning (5)

Examines multiple theoretical perspectives on thinking, learning, and teaching; the development of the whole person in a variety of cultural contexts; the roles thinking, learning, and teaching play in that development; and how researchers' and educators' conceptions shape instruction.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 262 - Social and Cultural Context of Education (5)

Application of anthropological and sociological theories to study of education. Examines social, cultural, and linguistic context of schooling with particular attention to role of race, class, culture, power, and language in influencing schooling outcomes.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 263 - Educational Reform (5)

Provides students with multiple analytic perspectives from which to examine important educational issues by analyzing political, historical, and philosophical origins of educational reform in the U.S. and internationally.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 264 - Research on Teacher Development and Teacher Education (5)

Addresses personal and professional development of teachers. Explores models of teacher education with specific attention to methods and processes by which teachers can be better prepared to work with culturally and linguistically diverse students.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 265 - Teacher as Educational Policy Maker (5)

Focuses on the role teachers play in making/implementing educational policy. Addresses how this topic is implicated in enhancing the educational opportunities available to students who, historically, have been underserved by schools.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 266 - Program Evaluation and Action Research in Educational Reform (5)

Overview of the purpose of and practice in program evaluations in a variety of contexts with a specific focus on educational settings. Students learn the techniques of program evaluation; the historical and theoretical context of program evaluations, including its relation to experimental research;

and how action research can be used in conducting field-based evaluations. Students should be familiar with basic quantitative and qualitative methodologies.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 268 - Schools, Communities, and Families (5)

Examines the nexus of schools, communities, and families, and, in particular, how collaboration across institutional boundaries can facilitate school and community reform.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 271 - Theoretical Perspectives on Learning and Using Literacy (5)

Examines theoretical perspectives, educational issues, and scholarship related to use and development of literacy among diverse populations, particularly those who have not fared well in U.S. schools.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 272 - Language in Education and Society (5)

Investigates discipline of sociolinguistics and explores actual ways in which sociolinguistics has become a useful lens for better understanding teaching, learning, and schooling. Conduct own sociolinguistic analyses of data collected for culminating project.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 273 - Language Acquisition, Bilingualism, and Education (5)

Foundations of first- and second-language acquisition and bilingualism with emphasis on implications for education in linguistically diverse settings. Topics include linguistic, cognitive, sociolinguistic, and sociocultural approaches to development of languages and the nature of individual and societal bilingualism.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 274 - Language and Power in Education (5)

Examines relationships between sociopolitical struggles and language/language practices. Students study ways in which Marxism, critical theory, and post structuralism have represented links between language and power, and investigate contemporary studies of language and power in education.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 276 - Theory and Practice of Writing (5)

Explores first and second language-writing theory, research, and practice, especially relating to language minority students and others considered academically under-prepared. Focuses on educational settings from pre-school settings including families and communities.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 277A - Second-year Doctoral Proseminar (2)

Three-quarter seminar supporting second-year doctoral students as they progress through their second year research project from proposal, through data collection and analysis, to final paper and presentation.

Prerequisite: Prerequisite(s): Enrollment is restricted to education doctoral students working on their second-year project.

EDUC 277B - Second-year Doctoral Proseminar (2)

Three-quarter seminar supporting second-year doctoral students as they progress through their second year research project from proposal, through data collection and analysis, to final paper and presentation.

Prerequisite: Prerequisite(s): Enrollment is restricted to education doctoral students working on their second-year project.

EDUC 277C - Second-year Doctoral Proseminar (2)

Three-quarter seminar supporting second-year doctoral students as they progress through their second-year research project from proposal, through data collection and analysis, to final paper and presentation.

Prerequisite: Prerequisite(s): Enrollment is restricted to education doctoral students working on their second-year project.

EDUC 278 - Critical Exploration of Reading Theory and Practice (5)

Doctoral seminar that examines historical and current research on reading processes and instructional practices. Intensive study of factors affecting the development of proficient, engaged, and reflective readers who can acquire new knowledge from text.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 279 - Directed Reading (5)

Directed reading that does not involve a final paper. Students submit a petition to the course-sponsoring agency. May be repeated for credit up to four times. Enrollment is restricted to graduate students.

EDUC 279F - Directed Reading (2)

Directed reading that does not involve a final paper. Students submit a petition to the course-sponsoring agency. May be repeated for credit up to four times. Enrollment is restricted to graduate students.

EDUC 280 - Language and Literacy Across Disciplines (5)

Considers and critiques conceptualizations of the language used for academic pursuits, from the early years of schooling to higher education. Focuses on implications for research and practice related to the education of students in linguistically diverse schools and societies.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 281 - Conceptual Change in Science and Mathematics (5)

Examines approaches in cognitive science, mathematics education, and science education to documenting student conceptions in science and mathematics, defining conceptual change, and describing relationship between conceptual change and learning with understanding.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 282 - Informal Learning in Sciences and Mathematics (5)

Explores research on learning outside of school in multiple settings such as museums, after-school clubs, aquariums, workplaces, and homes. Readings draw from multiple fields and disciplines, including cognitive psychology, cognitive anthropology, cognitive science, education, museum education and evaluation, science, and mathematics education. Examine theoretical approaches to describing and understanding how people learn science and mathematics outside of school, empirical studies documenting learning in multiple non-school settings, and diversity issues in out-of-school settings.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 283 - Equity and Social Justice in Mathematics and Science Education (5)

Examines the theory, research, policy and practice of social justice and equity in mathematics and science education in local, national, and international contexts. Emphasizes the promotion of equity and critical mathematics and science literacy in schools and communities.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 284 - Gender in Mathematics and Science Education (5)

Explores basic aspects of gender in the fields of mathematics and science education. Discusses historical trends, current dilemmas, and how science and mathematics block or enable access for women.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 285 - Culture and Learning (5)

Examines multiple approaches to the study of the relation between culture and learning. Readings include historical and contemporary perspectives from cognitive science, cognitive anthropology, cross-cultural psychology, cultural psychology, and socio-cultural theories as frameworks for the study of culture and learning.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 286 - Research in STEM Education (5)

Focuses on particular issues of theoretical importance to research in mathematics and science education. Topics vary from year to year. Particular issues in cognition, learning, teaching, curriculum, and assessment in mathematics and science education may be covered.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 287 - Issues in Educational Assessment (5)

Familiarizes students with the basic concepts of educational assessment and explores issues related to the design and implementation of educational assessment as well as the application of educational assessment in educational research.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 288 - Ethnographies of Education (5)

Offers opportunity to critique a range of book-length ethnographic studies of education focusing on relationship between culture, learning, and schooling in the U.S. with comparative studies from other countries.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 289 - School Organization (5)

Applies multiple perspectives drawn from organizational theory, highlighting important aspects of organization of schools, including their operational environment, instructional organization, and professional and bureaucratic dimensions.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 290 - CHAT and Educational Practice and Research (5)

Introduction to cultural-historical activity theory (CHAT) based on work of Vygotsky, Bakhtin, and contemporary developments of their ideas. Explores the utility of CHAT as a framework for thinking about educational practice and research.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 291 - Globalization and Transnationalism in Education (5)

Examines educational access and advancement in several nations affected by globalization, national policies, and localized identity and opportunity structures. Attention to language and cultural expectations relevant to research in international contexts and how this knowledge provides reflection on the American condition.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 292 - Ideology and Education (5)

Philosophical study of the theory of ideology from Marx to the present and how ideologies (racism, sexism, classism, linguicism, abilityism) become embodied, reproduced, resisted, and transformed (and particularly the role of education therein).

Prerequisite: Enrollment is restricted to graduate students.

EDUC 293A - Research Apprenticeship (2)

Research apprenticeship under guidance of faculty member during first or second year of doctoral studies. May also be taken in the third year and beyond. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

EDUC 293B - Research Apprenticeship (5)

Research apprenticeship under guidance of faculty member during first or second year of doctoral studies. May also be taken in the third year and beyond. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

EDUC 294 - Second-Year Research Project (5)

Doctoral students work with faculty advisors to plan, carry out, and write up small independent research project during second year of graduate studies. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

EDUC 295 - Critical Perspectives on Education (5)

Investigates critical theories in education. Situates the themes against and within critical theory and philosophic foundations of Paulo Freire's theory of liberation education. Elaborates these themes within the discourses on critical race theory and education, and feminism and education.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 296 - Educational Policy and the Context of Teachers' Work (5)

Focuses on both the conceptual and methodological developments in the study of policy and on the research relation to the policy context of teachers' work.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 297 - Independent Study (5)

Students submit petition to sponsoring agency.

EDUC 297F - Independent Study (2)

Students submit petition to sponsoring agency.

EDUC 298 - TA Apprenticeship (2)

Students work with a faculty member who is teaching an undergraduate or MA/Credential course. Students will not be responsible for final grades, narrative evaluations, or holding discussion section. The expected course time commitment is limited to 2-3 hours per week, plus class meeting time. Students gain perspectives and practices of teaching undergraduate and graduate courses, working with the instructor on lesson planning, class instruction, and grading some student work.

Prerequisite: Enrollment is restricted to graduate students.

EDUC 299 - Thesis Research (5)

Students submit petition to sponsoring agency.

ENVS - ENVIRONMENTAL STUDIES

To view planned offerings for the current academic year, please visit this link.

Lower-Division

ENVS 15 - Natural History of the UCSC Campus (2)

Introduces students to the range of natural species and communities occurring on the UCSC campus. All class time is spent outside, and each week a different area of campus is visited. Course 24 is recommended.

ENVS 17 - Curation of Natural History Collections (2)

Introduction and training in the skills needed to create, manage, and exhibit natural history collections, including plants, insects, fungi, birds, mammals, reptiles, and amphibians.

ENVS 18 - Natural History Illustration (5)

Students gain proficiency in illustration media, and acquire training in the essential skills needed to create natural-history inspired illustrations. Students create illustrations and paintings by studying organisms in the Norris Center for Natural History collections, as well as those living on and around campus. Some experience in basic drawing and/or natural-history sketching is recommended.

ENVS 19 - Topics in Natural History (3)

Students learn the fundamentals of organismal biology and ecology through observations in the field, museum specimens, and field journaling. Class focuses on a particular taxonomic group or natural community, such as reptiles, fungi, insects, coastal prairie, or chaparral.

ENVS 23 - The Physical and Chemical Environment (5)

Provides an overview of the physical and chemical environment of planet Earth. Fundamental chemistry and physics is introduced in the process of learning about Earth in a holistic way. The influence of human societies on the global environment is one focus of discussion. Earth's many spheres are explored first: the lithosphere; the atmosphere; the hydrosphere, and the ecosphere. Then global cycles of carbon, nitrogen, and several other elements are studied in the context of basic sciences and societal issues.

ENVS 24 - General Ecology (5)

Covers principles of ecology including limits to species abundances, evolutionary ecology, population dynamics, community interactions and patterns, and ecosystem patterns and dynamics.

Prerequisite: Prerequisite(s): AM 3 or AM 6, or MATH 3 or higher; or mathematics placement examination (MPE) score of 300 or higher; or AP Calculus AB exam score of 3 or higher; ENVS 23 recommended as prerequisite to this course.

ENVS 25 - Environmental Politics, Economics and Justice (5)

Introduces the policy and economic dimensions of some pressing environmental challenges. Case studies may include, biodiversity conservation, waste, water, climate change, and other topics to examine the drivers and policy responses to

environmental problems and the trade-offs in different policy solutions. (Formerly Environmental Policy and Economics.)

ENVS 26 - Culture and the Environment (5)

Explores how our understandings about environmental issues change and deepen when we take seriously issues of culture, identity, and sociality (alongside demography, economics, and technology) and why this matters, especially in the present moment.

ENVS 65 - Introduction to Fresh Water: Processes and Policy (5)

Introduction to freshwater resources from multiple scientific and policy perspectives. After a review of basic concepts, water issues affecting cities, farms, open space, and multiple-use landscapes are studied. Students cannot receive credit for this course if they have previously received credit for ENVS 165.

ENVS 80B - Climate Change Science and Solutions (5)

A broad overview of the impacts of human activities on the global climate system. Topics include how climate affects the distribution of ecosystems, the influence of global climate change on biodiversity, ecosystem function, and consequences for the human enterprise. (Formerly The Ecological Forecast for Global Warming.)

ENVS 80E - Climate Justice (5)

Drawing inspiration from a long history of social justice movements, this course hopes to educate a new generation of climate justice changemakers. Pre-recorded lectures by faculty experts, readings, and multimedia content deepen students' understanding of the most pressing issues and solutions related to climate change. After engaging with lectures and supplemental materials on their own time, students come together for synchronous Zoom discussions to share their experiences of the course materials and learn from their peers. Because facing the realities of climate change can induce intense emotions, this curriculum includes awareness-based practices and include space for students to reflect and journal, giving them time to process and retain these different forms of knowledge.

ENVS 80F - Introduction to Agroecology and Sustainable Food Systems (5)

Our current food system is unsustainable for the environment and unjust for the farmers, farmworkers, and consumers who depend on it. Course provides an interdisciplinary, experiential, and systems-focused introduction to agroecology and other approaches to advancing a more just and ecologically sustainable food system. Students will come to understand agroecology as a science for understanding agricultural ecosystems, as a farming practice, and as a social movement to change the way we produce and distribute/access food. Course examines many topics—including biological fertility and pest management, seeds, livestock raising, and aquaculture—from the perspective of both the natural and social sciences, leaving students with a perspective that transcends any particular academic discipline. Students gain hands-on experience with farming research, production, and food distribution happening across the UCSC campus farm and food system.

ENVS 83 - Environmental Studies Internship (5)

A supervised off-campus learning experience related to environmental problem solving. Focuses on initial experiences in applied work and specific skill development. Students may be placed individually or with a team in government agencies, private organizations, citizen action groups.

ENVS 84 - Environmental Studies Internship (2)

Supervised learning experience related to environmental problem solving. Students may work with government agencies, private organizations, citizen action groups, or in specialized apprenticeships on an individual or team basis. This 2-credit internship puts students in the field and offers them the experience of practicing environmental problem solving. This internship experience focuses on specific skill development. (Formerly ENVS 184.)

ENVS 99 - Tutorial (5)

Directed reading, supervised research, and organized projects relating to environmental problems. May be repeated for credit with consent of the chairperson of Environmental Studies Department. Students submit petition to sponsoring agency.

ENVS 99F - Tutorial (2)

Provides for department-sponsored directed reading, supervised research, or organized project for lower-division students under the direct supervision of a faculty sponsor. May not be counted toward major requirements. Students submit petition to sponsoring agency.

Upper-Division

ENVS 100 - Ecology and Society (3)

Introduction to environmental issues in an interdisciplinary matrix. Focuses on three issues at the intersection of ecological questions and social institutions: agroecology and sustainable agriculture; population growth, economic growth, and environmental degradation; and biodiversity conservation and land management. Reviews the important roles of disciplinary abstraction and of the application of that knowledge to context-dependent explanations of environmental problems.

Prerequisite: Prerequisite(s): ENVS 23 or CHEM 1A or CHEM 3B or CHEM 4B; ENVS 24 or BIOE 20C; ENVS 25; and STAT 7 and STAT 7L or STAT 17 and STAT 17L, or STAT 17 and STAT 17L, or ECON 113 or OCEA 90; and one from: EMVS 26, ANTH 2, SOCY 1, SOCY 10, SOCY 15, PHIL 21, PHIL 22, PHIL 24, PHIL 28, or PHIL 80G. Concurrent enrollment in ENVS 100L Is required.

ENVS 100L - Ecology and Society Writing Laboratory (5)

Required writing lab accompanying course 100. Students are introduced to writing in different styles and for different audiences typical of the ecosystem-society interface. Course 100 writing assignments are developed, written, and revised in conjunction with the lab. W credit is granted only upon successful completion of ENVS 100.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements. Concurrent enrollment in ENVS 100 is required.

ENVS 104A - Introduction to Environmental Field Methods (2)

Explore the theoretical frameworks, benefits, and limitations of a range of methods used in environmental field research and monitoring used to address ecological, conservation, and management questions. Learn the basics of using the R statistical platform for data analysis and making figures for presentations. Readings, lectures, and tutorials provide the theoretical structure for methods used in experiential application of environmental field methods in ENVS 104L.

Prerequisite: Prerequisite(s): ENVS 100 and ENVS 100L; exceptions by permission of instructor. Concurrent enrollment in ENVS 104L is required.

ENVS 104L - Field Methods Laboratory (5)

Provides hands-on grounding in the processes of environmental field research and monitoring used to address ecological, conservation, and management questions, while getting to know the diversity of habitats across the living laboratory of the UCSC campus. Students develop a broad range of field skills including natural history, habitat description, and sampling methods for plants, animals, soils, water, and microclimate. Students also become adept at observational and experimental study design, data handling, statistical analysis, interpretation, and presentation using the R statistical language. This is a field-based, experiential learning course but does not require overnight or weekend field trips.

Prerequisite: Prerequisite(s): ENVS 100 and ENVS 100L; exceptions by permission of instructor. Concurrent enrollment in ENVS 104A is required.

ENVS 106A - Natural History of Birds (5)

The evolution, taxonomy, physiology, behavior, ecology, and management of birds. Lecture, discussion, field format. Birds observed in habitats including bay, marsh, meadow, and forest. Evaluations based on a field journal and examinations.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor. BIOL 138 are recommended.

ENVS 106M - Natural History of Birds Laboratory (2)

A field course designed to complement ENVS 106A by providing students with the opportunity to gain direct experience in bird study. This includes participation in field exercises and trips to off-campus sites in the region.

Prerequisite: Prerequisite(s): Concurrent enrollment in ENVS 106A is required.

ENVS 107A - Natural History Field Quarter (5)

A 15-unit field course that uses California wild lands to develop skills of natural history observation and interpretation. Students gain the ability to identify plants, animals, vegetation types, and landscapes, as well as address the complex issues of preservation and management of these resources. Enrollment by interview. Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L; concurrent enrollment in ENVS 107B and ENVS 107C required. Students are billed a materials fee of $1000.

ENVS 107B - Natural History Field Quarter (5)

A 15-unit field course that uses California wild lands to develop skills of natural history observation and interpretation. Students gain the ability to identify plants, animals, vegetation types, and landscapes, as well as address the complex issues of preservation and management of these resources. Enrollment by interview. Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L; concurrent enrollment in courses ENVS 107A and ENVS 107C required.

ENVS 107C - Natural History Field Quarter (5)

A 15-unit field course that uses California wild lands to develop skills of natural history observation and interpretation. Students gain the ability to identify plants, animals, vegetation types, and landscapes, as well as address the complex issues of preservation and management of these resources. Enrollment by interview. Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L; concurrent enrollment in courses ENVS 107A and ENVS 107B required.

ENVS 108 - General Entomology (5)

Introduction to entomology including anatomy, physiology, systematics, evolution, behavior, and reproduction of the world's most diverse group of organisms. These topics are illustrated in several contexts, from the importance of insects as disease vectors to the historical and contemporary uses of insects by humans.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L required, or by permission of instructor.

ENVS 108L - General Entomology Laboratory (3)

Laboratory sections are devoted to the identification of insects. Individual collections representing 15 orders, sight identification of 60 families, and use of taxonomic keys for positive designations required.

Prerequisite: Concurrent enrollment in ENVS 108 is required.

ENVS 110 - Institutions, the Environment, and Economic

Systems (5)

Debate about environmental policy is often couched in economic terms. Environmental issues have become questions of political economy, as they influence international and domestic policy and reflect on the functioning of the market system. Examines the assumptions and implications of alternative approaches to political economy, as these pertain to questions of environmental policy and political institutions.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 115A - Geographic Information Systems and Environmental Applications (5)

Introduction to geographic information systems (GIS) as the technology of processing spatial data, including input, storage and retrieval; manipulation and analysis; reporting and interpretation. Emphasizes GIS as a decision support system for environmental and social problem solving, using basic model building, experimental design, and database management. Taught in conjunction with ENVS 215A. Students cannot receive credit for this course and ENVS 215A.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 115L and ENVS 100 and ENVS 100L, or permission of instructor. Course in computer science, Earth science, math, or geography recommended.

ENVS 115B - Intermediate Geographic Information Systems (GIS) (5)

Evaluates advanced technologies of processing spatial data, spatial theory, and application to unique geographic problems, data manipulation and analysis, and reporting and interpretation. Emphasizes GIS as a decision-support system for environmental and social problem solving, using basic model building, experimental design, and database management. Taught in conjunction with ENVS 215B. Students cannot receive credit for this course and ENVS 215B.

Prerequisite: Prerequisite(s): ENVS 115A. Concurrent enrollment in ENVS 115L.

ENVS 115C - Advanced Geographic Information Systems (5)

Explores more advanced training in spatial theory and methods and their application to unique geographic problems. Emphasis given to advanced aspects of spatial data analysis and building custom GIS solutions.

Prerequisite: Prerequisite(s): ENVS 115A and ENVS 115B. Enrollment is restricted to sophomores, juniors, and seniors.

ENVS 115L - Exercises in Geographic Information Systems (2)

Exercises in Geographic Information Systems and Remote Sensing that demonstrate the development of digital geographic data. Students gain hands-on experience with developing datasets, using imagery to create GIS layers, performing spatial analysis, and utilizing GPS technology. Emphasis placed on environmental applications. Students cannot receive credit for this course and ENVS 215L.

Prerequisite: Prerequisite(s): Concurrent enrollment in ENVS 115A, or ENVS 115B, or ENVS 115C is required.

ENVS 120 - Conservation Biology (5)

One of our biggest challenges as a society is to protect our planet and its biodiversity while we fulfill the demands of a growing human population. In this course, students learn about the importance of biodiversity, the threats it currently faces, and examples on how conservation biologists have tackled these challenges using methods that range from community-led conservation to global policy. Through development of a conservation grant project, students learn to identify conservation issues and propose tangible solutions based on the course materials.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 122 - Tropical Ecology and Conservation (5)

An introduction to the ecological processes, principles, and players of tropical ecosystems, and to conservation issues facing tropical American forests. We will look at how tropical ecosystems work, roles of humans in shaping them, and current conservation opportunities and dilemmas.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 123 - Animal Ecology and Conservation (5)

Advanced course in animal ecology and conservation focusing on the ecology, behavior, biogeography, and evolution of vertebrates.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L; or by permission of instructor.

ENVS 130A - Agroecology and Sustainable Agriculture (5)

Ecological concepts and principles are applied to the design and management of sustainable agroecosystems. Alternatives for agriculture are discussed in terms of ecosystem structure and function. A weekly three-hour lab is required.

Prerequisite: Prerequisite(s): Concurrent enrollment in ENVS 130L and previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 130B - Justice and Sustainability in Agriculture (5)

Agricultural sustainability is examined as a complex set of interactions between ecological, social, and economic factors. Drawing case studies from U.S. agriculture, course examines the social justice implications of historical and current agri-food system dynamics. (Formerly Principles of Sustainable Agriculture.)

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 130C - Field Experiences in Agroecology and Sustainable Food (5)

Research and practice in agroecology and sustainable food systems. Students gain multidimensional understanding of agroecology through study at the UCSC farm, guest speakers, field trips, and interdisciplinary readings. Students participate in research projects and learn about methods, and study design and statistical analysis. Students are billed a materials fee.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L.

ENVS 130L - Agroecology and Sustainable Agriculture Laboratory (2)

Laboratory and field exercises to train in the analysis of ecological processes in agricultural systems, with a focus on the quantification of ecological sustainability. Experimental design, analysis, and data interpretation are emphasized. Students are billed a materials fee.

Prerequisite: Concurrent enrollment in ENVS 130A is required.

ENVS 131 - Insect Ecology (5)

Advanced undergraduate course in insect ecology designed to appeal to both people with a deep appreciation for insects and those experiencing insect knowledge for the first time. The course covers major areas of ecology (e.g., populations, community ecology, species interactions, biodiversity conservation) as applied to terrestrial insects. The course also focuses on natural history of insects, the roles insects play in ecosystems, and the importance of insects for culture and society, agriculture, conservation, and public health. The course includes lectures, discussions, greenhouse and museum activities, field days, and a research project.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 133 - Agroecology Practicum (5)

Lectures and demonstrations are combined with field applications to give students direct experience and knowledge of sustainable agriculture and horticulture practices and principles. UCSC Farm and Garden are the living laboratories for testing agroecological principles. Emphasis is placed on small-farm systems. May be applied to major only once. Students are billed a materials fee.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 133B - Agroecology Practicum (6)

Lectures and demonstrations are combined with field applications to give students direct experience and knowledge of sustainable agriculture and horticulture practices and principles. UCSC Farm and Garden are the living laboratories for testing agroecological principles. Emphasis is placed on small-farm systems. May be applied to major only once.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 133C - ENVS Agroecology Practicum 133C (5)

Lectures and demonstrations are combined with field applications to give students direct experience and knowledge of sustainable agriculture and horticulture practices and principles. UCSC Center for Agroecology's Farm and Garden serves as the primary location for instruction. Field trips include UC Davis Student Farm, UC Berkeley Oxford Tract, UC ANR Kearney Agricultural Experiment Station, and regional farming operations. Together, these farms serve as living laboratories for testing agroecological principles. Emphasis is placed on small-farm systems. Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor. Enrollment is by permission of the instructor and is restricted to sophomores, juniors and seniors. May be applied to major only once. Students are billed a materials fee of $2,740.

ENVS 135 - Sustainable Aquaculture (5)

Current international and local aquaculture systems and science and practices needed to steer them toward sustainability. Critically looks at practices, analyzes environmental, social, economic, and human health effects of sustainable systems. Includes UCSC Aquaculture lab, farm visits, private sector, guests.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L.

ENVS 140 - National Environmental Policy (5)

An overview of all major federal environmental policy domains. Analyzes political, social, economic, and other forces influencing federal (and some state) public policy responses to land use, natural resources, pollution, and conservation dilemmas.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 141 - Ecological Economics (5)

Application of economic analysis to natural resource policy and management. Topics include welfare economics, property rights and externalities, natural resource valuation, exhaustible and renewable resources, and sustainable development.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 142 - Sustainable Energy (5)

Explores the renewable and fossil fuel energy resources, with an emphasis on interactions with food and water systems. Explores opportunities for improving efficiency, reducing pollution, and increasing access through technology advances, policy, and consumer decisions. (Formerly Energy Politics and Policy.)

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 143 - The Future of Sustainable Development (5)

Sustainable development emerged due to the environmental crises caused by development and as an attempt to reconcile development goals and environmental stewardship. This course is broadly concerned with the issue of sustainability and the future of development. The class is divided into thematic sections that examine the history of development theories and frameworks, environment and development challenges, and critiques of development. Topical areas of focus include environmental hazards, fair trade, sustainable food systems, extractive industries, climate change, conservation, ecotourism, and drugs and development. The course also highlights the dilemma that environmental justice poses for future sustainable development governance efforts. (Formerly Sustainable Development: Economy, Policy, and Environment.)

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 144 - Global Climate Change Politics (5)

Explores the central political questions surrounding global governance of climate change. Focuses on how climate change is governed within the United Nations system, and, in particular, explores issues of equity and justice in terms of how we address climate change.

Prerequisite: Prerequisite(s): Environmental Studies students, previous or concurrent enrollment in courses ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 145 - Green Cities (5)

Are cities an environmental savior or an engine of pollution? This course considers what makes a truly green city and analyzes innovative urban policies in areas such as energy, transportation, buildings, and waste management.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of the instructor.

ENVS 147 - Global Environmental Justice (5)

Surveys topics in environmental justice and human rights around the world. Provides a comprehensive foundation for students interested in the global environmental justice concentration. The readings comprise survey articles on environmental justice and related fields, such as political ecology, gender studies, labor studies, science and technology studies, risk and disaster studies, and human rights, and span a number of disciplines, including history, geography, sociology, anthropology, politics, and law. Formerly offered as Environmental Inequality/Environmental Justice.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 149 - Environmental Law and Policy (5)

Surveys a wide range of topics in environmental law, including state and federal jurisdiction, administrative law, separation of powers, state and local land use regulation, public land and resource management, pollution control, and private rights and remedies. Students read a large number of judicial cases and other legal documents.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 150 - Coastal and Marine Policy (5)

Examines key legal, policy, and institutional frameworks that govern the use and stewardship of coastal and marine areas and resources. Primary focus is on the U.S., although attention is also devoted to international laws and institutions.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENV 100 and ENVS 100L, or by permission of instructor.

ENVS 151 - Environmental Assessment (5)

Introduction to California land use planning law and practice, and the theory, practice, and public policy aspects of environmental assessment, using the California Environmental Quality Act (CEQA) as a model. The National Environmental Policy Act (NEPA) and other environmental and planning legislation also considered. Covers elements of State law and regulations, environmental impact assessment requirements, and practical procedures for preparing and evaluating CEQA documents, with case studies that exemplify legal, regulatory and public policy and practice aspects of the assessment process.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 152 - International Environmental Politics (5)

Examines international law and politics through the lens of cooperation on transboundary environmental problems, ranging from acid rain to toxic chemicals to biodiversity loss

and climate change, which have become pressing political concerns in our increasingly globalized economy.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in courses ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 154 - Amazonian Cultures and Conservation (5)

The Amazon rainforest in South America is one of the most biologically and culturally diverse biomes on the planet, playing a critical role in the global carbon cycle and hemispheric hydrological systems. Its survival is threatened by oil, mining, agribusiness, logging and other forms of extraction -- activities that perpetuate violence, dispossession and environmental injustice against Indigenous peoples. This course centers the cultural richness, ecological care, political advocacy, and complex livelihoods of Native Amazonian societies, focusing on the lessons they offer for more just and anti-colonial approaches to conservation.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, or permission of instructor.

ENVS 155 - Hacking4Oceans (5)

Multidisciplinary teams of 4-5 students address problem provided by real-world sponsors or student groups. Teams learn to apply Lean Startup methodologies to discover and validate customer needs and iterartively test whether they understood the problem and solution. Weekly assignments involve working outside of class to interview experts and share learnings in class. Enrollment is restricted to sophomores, juniors and seniors. Enrollment is by instructor consent. Application and interview in the quarter prior to the course is required. Taught in conjunction with CSP 281A. Students cannot receive credit for this course and CSP 281A.

ENVS 156 - Environmental Action Through Writing (5)

Guided practice in writing skills useful to environmental activists. Assignments emphasize thinking quickly, revising adeptly, researching resourcefully, and tempering powerful passions with careful arguments. Toward the development of effective individual voices, students read each other's drafts as well as the published work of established writers. Enrollment priority will be given to students who have not taken course 157.

Prerequisite: Prerequisite(s):satisfaction of the Entry Level Writing and Composition requirements and previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 157 - Writing in the Natural Sciences (5)

Guided practice in writing effectively about science and natural history for a variety of audiences. Assignments emphasize reporting first-hand observations, explaining processes and phenomena, understanding scientific papers, and writing about scientific and technical subjects for a general audience. Enrollment priority will be given to students who have not taken course 156.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 158 - Political Ecology and Social Change (5)

The object is to provide a rigorous grounding in the method of political ecology and to demonstrate how this approach has been used in environmental analysis and problem solving by environmental social movements.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 159 - Nature Literature (5)

Introduction to 19th- and 20th-century American writers who have influenced our understanding of humans' place in the natural world. Readings include original works as well as biographical and critical texts. Discussions, field trips, and writing assignments emphasize active learning.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 160 - Restoration Ecology (5)

A multidisciplinary overview of restoring degraded ecosystems. Among the topics addressed are linkages between ecological principles and restoration, planning and implementing restoration projects, evaluating restoration success, and case studies of restoration of specific ecosystem types. Participation in one work day is required.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 161A - Soils as Living Systems (5)

Provides fundamentals of soils and plant nutrition. The physical, biological, and chemical components of soils are investigated in relation to their ecological functions, fertility to plants, and sustainable management. (Formerly Soils and Plant Nutrition.)

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 162 - Plant Physiological Ecology (5)

Describes how the environment affects plants through the linkages between water, energy, nutrients, photosynthesis, and plant growth. Demonstrates how plant recruitment, survival, and reproduction affect conservation and agriculture. Prior coursework in ecology and/or plant physiology is recommended.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 162L - Plant Physiological Ecology Laboratory (2)

Introduces techniques for the study of plant interactions with the physical environment. Examines the role of stress on energy budgets, water relations, photosynthesis, and reproductive allocation. Emphasizes experimental design, field techniques, and instrumentation during field trips to local chaparral and grassland ecosystems.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 163 - Plant Disease Ecology (5)

Plant diseases do more than just harm plants we grow for food; they drive the evolution, population dynamics, ecosystem functioning, and diversity of plants in wild communities. This class looks at the biology of plant-microbe symbioses and the impacts of plant pathogens through the integrating lens of evolutionary ecology. Students explore the ecological basis for disease spread and management in agricultural, forest, and wild systems, and consider special challenges from emerging pathogens and climate change. Students focus on the diversity of voices and approaches to understanding plant diseases. Students cannot receive credit for this course and ENVS 263.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 163L - Plant Disease Ecology Lab (2)

Hands-on introduction to important techniques used to study plant diseases. Teaches methods for detection, isolation, cultivation, and identification of important groups of plant pathogens, including fungi, oomycetes, and bacteria. Through genuine research projects, students complete Koch's proof of pathogenicity, develop skills for disease assessment, complete experiments to answer questions about the evolutionary ecology of plant diseases, and develop familiarity with basic tools in plant disease epidemiology. Class activities are held in both in the lab and in the field.

Prerequisite: Prerequisite(s): concurrent enrollment in ENVS 163 is required.

ENVS 164 - Projects and Practices in Soil Ecology (5)

Students learn soil ecological principles by carrying out inquiry-based projects and practices in land ecosystems (agroecosystems, forests and grasslands). UCSC reserves, farms, gardens, and greenhouses are the default living-laboratories for the course. The emphasis is on experiential learning of practical and technical skills in using soil methods.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of the instructor. Previous enrollment in ENVS 161A is recommended.

ENVS 165 - Sustainable Water Systems (5)

Concepts, vocabulary, and skills necessary to the analysis of freshwater issues are introduced from hydrology, ecology, law, economics, engineering, and other disciplines. The skills are then applied to case studies involving local, state, and international freshwater conflicts and crises. (Formerly Freshwater Issues and Policy.)

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 166 - Agroecosystem Analysis and Watershed Management (5)

Explores a range of approaches to examine agroecosystem function, watershed management, and concepts of sustainability. Uses a combination of lecture, demonstration, field work, and field trips to illustrate approaches to analysis of managed ecosystems behavior and the integration of biophysical and socio-political knowledge to aid in watershed management.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor; and ENVS 130A or ENVS 130B or ENVS 129 or ENVS 133 or ENVS 160 or ENVS 167.

ENVS 167 - Freshwater and Wetland Ecology (5)

Field and lecture course teaches the physical and biological patterns and processes in freshwater and wetland systems, primarily focusing on Central Coast systems from headwaters to coastal marshes.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 167L - Freshwater and Wetland Ecology Lab (2)

Provides basic skills to assess chemical, biological, and physical characteristics of freshwater creeks, rivers, and wetlands. These skills are needed in environmental consulting, municipal agencies engaging in water management or impacts on water, and regulatory agencies. Relies on methods in geomorphology, biogeochemistry, hydrology, and field biology.

Prerequisite: Concurrent enrollment in ENVS 167 is required.

ENVS 168 - Biogeochemistry and the Global Environment (5)

Studies biogeochemical cycles and related environmental issues such as global environmental change, eutrophication, ecosystem degradation, and agricultural sustainability. Discusses transformation and movement of major nutrient elements in context of watershed ecology and societal implications. Students cannot receive credit for this course and ENVS 268.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L required, or by permission of instructor.

ENVS 169 - Climate Change Ecology (5)

Advanced topics in atmospheric science and ecological theory. Topics include impacts on biodiversity, carbon sequestration, sustainable agriculture, and innovative solutions.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L required, or by permission of instructor.

ENVS 170 - Agriculture and Climate Change (5)

Agriculture contributes to and is affected by climate change. Through lectures and field trips, this course covers the impacts on crops and livestock; climate adaptation strategies in the United States and internationally; and agricultural policy responses to climate change.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L.

ENVS 171 - Topics in Environmental Studies (5)

Readings and discussions of primary literature on a current environmental topic. Emphasizes experiential learning and research. The topics vary; consult current course listings.

Prerequisite: Prerequisite(s): ENVS 100 and ENVS 100L, or by permission of the instructor.

ENVS 172 - Environmental Risks and Public Policy (5)

Introduces students to the dilemmas in public policy relating to the management of environmental risks, and discusses their underlying philosophical underpinnings. Explores emergent alternatives, such as the precautionary principle and alternatives assessment, and examines the relationship between experts and the lay public in public controversies.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 173 - An Introduction to World Environmental History (5)

Introduces students to some of the central issues in world environmental history such as: human attitudes toward the natural environment; the role of human societies, their institutions and technologies in changing the face of the earth; and the historical impact of environmental and developmental policies on race, class, and gender differences in a variety of human communities across the world.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 174 - Gender and the Environment (5)

As we collectively work to address environmental concerns—from climate change to wildfires to toxic pollution to distribution of land—gender is a critical social variable that must be addressed. Using the lens of gender, this course examines the linkages between environmental and social change. Beginning by conceptualizing sex, gender and the environment, this course explores key theoretical bodies including ecofeminism, feminist science studies, and queer ecologies. We also investigate the real-life applications of these concepts through consideration of how gender shapes environmental justice activism, rural livelihoods, and more. This course is highly reading and writing intensive.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of the instructor.

ENVS 176 - Vulnerability, Complex Systems, and Disasters (5)

Introduces students to the research on the relationship between vulnerability and disasters, and on complex systems including hazardous technologies. Explores perspectives on disasters in the literature on political ecology. Also examines relevant work of organizational sociology, and related fields including normal accident and high reliability organizational theories.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of the instructor.

ENVS 177 - Teaching Environmental Education (5)

Designed for environmental studies majors interested in teaching environmental education in the K-12 school system. Students investigate incorporation of environmental education in the classroom; design an environmental education school project; and are placed in a school where they observe environmental education in practice.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in courses ENVS 100 and ENVS 100L, or by permission of instructor.

ENVS 178 - Race and the Environment (5)

Introduces students to the entangled forces of coloniality, racism, and capitalism as they shape global environments, and vice-versa. Drawing on sources that center the expertises of Indigenous, Black, and Brown communities, class explores how racialization occurs through imperial violence to ecologies and their inhabitants. Studies long arcs of colonial science and power to understand how nature has been normalized as an object of ownership, extraction, pollution, and control. Students explore whose knowledge shapes environmental discourse, how discourse shapes material realities, and under what conditions science resists colonial habits of thought or enables them to flourish. Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, or by permission of the instructor.

ENVS 179 - Environmental Interpretation (5)

A field course in theory and practice of environmental interpretation in parks, museums, and school programs with special attention to local natural history and children. Students work to define their own interpretive philosophy, skills, and style. A background in natural history and/or experience working with children is recommended.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 100 and ENVS 100L or by permission of instructor. Enrollment in ENVS 184 is highly recommended.

ENVS 183 - Environmental Studies Internship (5)

A supervised off-campus learning experience related to environmental problem solving. Students may work with government agencies, private organizations, citizen action groups, or in specialized apprenticeships on an individual or team basis. A significant, independently researched project is required. Internship intended for environmental studies majors. Prerequisite(s): previous or concurrent enrollment in ENVS 100 and ENVS 100L, and by permission of instructor. Students submit petition to course sponsoring agency.

ENVS 183A - Senior Internship (5)

First quarter of two-quarter senior internship exit requirement. Supervised off-campus learning experience related to environmental problem-solving. Students may work with government agencies, private organizations, citizen action groups, or in specialized apprenticeships on an individual or team basis. Students submit petition to course-sponsoring agency. Enrollment is restricted to environmental studies majors and the combined majors with Earth science, biology, and economics. Enrollment is by permission of instructor.

ENVS 183B - Senior Internship (5)

This course combines fieldwork at an off-campus agency and a comprehensive analytical paper produced for the agency. Equivalent to a thesis in terms of the depth and quality of the work expected. Prerequisite(s): ENVS 183A. Students submit petition to course-sponsoring agency. Enrollment is restricted to environmental studies majors and the combined majors with Earth sciences, biology, and economics.

ENVS 189 - Environmental Studies Research Seminar (1)

Research seminars presented weekly throughout the year by environmental studies faculty, visiting scholars, and graduate students. Students discuss content and methodology of research presented following each seminar. Students write critiques of some seminars.

ENVS 190 - Capstone Course: Environmental Problem Solving (5)

A synthetic course that draws on the knowledge and skills students bring from other courses in the major. Focuses on written and oral individual and group projects in which students must take the initiative. Emphasizes developing skills critical for students in their future careers.

Prerequisite: Prerequisite(s): ENVS 100 and ENVS 100L; Entry Level Writing and Composition requirements. Enrollment is restricted to senior environmental studies majors, agroecology majors, and the combined majors with Earth sciences, biology, and economics.

ENVS 191F - Community and Agroecology Seminar (2)

Interdisciplinary two-credit seminar designed for upper-division students who want to become involved in PICA (Program in Community and Agroecology) and to explore concepts of community and agroecology as they relate to sustainability. Also emphasizes development of leadership skills. Specific topics and readings change each quarter.

Prerequisite: Prerequisite(s): ENVS 91F, ENVS 130A, ENVS 130B, or ENVS 133, or equivalent experience.

ENVS 192 - Summer NextGen Scholars (10)

Undergraduate course for students in NextGen Scholar Programs. Participants are engaged in research related to agroecology, food, natural resources, and human sciences. The course includes independent research with a faculty mentor, participating in meetings, workshops, and field trips, and completing assignments and evaluation. Independent research takes place in person (on and off-campus) and meetings, workshops, and a final research symposium takes place online in a synchronous format. Enrollment is by permission of the instructor. Enrollment is limited to UCSC students participating in NextGen summer programs (e.g., Supporting Undergraduates by Promoting Education, Extension, Research, Diversity, and Agricultural Resilience [SUPERDAR]; Food, Agriculture, Natural Resources and Human Sciences [FANH] Scholars; Agricultural and Land Based Training).

ENVS 194 - Teaching Environmental Studies (5)

This provides an opportunity to participate in the preparation and teaching of introductory environmental studies courses. Students will have significant responsibility in leading discussion sections. Students submit petition to sponsoring agency.

ENVS 194F - Teaching Environmental Studies (2)

Students facilitate discussions of course material in an introductory environmental studies course in conjunction with faculty and teaching assistants. May not count toward upper-division major requirements. Approval of the sponsoring agency and selection by the primary instructor of specific courses is required.

ENVS 195A - Senior Research (5)

First of a two-quarter senior thesis that results in drafting key thesis elements. Completion of this course does not satisfy the senior exit requirement. Continuation into 195B is contingent upon instructor approval after satisfactory completion of this course. Prerequisite(s): Completion of ENVS 100 and ENVS 100L, and Entry Level Writing and Composition requirements.

ENVS 195B - Senior Thesis Group (5)

Individually supervised senior research that results in a senior thesis. Must meet regularly with faculty sponsor to discuss progress of the project, and to receive academic and technical guidance. Students must submit electronic copies of the completed research and write-up. Satisfies the senior comprehensive requirement. Prerequisite(s): Completion of ENVS 100 and ENVS 100L and ENVS 195A.

ENVS 196 - Senior Seminar (5)

Readings and discussions of primary literature on a current environmental studies topic. Field or literature-based research projects (individual or group) writing multiple drafts resulting in a final paper. Topics vary yearly; consult current course listings. Satisfies senior comprehensive requirement. Prerequisite(s): ENVS 100 and ENVS 100L; Entry Level Writing and Composition requirements. Enrollment is by application with selection based on appropriate background and academic performance and by permission of instructor. Enrollment is restricted to senior environmental studies majors, agroecology majors, and the combined majors with Earth sciences, biology, and economics.

ENVS 196G - Senior Seminar in Geographic Information Systems (GIS) (5)

Readings and discussions of primary literature on Geographic Information Systems (GIS). Lab-based research projects (individual or group) writing multiple drafts resulting in a final project. Enrollment by application with selection based on appropriate background and academic performance and by consent of instructor. Satisfies senior comprehensive requirement.

ENVS 199 - Tutorial (5)

Advanced directed reading, supervised research, and organized projects relating to environmental problems. May be repeated for credit with consent of the chair of environmental studies. Students submit petition to sponsoring agency. Prerequisite(s): prior or concurrent enrollment in ENVS 100 and ENVS 100L.

ENVS 199F - Tutorial (2)

Provides for department-sponsored directed reading, supervised research, or organized project under the direct supervision of a faculty sponsor. May not be counted toward major requirements. Students submit petition to sponsoring agency.

Graduate

ENVS 201A - Research Approaches in Environmental Studies (5)

Explores the range of scholarly traditions that inform the kinds of research common to the Environmental Studies Department at UC Santa Cruz.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 210 - Political Ecological Thought and Environment (5)

Provides an introduction to social scientific analyses of the relationships between capitalistic development and the environment in the late 20th century. It has a dual purpose: First, to develop a contemporary historical understanding and sensibility of how economic change, new institutional configurations, and world scale processes are shaping interactions with the environment. Second, to examine some recent political social theoretical perspectives on nature-society relations and radical environmental and social movements.

Prerequisite: Enrollment is restricted to graduate students in environmental studies.

ENVS 215A - Geographic Information Systems and Environmental Applications (5)

Introduction to geographic information systems (GIS) as the technology of processing spatial data, including input, storage and retrieval; manipulation and analysis; reporting and interpretation. Emphasizes GIS as a decision support system for environmental and social problem solving, using basic model building, experimental design, and database management. Students cannot receive credit for this course and ENVS 115A.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in ENVS 215L is required. Enrollment is restricted to graduate students.

ENVS 215B - Intermediate Geographic Information Systems (5)

Evaluates advanced technologies of processing spatial data, spatial theory, and application to unique geographic problems, data manipulation and analysis, and reporting and interpretation. Emphasizes GIS as a decision-support system for environmental and social problem solving, using basic model building, experimental design, and database management. Taught in conjunction with ENVS 115B. Students cannot receive credit for this course and ENVS 115B.

Prerequisite: Prerequisite(s): ENVS 215A. Concurrent enrollment in ENVS 215L. Enrollment is restricted to graduate students.

ENVS 215C - Advanced Geographic Information Systems (5)

Spatial data arise in almost every field of study and contemporary spatial data analysis focuses on detecting patterns and modeling relationships between such patterns. This course is a project environment through which students demonstrate the ability to apply advanced knowledge and skills to analyze spatial data. In particular, this course serves as an introduction to spatial statistics and the background necessary to investigate patterns in geographically represented data. Course also hones students' critical assessment of scholarship in the field and learn how to evaluate, plan, and conduct research. The course is focused on the design and practical application of GIS, demonstrating the student's ability to manage and develop a GIS product for a real world problem or situation.

Prerequisite: Prerequisite(s): ENVS 215B/GIST 215B. Concurrent enrollment in ENVS 215L/GIST 215L is required. Enrollment is restricted to graduate students enrolled in the GISTAR M.A. Program.

ENVS 215L - Exercises in Geographic Information Systems (2)

Exercises in Geographic Information Systems and Remote Sensing that demonstrate the development of digital

geographic data. Students gain hands-on experience with developing datasets, using imagery to create GIS layers, performing spatial analysis, and utilizing GPS technology. Emphasis placed on environmental applications. Students cannot receive credit for this course and ENVS 115L.

Prerequisite: Prerequisite(s): Concurrent enrollment in ENVS 215A, or ENVS 215B, or ENVS 215C is required. Enrollment is restricted to environmental studies graduate students.

ENVS 220 - Conservation Biology (5)

The principles of conservation biology, including a review of the core disciplines of demography, population genetics, island biogeography, and community ecology and discussion of area and edge effects, population viability, and ecosystem issues related to the maintenance of biological diversity, especially in fragmented landscapes.

Prerequisite: Enrollment is restricted to environmental studies graduate students.

ENVS 230 - Agroecology and Sustainable Agriculture (5)

The application of ecological concepts and principles to the design and management of agricultural systems. The long-term goal of sustainable agroecosystems is examined in economic, social, and ecological contexts.

Prerequisite: Enrollment is restricted to environmental studies graduate students.

ENVS 235 - Social Theories of Nature (5)

Intensive reading and discussion seminar on the treatment of nature in social theory. Focuses on major recent works which examine nature in social theory, in themselves, and in the context of the intellectual history of development of disciplinary discourses about nature. Students write critical reviews of assigned books and a research paper situating a particular book within its intellectual tradition. Prerequisite(s): interview with instructor to determine preparedness.

ENVS 240 - Public Policy and Conservation (5)

Introduction to political and economic approaches to policy analysis, with particular reference to natural resource scarcity, property rights, and environmental conservation. Case studies apply economic and policy process concepts to the management of public lands, biodiversity, and renewable resources.

Prerequisite: Enrollment is restricted to environmental studies graduate students.

ENVS 247 - Regional Approaches to Environmental Policy (5)

A research seminar combining theoretical issues in democratic theory, political economy, and planning with emerging concepts of bioregionalism. The focus is on institutional, scientific, and political innovations in managing the environment. Students evaluate current and historical proposals to regionalize environmental policy in the U.S.

Prerequisite: Enrollment is restricted to environmental studies graduate students.

ENVS 250 - Coastal Governance (5)

Introduction to major theories of ocean and coastal governance, with emphasis on those that underlie current policy and management approaches. Students analyze local, state, national, and international laws and policies, considering interactions across scales, levels of social organization, and institutions.

Prerequisite: Enrollment is restricted to environmental studies graduate students.

ENVS 263 - Plant Disease Ecology (5)

Plant diseases do more than just harm plants we grow for food; they drive the evolution, population dynamics, ecosystem functioning, and diversity of plants in wild communities. This class looks at the biology of plant-microbe symbioses and the impacts of plant pathogens through the integrating lens of evolutionary ecology. Students explore the ecological basis for disease spread and management in agricultural, forest, and wild systems, and consider special challenges from emerging pathogens and climate change. Through developing a research proposal, students delve into diverse approaches that are used in basic and applied plant disease research. Students cannot receive credit for this course and ENVS 163.

Prerequisite: Prerequisite(s): one ecology course. Enrollment is restricted to graduate students.

ENVS 265 - Data Science for the Environment (5)

Data science is growing exponentially in size and quality, changing environmental scholarship and creating challenges of sifting, processing, and synthesizing large and diverse sources of information. In this course, students learn the fundamental practices of environmental informatics mainly using the R programming language. The workshop-style course is designed without requirement on prior experience in R. Includes environmental-related modules such as climate change, plant growth, animal predator-prey dynamics, overfishing and marine protected areas. Throughout the quarter, students use new hands-on skills to find an environmental-related topic, write a proposal, search for data, perform analyses, summarize results, and complete a final paper.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 268 - Biogeochemistry and the Global Environment (5)

Studies biogeochemical cycles and related environmental issues such as global environmental change, eutrophication, ecosystem degradation, and agricultural sustainabilty. Discusses transformation and movement of major nutrient elements in context of watershed ecology and societal implications. Students cannot receive credit for this course and ENVS 168.

Prerequisite: Enrollment is restricted to environmental studies graduate students.

ENVS 271 - Valuing the Environment (5)

Intensive seminar examining the normative underpinnings of environmental values. Draws on tools from analytical, ethical, and political philosophy to develop normative arguments concerning environmental inequality and justice, environmental preservation, and risk evaluation. Involves team projects in which students develop cases on controversial contemporary issues such as biotechnology. Prerequisite(s): interview only. Enrollment restricted to graduate students.

ENVS 272 - Qualitative Field Methods (5)

Introduces qualitative research approaches in environmental studies. Focuses on philosophies of science, epistemological debates, and specific approaches to qualitative methods. Course components include: field safety, research ethics, human subjects, training, research design and sampling, field observation and ethnographies, key informants, field notes, focus groups, oral histories, narrative research, archival research, questionnaires, discourse analysis, participatory research, and qualitative data analysis techniques.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 280 - Advanced Topics in Environmental Studies (5)

Intensive research seminar, including reading and critique of primary research literature and research in progress. Topics vary and are announced in advance; students should consult with faculty prior to enrolling. Enrollment by permission of instructor. Enrollment restricted to graduate students.

ENVS 283 - Environmental Studies Internship (5)

Graduate level internship focuses on integrating interdisciplinary academic theory with practical, specialized experience in a professional setting. Course intended for environmental studies graduate students; students must complete paperwork and meet with coordinator prior to first day of instruction.

ENVS 290 - Interdisciplinary Research Seminar (2)

Research seminars presented weekly throughout the year by environmental studies and affiliated faculty, by visiting scholars, and by graduate students. Students discuss the content and methodology of research presented following each seminar.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 290L - Graduate Research Seminar (2)

Graduate student presentations of doctoral research proposals, dissertation work-in-progress, grant applications, and conference papers. This weekly laboratory meeting seeks to develop professional skills, teach constructive criticism, and foster effective discussion among peers.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 291 - Advanced Readings in Environmental Studies (3)

Focusing on a recently published volume or on a topic of current interest, this seminar requires a rigorous analysis of the principles and methods employed in the four core areas of the program: sustainable agriculture and agro-ecology; conservation biology; environmental policy analysis; and political economy.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 291C - Advanced Readings in Risk and Public Policy (3)

Advanced readings and research on environmental risk and public policy. Explores environmental decision making given the question of the burden of proof and scientific uncertainty and grapples, in an advanced manner, with emergent policy alternatives, such as the precautionary principle. Also offered as ENVS 281C for 5 credits.

Prerequisite: Prerequisite(s): ENVS 172 or equivalent work demonstrated by an interview. Enrollment is restricted to graduate students.

ENVS 291D - Advanced Readings in Tropical Ecology, Agriculture, and Development (3)

Analyzes recent publications in ecology, conservation, agroecology, and development in tropical and subtropical regions, particularly Latin America. Discussions place special emphasis on integration across natural and social science disciplines to address issues of sustainability in tropical regions.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 291M - Advanced Readings in Biogeochemistry (3)

Course consists of three parts: fundamental biogeochemistry of the Earth, global cycles of nutrient elements, and societal and scientific issues of global change. Class activities include (1) presentation of summary statements based on reading assignments; (2) discussion of theories, concepts, methodologies, and applications; (3) computer simulation and modeling of elemental cycles using STELLA; and (4) integration of scientific information on global change with social issues by writing.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 291P - Advanced Readings in Environmental History and Anthropology (3)

Course of readings systematically surveying the theoretical contributions of the disciplines of environmental history, historical ecology, environmental anthropology, and geography. After an overview of the evolution of 20th-century thought on the relationship between environment and culture as seen through the lenses of these disciplines, explores emerging research hybrids and new research frontiers.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 292 - Topics in Research in Environmental Studies (2)

Seminar in which students give critically evaluated presentations regarding current research in environmental studies and issues in research design. Students should consult with faculty prior to enrolling.

Prerequisite: Enrollment is restricted to graduate students.

ENVS 297A - Independent Study (5)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

ENVS 297B - Independent Study (10)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

ENVS 297C - Independent Study (15)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

ENVS 297F - Independent Study (2)

Independent study and research under faculty supervision. Intended to be taken in conjunction with a 5-credit course. Students submit petition to sponsoring agency.

ENVS 299A - Thesis Research (5)

Students submit petition to sponsoring agency.

ENVS 299B - Thesis Research (10)

Students submit petition to sponsoring agency.

ENVS 299C - Thesis Research (15)

Students submit petition to sponsoring agency.

ESCI - ENVIRONMENTAL SCIENCES

To view planned offerings for the current academic year, please visit this page.

Lower-Division

ESCI 30 - Biological Principles of Environmental Sciences (5)

Introduction to biology and ecology for environmental sciences, focusing on the role of biological organisms within the Earth system. Topics span molecular/organismal interactions, such as photosynthesis and respiration, to global biogeochemical cycles including the role of microbes, net community production, and contaminant distributions.

Upper-Division

ESCI 100A - Fundamentals of Environmental Sciences (5)

Introduces fundamental concepts for quantitative analysis of environmental problems and their application to complex systems focusing on algebraic tools. Key concepts include box models, mass and energy balances (including chemical processes), turning word problems into mathematical statements, and estimation. (Formerly offered as Introduction to Environmental Sciences.)

Prerequisite: Prerequisite(s): MATH 11A or MATH 19A, CHEM 3B or CHEM 4B or CHEM 1A, and PHYS 6A or PHYS 5A. Enrollment is restricted to environmental sciences majors.

ESCI 100B - Fundamentals of Environmental Processes (5)

Quantitative exploration of physical and chemical processes relevant to the environment and their applications to complex environmental systems. Focuses on calculus-based tools. Key concepts include fluid mechanics, heat transfer, mass transfer, particle mechanics, turbulence, and physicochemical processes. (Formerly offered as Introduction to Environmental Processes.)

Prerequisite: Prerequisite(s): ESCI 100A, and MATH 11B or MATH 19B, and CHEM 3C or CHEM 4B or CHEM 1C, and PHYS 6B or PHYS 5B. Enrollment is restricted to declared environmental sciences majors.

ESCI 122 - Air Pollution (5)

Introduces students to the chemistry and physics of air pollution with primary emphasis on understanding the main types of air pollutants, from where they originate, how they are removed, how to control their sources, measurement techniques, and their health effects.

Prerequisite: Prerequisite(s): ESCI 100A or EART 110A.

ESCI 150 - Field and Laboratory Methods in Coastal and Aquatic Science (5)

Students become familiar with some of the core measurement and sampling techniques routinely employed by working aquatic scientists. In keeping with the multi-disciplinary nature of aquatic science, these techniques and measurements include those taken from biology, geology, chemistry and physics. The overarching goal of is having students become deeply familiar with a field site and observing it over an extended period of time while working collaboratively to accomplish all the measurements. The field component of the work is conducted at UCSC's Younger Lagoon Research Reserve, located adjacent to the Long Marine Lab on the coastal campus. Taught in conjunction with OCEA 250; students cannot receive credit for this course and OCEA 250.

Prerequisite: Prerequisite(s): CHEM 3C, CHEM 4B, or CHEM 1C, and PHYS 5B or PHYS 6B, and MATH 11B or MATH 19B, and ESCI 30 or BIOE 20C.

ESCI 160 - Data Analysis in the Environmental Sciences (5)

Introduces data-analysis methods regularly encountered within environmental sciences. Students learn how to think about data, its uncertainty, how models and data are related and depend on underlying assumptions, and how to synthesize information contained in data.

Prerequisite: Prerequisite(s): MATH 11B or MATH 19B or equivalent. Enrollment is restricted to declared environmental sciences majors.

ESCI 167 - Applied Environmental Time Series Analysis (5)

Explores empirical approach to quantify and explain changes in the Earth system over time. With the complexity of the Earth system, and the challenge of making accurate and numerous observations, simple methods can be of limited usefulness. Course covers more advanced methods that are typically not included in introductory-level statistical courses. Students learn how to analyze time-series data and answer questions about the Earth system and acquire the theoretical basis of the statistical approaches, the experience at conducting analyses, and practice interpreting and discussing the results. This class is hands-on and utilizes a suite of observational datasets and outputs from Earth system models. Students cannot receive credit for this course and OCEA 267.

Prerequisite: Prerequisite(s): ESCI 160, EART 125, or OCEA 260/EART 260.

ESCI 191 - Capstone Seminar (5)

In-depth exploration of a topic within the environmental sciences. Involves at least one research paper. Topics vary quarterly; consult the current course listings. Prerequisite(s): Entry Level Writing and Composition requirements; ESCI 100A and previous or concurrent enrollment in ESCI 100B. Enrollment is restricted to senior environmental sciences majors. Enrollment is by application with selection based on appropriate background and academic performance and by consent of the instructor. Satisfies the senior comprehensive requirement.

ESCI 195 - Senior Thesis (5)

Students complete their senior thesis research projects and submit their thesis in the form of a research paper that is appropriate for submission to a relevant journal or conference. Prerequisite(s): Entry Level Writing and Composition requirement. Enrollment is restricted to environmental sciences majors.Satisfies the senior comprehensive requirement. Students submit petition to sponsoring agency.

FIL-FILIPINO

Lower-Division

FIL 82 - Introduction to Filipino Language & Culture (5)

Introduction to Filipino language and culture. Four skills (reading, writing, speaking, listening) in basic Filipino (Tagalog), with readings and discussion of critical contemporary thought (decolonization, gender, social movements) in English. For heritage speakers and second-language learners.

Upper-Division

FILM - FILM AND DIGITAL MEDIA

Lower-Division

FILM 10 - Professional Topics in Film, Television, and Digital Media (2)

Taught by a working professional, lectures and workshop provide students with career-related information and insight into a specific profession in film, television, and digital media. Students research various aspects of a film, television, or digital media profession.

Prerequisite: Enrollment is restricted to proposed and declared film and digital media majors and minors.

FILM 20A - Introduction to Film Studies (5)

An introduction to the basic elements, range, and diversity of cinematic representation and expression. Aesthetic, theoretical, and critical issues are explored in the context of class screenings and critical readings. If space allows, restrictions may be lifted after priority enrollment.

Prerequisite: Enrollment is restricted to proposed and declared film and digital media majors and film and digital media minors. Students pursuing the minor may contact the instructor for a permission code.

FILM 20B - Introduction to Television Studies (5)

Introduction to the basic forms of televisual presentation, including differing narrative structure from movies and situation comedies to soap opera, plus modes of direct discourse in news, advertising, sports, music, television, and other genres. Alternative forms and modes in electronic media, such as independent video art and documentary, public television, cable, and electronic networks are explored, with their potential for expressing cultural diversity set in relation to social, cultural, and political conditions. If space allows, restrictions may be lifted after priority enrollment.

Prerequisite: Enrollment is restricted to proposed and declared film and digital media majors and film and digital media minors. Students pursuing the minor may contact the instructor for a permission code.

FILM 20C - Introduction to Digital Media (5)

Introduces fundamental features of digital media and examines the immense visual, social, and psychological impact of the digital revolution on our culture. Topics include the concepts and forms of the digital hypertext interface, Internet, and web, and the impact of digital media on conceptions of the self, body, identity, and community. If space allows, restrictions may be lifted after priority enrollment.

Prerequisite: Enrollment is restricted to first-year, sophomore, and junior declared, proposed, and pre-film and digital media majors and film and digital media minors. Students pursuing the minor may contact the instructor for a permission code.

FILM 20P - Introduction to Production Technique (5)

Introduction to the production processes of visual/aural, time-based, creative work. Students work on a range of creative projects: performed, written, photographed, and created digitally. Assignments emphasize imaginative problem-solving, collaboration, visualization, and critical media literacy.

Prerequisite: Enrollment is restricted to proposed and declared film and digital media majors.

FILM 80A - The Film Experience (5)

Students learn to understand how films reach the public through a collaborative, industrial, and artistic practice; how films work in a narrative sense; how they construct meanings for viewers; and how their formal techniques construct different possibilities for meaning and interpretation.

FILM 80C - Indigenous California in Film and Media (5)

Examines the historical representation of Indigenous Californians and their histories in a diversity of films and visual media drawing on cultural studies, cultural history, and Indigenous studies. Course examines bad hollywood stereotypical films about California Indians as well as more recent films written by and created by California Indians themselves.

FILM 80M - Understanding Media (5)

Introduces students to contemporary concerns, issues, and topics of media and media criticism. With an emphasis on visual analysis, students develop conceptual tools to think critically about photography, cinema, television, video, and print journalism.

FILM 80S - Special Topics in Film and Digital Media (5)

Study of selected aspects of film, television, and/or digital media. Includes weekly screenings and historical/theoretical readings.

FILM 80T - Technothrillers (5)

Examination of recent films classified as thrillers that approach technology (computers, robotics, biotech, the Internet, etc.) through suspense, anxiety, and paranoia. It will also address how technologically produced popular culture negotiates attitudes toward technological change.

FILM 80V - Video Games as Visual Culture (5)

Through aesthetic, medium-specific and critical theories of electronic games, course introduces histories, ideas, and debates that inform critical game studies. Themes include: games and cinema; race, class, gender, sexuality and representation; visual/cultural studies approaches; topical issues in games.

FILM 80X - Sex in the Cinema (5)

Examines the historical representation of sexual difference, orientation, and politics in film and video using cultural studies, political and economic historiography, and feminist and queer theory and paying special attention to intersections of U.S. political movements with filmmaking and reception.

Upper-Division

FILM 120 - Introduction to Media Theory (5)

Explores media theory. May be organized thematically or chronologically. Selects from key debates and movements central to understanding media forms in relation to self, society, politics, and aesthetics.

Prerequisite: Prerequisite(s): FILM 20A. Enrollment is restricted to proposed and declared film and digital media majors.

FILM 130 - Silent Cinema (5)

Presents the development of silent film as a cultural form from the early period to the beginning of sound, addressing its historical evolution, technological development, aesthetic transformations, and varied cultural contexts. Usually offered in alternate academic years.

Prerequisite: Prerequisite(s): FILM 20A, satisfaction of the Entry Level Writing and Composition requirements.

FILM 132A - International Cinema to 1960 (5)

A survey of significant developments in narrative film outside Hollywood from the advent of sound technology to the late '50s. Differing inter/national contexts, theoretical movements, technological innovations, and major directors are studied. Usually offered alternate academic years.

Prerequisite: Prerequisite(s): FILM 20A, satisfaction of the Entry Level Writing and Composition requirements.

FILM 132B - International Cinema, 1960 to Present (5)

A survey of significant developments in narrative film outside Hollywood from 1960 to the present. Major film movements and directors from around the world are studied. Usually offered in alternate academic years.

Prerequisite: Prerequisite(s): FILM 20A, satisfaction of the Entry Level Writing and Composition requirements.

FILM 134A - American Film, 1930-1960 (5)

A survey of American narrative cinema from 1930 to 1960. Examines developments in film style, film technology, and the film industry in relation to American cultural history.

Prerequisite: Prerequisite(s): FILM 20A or FILM 20B, satisfaction of the Entry Level Writing and Composition requirements.

FILM 134B - American Film, 1960-Present (5)

A survey of American narrative cinema from 1960 to the present. Examines developments in film style, film technology, and the film industry in relation to American cultural history.

Prerequisite: Prerequisite(s): FILM 20A or FILM 20B; and satisfaction of the Entry Level Writing and Composition requirements.

FILM 136A - Experimental Film and Video (5)

A survey of various experimental styles and practices in film and video, addressing the historical developments of these media formats. The course situates experimental film and video work within the larger contexts of artistic traditions as well as networks of production and reception.

Prerequisite: Prerequisite(s): FILM 20A .

FILM 136B - History of Television (5)

Survey of the historical development of broadcast television from its origins to the present day phenomena of cable, satellite, and electronic networks. Examination of major genres, forms, and modes of production and consumption within cultural, social, and economic contexts. Offered every other year, alternating with FILM 136A.

Prerequisite: Prerequisite(s): FILM 20B.

FILM 136C - Visual Culture and Technology: History of New Media (5)

Explores the relationship between technology and change and surveys the history of various technologies of visual culture from print to computer based imagery and the Internet.

Prerequisite: Prerequisite(s): FILM 20C.

FILM 136D - Documentary Film and Video (5)

Explores the category of nonfiction through a historical and theoretical study of documentary in film and video. Addresses ethnographic film, Soviet and Griersonian documentary, cinema verite and/or other selected documentary texts and the issues of representation they raise. Students are billed a course materials fee.

Prerequisite: Prerequisite(s): FILM 20A or FILM 20B.

FILM 145 - Social Media Documentary Theory and Production (5)

Teaches social media documentary theory and production. Students review current scholarship around social media campaigns, cellphone footage as evidence, and the creation of original media to expand messages for social justice. Students shoot a body of source footage on their smart device and create a social media-based outreach strategy that could support future work for a grassroots initiative.

Prerequisite: Prerequisite(s): FILM 20P.

FILM 150 - Screenwriting (5)

Problems in writing for film and television are explored through the writing of original material and analysis of existing works. Various film genres, conventions, and styles, both fictional and nonfictional, are examined. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Admission by application; application materials available during the last three weeks of preceding quarter.

FILM 151 - Film Directing (5)

Workshop that explores the director's involvement in film and video production. Topics include the manipulation of time and space, continuity, script planning and blocking, and working with actors and crew. Students participate in group and individual exercises in pre-production and scene direction.

Prerequisite: Prerequisite(s): FILM 170B. FILM 20P is recommended.

FILM 152 - Script Analysis (5)

Students analyze diverse narrative techniques, dramatic structures, and genre forms to understand the craft of screenwriting and prepare for their own creative writing and filmmaking. Students read finished scripts and view films.

Prerequisite: Prerequisite(s): FILM 120. Enrollment is restricted to proposed and declared film and digital media majors.

FILM 160 - Film Genres (5)

Concentrated study of films from one cinematic grouping with similar themes and narrative structures such as westerns, musicals, or science fiction, or a comparative study of different genres. History, theory, and criticism of the genre are covered.

Prerequisite: Prerequisite(s): FILM 130, FILM 132A, FILM 132B, FILM 132C, FILM 134A or FILM 134B.

FILM 160H - Film Genres, Horror (5)

Concentrated study of films examining the horror genre, examining its enduring popularity, cultural significance, and evolving aesthetic forms. Through a combination of historical overview and thematic analysis, students consider horror's complex relationship to gender, race, class, and the body. Students engage with a diverse range of films across subgenres and global contexts, developing critical tools to analyze cinematic techniques, narrative structures, genre conventions, and audience reception. History, theory, and criticism of the genre are covered.

Prerequisite: Prerequisite(s): FILM 130, or FILM 132A, or FILM 132B, or FILM 134A, or FILM 134B. Enrollment is restricted to film and digital media majors and minors and proposed film and digital media majors.

FILM 160W - Film Genres, The Western (5)

Concentrated study of films examining the western genre and settler colonialism. Course explores the broad and changing genre of the western, while investigating how these stories engage with broader themes of settler colonial justifications and critiques. History, theory, and criticism of the genre are covered.

Prerequisite: Prerequisite(s): FILM 130, or FILM 132A, or FILM 132B, or FILM 134A, or FILM 134B. Enrollment is

restricted to film and digital media majors and minors and proposed film and digital media majors.

FILM 161B - Documentary Animation (5)

Examines the history, practice, and emergence of documentary animation in contemporary film, on the Web and as activist media with emphasis on the discourse central to social documentary, decolonial theory, and the politics of representation.

Prerequisite: Prerequisite(s): FILM 20A. Enrollment is restricted to juniors and seniors.

FILM 162 - Film Authors (5)

Intensive critical study of the work of one film auteur (director, screenwriter, actor, cinematographer). Themes, style, and structure are explored using various critical modes of analysis.

Prerequisite: Prerequisite(s): FILM 130, FILM 132A, FILM 132B, FILM 134A, or FILM 134B.

FILM 162F - Female Filmmakers (5)

Examines contributions that female and non-binary filmmakers have made to world cinema.

Prerequisite: Prerequisite(s): FILM 20A.

FILM 165A - Film, Video, and Gender (5)

A study of texts, theories, and issues of gender in film and/or video. Changing focus on one or more topics, including production and authorship, representation, reception, theories of identification, sexual preference, and related issues. Usually offered in alternate academic years.

Prerequisite: Prerequisite(s): FILM 20A or FILM 20B.

FILM 165B - Race on Screen (5)

Review of historical and critical tools to interpret representations of race on cinematic, television, and computer screens. Class will consider the place of race in theoretical and historical scholarship and examine the debates about race produced within and across film and digital media. Usually offered in alternate academic years.

Prerequisite: Prerequisite(s): FILM 20A or FILM 20B.

FILM 165C - Lesbian, Gay, and Queer Film and Video (5)

An overview of homosexuality and LGBT representations in American film. Explores the format and historical significance of New Queer Cinema. Recent independent queer film and video discussed. Topics include: authorship; spectatorship; genre and genre reappropriation; historical gender constructs; the art film; mainstream versus independent production; and the relationship of film to popular music.

Prerequisite: Enrollment is restricted to juniors, sophomores, and seniors.

FILM 165D - Asian Americans and Media (5)

Examines media representations about, as well as by, Asian Americans. Using critical essays on film theory, racial studies, feminist criticism, and independent cinema, students develop the skills necessary to conduct critical analysis of Asian Americans in film and television.

Prerequisite: Prerequisite(s): FILM 20A. Enrollment is restricted to sophomores, juniors, and seniors.

FILM 165E - Chicana/o Cinema, Video (5)

Examines emergence of Chicana/o cinema and video from a place of social displacement, resistance, and affirmation. Looks at Chicana/o representation and spectatorship as it pertains to ethnicity, class, gender, and the beginning of a new Chicana/o film aesthetic.

Prerequisite: Prerequisite(s): FILM 20A. Enrollment is restricted to sophomores, juniors, and seniors.

FILM 165G - Gender and Global Cinema (5)

Offers students historical and critical tools to investigate global film through the framework of gender. Focused in particular on contemporary film (from 1960 to present), the class is structured both chronologically and via national industries.

Prerequisite: Prerequisite(s): FILM 20A.

FILM 168 - National Cinema and Culture (5)

Study of a specific cinematic or other media tradition of a region, nation, language, diasporic collectivity or other unifying cultural entity. Not a survey, this course selects one focus or offers a comparative of cross-cultural framework.

Prerequisite: Prerequisite(s): FILM 130, FILM 132A, FILM 132B, or FILM 132C.

FILM 168A - Arab and North African Cinemas (5)

Introduction to the diverse cinemas of the Arabic-speaking world. By introducing a wide range of films and clips every week, the course gives students a historical grounding in cinema from across the region, paying attention to the interconnections and influences between films, filmmakers, and countries. While history and politics are considered to understand the films' contexts, attention is paid to form and aesthetics, too: one of the course aims is to illustrate that Arab films are more than just political or sociological texts, even if they are usually read that way in the United States.

Prerequisite: Prerequisite(s): FILM 132A or FILM 132B or permission of instructor.

FILM 168F - Francophone African Cinema (5)

Introduces students to the diverse cinema of French-speaking African nations and interrogates the role of empire and language in relation to cinema and decolonial politics. The course presents a wide array of films by Francophone (French-speaking) filmmakers from Africa, including some made by diasporic or itinerant filmmakers based in France.

Film viewings and discussions of work from Morocco, Senegal, Cameroon, Mali, Burkina Faso, and other countries. Critically engages with debates around the meaning of francophonie in a contemporary context.

Prerequisite: Prerequisite(s): FILM 132A or FILM 132B or permission of the instructor.

FILM 168M - National Cinema and Culture: Morocco (5)

Faculty-led study abroad course taught in Rabat, Morocco. In-depth investigation of Moroccan cinema and culture, including literature and art. Includes visits and field trips around Morocco.

FILM 170A - Fundamentals of Digital Media Production (5)

Introduction to the conceptual and technical fundamentals of making digital media. Covers principles of digital image manipulation, basic web authoring, and interface design through projects that introduce production techniques and methods.

Prerequisite: Prerequisite(s):FILM 20C or CSE 101 or CSE 111.

FILM 170B - Fundamentals of Film and Video Production (5)

An introduction to the art and craft of making films and videos. Covers principles of cinematography, videography, editing, production planning, and lighting involving both production techniques and methods. Students are billed a course materials fee of $190.

Prerequisite: Prerequisite(s): FILM 20A or FILM 20B and at least one upper-division film and digital media critical studies course.

FILM 171A - Sound (5)

The cinematic equation equals images plus sound. What are sound-specific properties? What is the relationship between sound and image? Course examines these and other questions through the creation of audio and audiovisual pieces. Students are billed a course materials fee of $161.

Prerequisite: Prerequisite(s): FILM 170A or FILM 170B.

FILM 171C - Special Topics Workshop: Found Footage (5)

Students consider the practice of transforming or recycling found images and other visual materials to create new meanings. In addition to assigned readings, screenings, and technical workshops, students produce creative found moving image projects and writing responding to course materials. Prior experience with digital editing recommended.

Prerequisite: Prerequisite(s): FILM 20A; prior experience with digital editing recommended.

FILM 171D - Social Information Spaces (5)

Investigates how information spaces can be designed to be inhabited, socially navigable spaces. Emphasizes the social navigation of information spaces, a set of techniques and ideas from computer-supported cooperative works, human-computer interaction, and architecture.

Prerequisite: Prerequisite(s): FILM 170A.

FILM 171F - Special Topics Workshop: Autobiographical Film (5)

Students explore autobiography as a filmmaking genre and practice, using experimental, fictionalized, documentary, and hybrid forms. Readings and screenings provide a theoretical context for production work. Topics include: strategies of (self) representation, reenactment, performance, portraiture, memoir, confession, and diaristic film. Students are billed a course materials fee of $210. Prerequisite(s): FILM 170B. Admission by application; application materials available during the last three weeks of preceding quarter.

FILM 171S - Special Topics in Film and Digital Media Production (5)

Intermediate workshop-style production course which addresses diverse themes and approaches. Content changes quarterly according to faculty research interests and changing technologies/discourses in digital audiovisual production. Students are billed a materials fee of $175.

Prerequisite: Prerequisite(s): FILM 170B.

FILM 172 - Narrative Video Workshop (5)

Intermediate workshop in film and video production concentrating on narrative production, development of critical standards, and technical methods. Topics include cinematography, sound, and non-linear digital editing techniques. Each student is responsible for the completion of short narratives from assignments. Students are billed a course materials fee of $292.

Prerequisite: Prerequisite(s): FILM 170B.

FILM 173 - Narrative Digital Media Workshop (5)

Analysis of cinematic codes and narrative structure through digital video, Internet and interactive multimedia projects. Required readings address contemporary research in narratology and hyper-media, exploring the potential of digital technology to reconfigure the role of both author and audience. Students billed a course materials fee of $210.

Prerequisite: Prerequisite(s): FILM 170A.

FILM 174A - Reasonable Doubts: Making an Exoneree Part A (5)

Part 1 of an intensive two-quarter course sequence in which UCSC students collaborate with students from Georgetown University to reinvestigate and document five cases of wrongful conviction. Small teams of students from both universities work together as investigative journalists, filmmakers, and social justice activists, producing short documentary films, websites, and social media campaigns providing humanizing portraits of the lives, families, and complicated legal cases of five wrongfully convicted incarcerated people. Commitment to enrollment in FILM

174B in the following quarter is required. Enrollment is by application; application materials available during the last three weeks of preceding quarter. Enrollment is restricted to sophomores, juniors, and seniors.

FILM 174B - Reasonable Doubts: Making an Exoneree Part B (5)

Part 2 of an intensive two-quarter course sequence in which UCSC students collaborate with students from Georgetown University to reinvestigate and document five cases of wrongful conviction. Small teams of students from both universities work together as investigative journalists, filmmakers, and social justice activists, producing short documentary films, websites, and social media campaigns providing humanizing portraits of the lives, families, and complicated legal cases of five wrongfully convicted incarcerated people.

Prerequisite: Prerequisite(s): FILM 174A. Enrollment is restricted to sophomores, juniors, and seniors.

FILM 175 - Documentary Video Workshop (5)

Workshop in documentary video production, development of critical standards, ethical issues, and technical methods. Each student is responsible for the completion of short documentaries from assignments. Students are billed a course materials fee of $210.

Prerequisite: Prerequisite(s): FILM 170B.

FILM 176 - Experimental Video Workshop (5)

Introductory workshop in video production (non-narrative, experimental). Topics include a survey of non-narrative experimental video from a historical/theoretical perspective and an introduction to videography, fundamentals of video editing, and sound. Students are billed a course materials fee of $210.

Prerequisite: Prerequisite(s): FILM 170B.

FILM 177 - Digital Media Workshop: Computer as Medium (5)

Introduction to the computer as a medium as well as a tool. Students explore art practice within digital imaging and information and communications environments through projects, readings, and screenings. Assignments may include designing virtual communities and /or interactive, multimedia web works.

Prerequisite: Prerequisite(s): FILM 170A.

FILM 178A - Personal Computers in Film and Video (5)

Introduction to the specific applications of computers for film and video. By using computer-generated, enhanced and imported graphics, animation, text, sound, and moving video, students create still and time-based works in a computer environment. Students are billed a course materials fee of $147. Prerequisite(s): FILM 170A or FILM 170B. Admission by application; application materials available during the last three weeks of preceding quarter.

FILM 178B - Advanced Personal Computers in Film and Video (5)

Study of advanced computer tools in digital media, including exploration, creation, and manipulation of sound with the same level of complexity as required in composing the moving image. Students produce a final project that demonstrates skills learned. Prerequisite(s): FILM 170A or FILM 170B. Admission by application; application materials available during the last three weeks of preceding quarter.

FILM 179A - Special Topics in Animation (5)

Provides opportunities to learn technical skills in animation while engaging in critical analysis of animation and design. Students are encouraged to pursue their personal artistic vision as well as to develop a collaborative and problem-solving mindset.

Prerequisite: Prerequisite(s): FILM 170A or FILM 170B.

FILM 179B - Documentary Animation Workshop (5)

A project-based production seminar in documentary animation: students learn diverse animation styles and techniques, and apply them to a documentary-animation class project.

Prerequisite: Prerequisite(s): FILM 170A or FILM 170B.

FILM 180 - Writing About Film, Television, and Digital Media (5)

Improves students' ability to write and edit, and invites students to explore different kinds of writing related to film, television, and digital media including historical, theoretical, cultural criticism, popular reviews, grant proposals, online forums, and publishing.

Prerequisite: Prerequisite(s): FILM 20A, FILM 20B, or FILM 20C. Enrollment is restricted to sophomore and junior film and digital media majors.

FILM 185D - Sound and Image in Theory and Criticism (5)

Explores theories and critiques of sound in culture and analyzes sound in relation to media images in film, video, and other media. Voice, noise, and music are addressed.

Prerequisite: Prerequisite(s): FILM 120.

FILM 185F - Advanced Topics in Film Studies (2)

Study of a selected aspect of film history, theory, and/or criticism. Usually offered in alternate academic years with rotating topics.

Prerequisite: Prerequisite(s): FILM 120 or FILM 130 or FILM 132A or FILM 132B or FILM 132C/FILM 165G or FILM 134A or FILM 134B. Enrollment is restricted to film and digital media majors.

FILM 185R - The Film Remake (5)

History and theory of the remake through case studies across cultural, gender, and genre boundaries. Examines changing cultural, social, stylistic, and technical values and explores notions of originality, repetition, homage, allusion, quotation,

and intertextuality from Feuillade and Hitchcock to Raimi and Johnny To.

Prerequisite: Prerequisite(s): FILM 120, FILM 130, FILM 132A, FILM 132B, FILM 132C, FILM 134A or FILM 134B.

FILM 185S - Advanced Topics in Film Studies (5)

Study of a selected aspect of film history, theory ,or criticism. Includes weekly screenings and historical/theoretical readings. Usually offered in alternate academic years with rotating topics.

Prerequisite: Prerequisite(s): FILM 120, FILM 130, FILM 132A, FILM 132B, FILM 132C, FILM 134A, or FILM 134B.

FILM 185X - EyeCandy Seminar (5)

Seminar and workshop on writing, producing, and publishing a journal. Students engage in assignments and exercises directly and indirectly related to the production of a web launch as well as a print copy of EyeCandy. Permission of instructor required based upon student's participation in EyeCandy in winter and spring quarters. Preference given to film and digital media majors and minors; others may apply based on qualifications and as space allows.

FILM 187 - Advanced Topics in Television Studies (5)

Study of a selected aspect of television history, television criticism, or national television. Includes weekly screenings and historical/theoretical readings. Usually offered in alternate academic years, with rotating topics.

Prerequisite: Prerequisite(s): FILM 20B. Enrollment is restricted to junior and senior film and digital media majors and minors.

FILM 189 - Advanced Topics in Digital and Electronic Media Studies (5)

Study of a selected aspect of digital and/or electronic media history and criticism. Topics can include virtual environments, electronic networks, video installations, computer games, and hyper-media. Usually offered in alternate academic years.

Prerequisite: Prerequisite(s): FILM 20C. Enrollment is restricted to junior and senior film and digital media majors and minors during priority enrollment; may be opened if space allows.

FILM 192 - Directed Student Teaching (5)

Teaching a lower-division course under faculty supervision (see FILM 42). Proposal supported by a faculty sponsor and department.

FILM 193F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty instructor. Tutorial may not be used to satisfy major requirements. Students submit petition to sponsoring agency.

FILM 194A - Film Theory Seminar (5)

Advanced senior seminar examining classical and contemporary film theory and those theoretical paradigms and methods that have illuminated the medium: formalism, realism, structuralism, semiology, psychoanalysis, Marxism, feminism, and phenomenology. Primary texts are read.

Prerequisite: Prerequisite(s): FILM 120. Enrollment is restricted to senior film and digital media majors.

FILM 194B - Electronic Media Theory Seminar (5)

Study of the major theoretical approaches to electronic media and their critical application to texts from television, independent video art and documentary, and electronic networks. Readings include a range of theoretical approaches selected from semiotic, ideological, feminist, cultural studies, reception theory, postmodernist, and other critical traditions.

Prerequisite: Prerequisite(s): FILM 120. Enrollment is restricted to senior film and digital media majors.

FILM 194C - New Media Theory Seminar (5)

Study of theories of emerging genres of electronic culture, with emphasis on the discourse about computer-assisted and computer-generated forms of art and mass culture such as digital imagery, virtual environments, telematics, hyper- and multimedia, and electronic networks

Prerequisite: Prerequisite(s): FILM 120. Enrollment is restricted to senior film and digital media majors.

FILM 194D - Film History Seminar (5)

In-depth study of film history investigating developments in cinematic style, technological innovation, and industrial practice against the broad canvas of cultural history. Students will acquire the basic tools necessary to conduct informed film historical research.

Prerequisite: Prerequisite(s): FILM 120; and FILM 130 or FILM 134A or FILM 134B. Enrollment restricted to senior film and digital media majors.

FILM 194E - International Cinemas (5)

In-depth study of the history and theory of international cinemas with changing topics such as globalism and resistance, postcolonial theory, international productions and querying race, the national, and cinema.

Prerequisite: Prerequisite(s): FILM 120; and FILM 132A or FILM 132B or FILM 132C. Enrollment restricted to senior film and digital media majors.

FILM 194F - Film and the Other Arts (5)

Examines the use of artistic media within films and of films that thematically are about other media. What do other art forms allow for in terms of the story, the film's meaning, the gaze, and the spectator?

Prerequisite: Prerequisite(s): FILM 120. Enrollment restricted to senior film and digital media majors.

FILM 194G - New(s) Media (5)

Addresses the role of new media technologies in the production, distribution, and reception of the news, especially international news. Examines software and network technologies as amplifying, filtering, extending, and countering the forces of media.

Prerequisite: Prerequisite(s): FILM 120. Enrollment restricted to senior film and digital media majors.

FILM 194H - Ethics and Documentary Filmmaking (5)

Online senior seminar that addresses long-standing ethical dilemmas including filmmaker/participant relationships, ethical ethnographic filmmaking, and conversations regarding the role of social media and new media. Explores issues such as allyship, privilege, and insider/outsider responsibilities for filmmakers working with topics such as class, the environment, gender, feminism, race and sexuality.

Prerequisite: Prerequisite(s): FILM 120 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior film and digital media majors.

FILM 194S - Special Topics Seminar (5)

Intensive research and writing on a changing topic chosen to demonstrate critical mastery in a specific area of film and digital media studies, for example, film adaptations and their literary sources, documentary/reality shows, or networked new media texts.

Prerequisite: Prerequisite(s): FILM 120. Enrollment restricted to senior film and digital media majors.

FILM 195 - Senior Thesis/Project (5)

An individually supervised course, with emphasis on independent research, to culminate in a senior thesis/project/production. Proposals should be submitted to adviser one quarter in advance. Petition required, approved by instructor and department; thesis petitions available in the department office.

FILM 196A - Senior Project in Narrative Production (5)

Students accomplish a range of production work focused on narrative production including script development, casting, and rehearsing to shooting and post-production work. Students are billed a course materials fee of $292. Enrollment is restricted to senior film and digital media majors. Students may apply a maximum of two times.

Prerequisite: Prerequisite(s): FILM 170B, and two additional upper-division FDM production courses. FILM 172 is recommended. Enrollment is restricted to senior Film & Digital Media majors.

FILM 196B - Senior Project in Screenwriting (5)

Students write a full-length (75-100 pages) screenplay in this seminar while studying structural concepts and character development in selected films. Scheduling, outlining, pitching ideas, and critique are all part of the workshop format of the class.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements; and FILM 150, THEA 157, or THEA 159. Enrollment is restricted to senior film and digital media majors.

FILM 196C - Senior Project in Documentary (5)

Students are responsible for producing short documentaries (up to 12 minutes). In class, students discuss each other's work as well as view and discuss other documentary films. Students are billed a course materials fee of $292. Enrollment is restricted to senior film and digital media majors.

Prerequisite: Prerequisite(s): FILM 170B, and two additional upper-division FDM production courses. FILM 172 is recommended. Enrollment is restricted to senior Film & Digital Media majors.

FILM 197 - Senior Digital Media Workshop (5)

Incorporates independent projects using the computer as a medium as well as a tool. Students design and implement projects in digital imaging, information, and communications environments. Students' projects may include designing virtual communities, building collaborative networks, and/or interactive, multimedia web works. Admission by application; application materials available during the last three weeks of the preceding quarter. Enrollment is restricted to senior film and digital media majors.

FILM 198 - Independent Field Study (5)

Provides for department-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students engaging in field study must complete application procedures for such study by the fifth week of the previous quarter. Field study may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available in the department office.

FILM 198F - Independent Field Study (2)

Provides for department-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students engaging in field study must complete application procedures for such study by the fifth week of the previous quarter. Field study may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available in the department office.

FILM 199 - Tutorial (5)

Individual study in areas approved by sponsoring instructors. Tutorial may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available in the department office.

FILM 199F - Tutorial (2)

Individual study in areas approved by sponsoring instructors. Tutorial may not be used to satisfy major requirements. Petition required, approved by instructor and department; petitions available in the department office.

Graduate

FILM 200A - Introduction to Graduate Study (5)

Introduces graduate study in the critical practice of film and digital media. Conducted as a pro-seminar, with faculty presentations and discussion.

Prerequisite: Enrollment restricted to graduate students.

FILM 200B - Theory and Praxis of Film and Digital Media 1 (5)

Investigates methods for rhetorical production of written and visual/aural texts. Emphasizes questions about delineation between theory and practice, and provides groundwork in theories relevant to key areas in film, television, and digital media studies.

Prerequisite: Enrollment restricted to graduate students.

FILM 200C - Theory and Praxis of Film and Digital Media 2 (5)

Investigates methods for rhetorical production of written and visual/aural texts. Emphasizes interwoven practices of the artist/researcher/teacher, formal and expressive possibilities of hybridized research, and cultural issues raised by integrated methods of inquiry.

Prerequisite: Enrollment restricted to graduate students.

FILM 202 - Pedagogy in Film and Digital Media (2)

Prepares students for teaching assistantships and instructor roles. Topics include TAships, designing inclusive course syllabi and lesson plans, active learning, teaching technologies, and classroom environment.

Prerequisite: Enrollment is restricted to graduate students.

FILM 203 - Professional Development in Film and Digital Media (3)

Prepares graduate students with professional skills in the discipline, such as CV writing, grants research and writing, public presentation, exhibition, publication, and job seeking.

Prerequisite: Enrollment is restricted to graduate students.

FILM 221 - Audio Arts and Methods (5)

Explores practices and ethics of listening, noticing and audio recording. Students gain expertise with microphones for field recording, studio set-ups, and digital audio editing software, and create original sound works of their own. The course entwines theory and practice, considering various approaches to audio arts across platforms and contexts such as broadcast, podcast, installation, audio essay, performance, and art as social practice, as well as exploring strategies for sound design for audiovisual works.

Prerequisite: Enrollment is restricted to graduate students.

FILM 222 - Critical Methodologies in Film and Television (5)

Introduces graduate students to critical methodologies in media studies and offers sustained examination of theoretical approaches to media studies. Methodologies may include (but are not limited to) contemporary theory (semiotic, psychoanalytic, ideological), cultural studies, intertextuality, feminist film, and television theory.

Prerequisite: Enrollment restricted to graduate students.

FILM 223 - The Film/Video Essay (5)

Focuses on essayistic approaches to scholarship and production, emphasizing relationships between theory and praxis that this mode of production requires.

Prerequisite: Enrollment restricted to graduate students.

FILM 224 - Mediating Difference (5)

Considers theoretical and strategic, situated difference in the era of (semi-)colonialism, post-colonialism, and globalism, examining theoretical writing alongside media works on the topic.

Prerequisite: Enrollment restricted to graduate students.

FILM 225 - Software Studies (5)

Today, our lives are woven into vast software systems that facilitate our family communications, personal relations, jobs, and cultural, economic, political, and social institutions. Course examines these conditions of life and thought using insights from the arts and humanities.

Prerequisite: Enrollment restricted to graduate students.

FILM 226 - Queer Theory and Global Film and Media (5)

Examines queer subjectivities, practices, and theories in relation to globalization, transnationalism, and postcoloniality, focusing on film/media produced outside the United States. The course addresses representation and also uses queer theoretical work to engage wider contexts of film/media production, distribution, and exhibition.

Prerequisite: Enrollment restricted to graduate students.

FILM 227 - Representing Memory (5)

Studio-based hybrid practice/theory to explore problems of historical representation in film, video, and new media and engage with the production of new cinematic/visual forms that take on issues of personal, collective, and national memories.

Prerequisite: Enrollment is restricted to graduate students.

FILM 228 - Moving Image Archives and the Frontiers of

Information (5)

Explores moving image archives in relation to social movements, technological change, and moving image use and reuse. Theories of memory, information, and technology provide a framework for discussions, site visits, and individual projects.

Prerequisite: Enrollment restricted to graduate students.

FILM 229 - Topics in Documentary Studies (5)

Examines the forms, discourses, and practices of documentary film, television, video, and other media in relation to cultural, social, and political history and theory. While the thematic focus varies from term to term, each edition of the course places critical thought and documentary work in conversation around issues central to forms of social knowledge and action.

Prerequisite: Enrollment restricted to graduate students.

FILM 230 - Expanded Documentary (5)

Students explore the aesthetic, political, and ethical dimension of new and expanded forms of documentary practice including: new media; database-driven, interactive documentary; participatory media; social media; and documentation-based art practices.

Prerequisite: Enrollment restricted to graduate students.

FILM 231 - Topics in Postcolonial Theories, Film, and Media (5)

Explores topics in postcolonial theories and film and media around themes such as colonialism, modernity, and institutions of cinema; colonial histories and national or transnational film and media; race, gender, sexuality and colonialism; the uneven implications, pitfalls, and possibilities of the term postcolonial in relation to film and media.

Prerequisite: Enrollment restricted to graduate students.

FILM 232 - Audiovisual Ethnography (5)

Students learn the technical and critical skills required for fieldwork-based ethnographic video and audio media production. The course is structured around cumulatively building filmmaking skills with an emphasis on critically informed nonfiction ethnographic observation.

Prerequisite: Enrollment restricted to film and digital media, anthropology, or social documentation graduate students.

FILM 234 - Toward an Ethics of New Media (5)

Investigates an ethics of new media. Using an intersectional approach, students read thematic units that consider issues of race, class, and gender as they crosscut questions of advanced technological tools and their implementation in modern society.

Prerequisite: Enrollment restricted to graduate students.

FILM 235 - Feminist Media Histories (5)

Investigates feminist histories of film, radio, television, video, technology, playable media, and digital culture from the 19th century through the present day. Students learn varied historiographic methodologies and also engage in primary historical research.

Prerequisite: Enrollment restricted to graduate students.

FILM 236 - Making...in the Anthropocene (5)

Through readings and assignments, students explore the notions of making and the temporal context of the Anthropocene. Making is broadly defined as any creative production. The Anthropocene and climate change are studied as urgent and compelling context.

Prerequisite: Enrollment is restricted to graduate students.

FILM 237 - Graduate Critique (5)

Develops fluency in the languages of critical practice as expressed across media. Integrates critical and analytical writing about objects and experiences created by and through electronic and digital media with ongoing, student-driven critiques of audiovisual scholarship.

Prerequisite: Enrollment is restricted to film and digital media graduate students. Graduate students from other programs may enroll by permission of the instructor.

FILM 238 - The Politics of Information (5)

Explores the production and perception of information (news, stories, figures, identities, controversies, and complacencies). Students research, analyze, theorize, and define the scope of the politics of information, study the consequences of media(ted) knowledge, and propose possibilities for critical intervention and change.

Prerequisite: Enrollment is restricted to graduate students.

FILM 239 - Topics in Media Theory (5)

Explores advanced media theory and the methodologies of media analysis. Themes and issues to be drawn from media history; material, popular, or mass cultures; network and information theory; and intellectual, institutional, political, or cultural contexts.

Prerequisite: Enrollment is restricted to graduate students.

FILM 283 - New Media Art and Digital Culture (5)

A study of new media art in the context of digital culture. Electronic, digital and online technology art are set in critical relation to discourse on history, aesthetics, hypermedia, the interface, hacks, embodiment, robotics, artificial life and other topics.

Prerequisite: Enrollment restricted to graduate students.

FILM 284 - Film, Culture, and Modernity (5)

Traces the rise of motion picture culture from the late 19th century through the end of the 1920s, looking at film's

emerging visual and narrative grammar, its changing cultural status, and its engagement with shifting registers of class, ethnicity, gender, and sexuality.

Prerequisite: Enrollment restricted to graduate students.

FILM 295 - Directed Reading (5)

Directed reading that does not involve a term paper. Students submit petition to course-sponsoring agency. Enrollment restricted to graduate students.

FILM 296F - Independent Study (2)

Independent study with primary advisor for graduate students prior to advancing to candidacy.

FILM 297 - Independent Study (5)

Either study related to a course being taken or a totally independent study. Students submit petition to sponsoring agency. Enrollment restricted to graduate students. May be repeated for credit.

FILM 297F - Independent Study (2)

Students submit petition to course-sponsoring agency. Enrollment restricted to graduate students.

FILM 299A - Thesis Research (5)

Students submit petition to course sponsoring agency. Enrollment restricted to graduate students.

FILM 299B - Thesis Research (10)

Students submit petition to course sponsoring agency. Enrollment restricted to graduate students.

FMST - FEMINIST STUDIES

Lower-Division

FMST 1 - Feminist Studies: An Introduction (5)

Introduces the core concepts underlying the interdisciplinary field-formation of feminist studies within multiple geopolitical contexts. Explores how feminist inquiry rethinks disciplinary assumptions and categories, and animates our engagement with culture, history, and society. Topics include: the social construction of gender; the gendered division of labor, production, and reproduction; intersections of gender, race, class, and ethnicity; and histories of sexuality.

FMST 10 - Feminisms of/and the Global South (5)

Explores feminist theories from domestic U.S. and global contexts in order to ask how interventions of women of color in the U.S. and of radical feminist movements in non-U.S. locations radically re-imagine feminist politics. Rather than focusing on feminist movements that represent different regions of the world, course examines feminist theory through multiple histories of colonialism, post-colonialism, and globalization.

FMST 12 - Podcasting: Feminist Files (5)

Introduces students to the basics of podcasting and guides students to become contributors to Feminist Files, a podcast that makes feminist scholarship and scholars accessible to the public. This course gives students the theoretical and practical framework to critique a variety of podcasts and engage in the podcast movement. Students learn how to conceptualize stories, research topics, interview guests, write scripts, host shows, records and edit audio. Students also build their collaboration skills by working in groups to produce segments.

Prerequisite: Prerequisite(s): Completion of at least one other lower-division feminist studies course.

FMST 14 - Popular Culture in South Asia (5)

Popular culture enables people to make sense of their modern selves and their place in the world. Focusing on South Asia, this course explores the region's rich and variegated popular culture forms, including film, music, television, the painted and printed image, and sport. It also investigates how the popular articulates with nation and global conjunctures and how it constructs hierarchies of class, gender, caste, and sexuality.

FMST 15 - Gender, Sexuality, and Transnational Migration Across the Americas (5)

Examines migration as a mode of inquiry into transnational practices across geographic locales and temporal zones. Analyzes migration in relation to the transnational formation of gender, race, and sexuality as well as processes of neocolonialism, the state, and globalization. Taught in conjunction with FMST 115.

FMST 16 - Media Histories--News and New Media (5)

The news is a set of narratives that produce, maintain, repair, and transform reality. Using three events that brought together old and new media, this course traces how the interaction of new media with news has changed how we make sense of the world around us and our place in it.

FMST 18 - Black Feminist Ethnographies (5)

Black feminist theoretical and methodological approaches to the dailiness of women's lives, which considers historical and contemporary Black feminist interventions and praxis that challenge ethnographic hegemony. Students revisit old and new debates to ponder questions of authority, genres, positionality, and citation politics.

FMST 19 - Black Feminisms: An Introduction (5)

Focuses on key issues, core concepts and debates foundational to Black feminisms. With some consideration from the Black diaspora, students examine processes of self-making from resistance to a history of violence, practices and strategies of creative survivalism, and the ongoing struggle to liberation.

FMST 20 - Feminism and Social Justice (5)

Examines, and critically analyzes, select post-World War II movements for social justice in the United States from feminist perspectives. Considers how those movements and their participants responded to issues of race, class, gender, and sexuality. A feminist, transnational, analytic framework is also developed to consider how those movements may have embraced, enhanced, or debilitated feminist formations in other parts of the world.

FMST 21 - Religion in American Politics and Culture (5)

Introduces dominant discourses about Christianity and Islam in the American public sphere, with particular attention paid to race, gender, sexuality, and class in thinking about religion. Visual and textual media, political commentary, and popular ethnographies are analyzed.

FMST 30 - Feminism and Science (5)

Explores questions of science and justice. Examines the nature of scientific practice, the culture of science, and the possibilities for the responsible practice of science. Rather than focusing on feminist critiques of science, the course examines how science and technology are changing our world and the workings of power.

FMST 31 - Disability Studies (5)

Introduces students to the key critical concepts, debates, and questions of practice in the emerging field of disability studies, with a focus on feminist and critical race approaches to disability.

FMST 40 - Sexuality and Globalization (5)

Examines the relationship between sexuality and the contemporary term globalization as a dense entanglement of processes that emerges from a history of U.S. empire. Sexuality cannot be separated from power struggles over the classification of bodies, territories, and questions of temporality. Examines how sexualized contact zones produce new knowledge, commerce, inequalities, possibilities, and identities.

FMST 41 - Trans Gender Bodies (5)

Draws from representations of transgender/transsexual people in popular, biomedical, and political contexts. Examines the impact of transgender lives on concepts of gender, identity, and technology. Engages with biological and sexological frameworks of sex/gender, trans experience, and social movements and theories.

FMST 43 - Rasanblaj: On Wholeness and Well-Being (5)

Centering Black feminist Toni Cade Bambara's existential question, "Are you sure, Sweetheart, that you want to be well?" this course puts the emphasis on transnational feminist praxis to consider interdisciplinary approaches and methods to living with inequity while pursuing wholeness and well-being. Considering notions of individual and community, care and personhood, environment and nature, self-love and happiness, and other themes, we find theoretical grounding in the concept of rasanblaj (the gathering of ideas, things, people, and spirits).

Prerequisite: Prerequisite(s): FMST 1.

FMST 44 - Women, Globalization, and Migration (5)

Women are subject to diverse forms of discrimination which creates barriers to their socio-economic advancement. The course explores the benefits and hardships produced through gendered migration, how migration is not universally experienced, and how in a globalized world women's participation in migration differs from each other due to intersectionality. Also, the class examines what motivates women to migrate in globalization from one nation to another, how they are impacted by such movement, and the impacts on their families and support systems.

FMST 71 - Introduction to Visualizing Abolition Studies (5)

Why has the proliferation of research on prisons—demonstrating economic and racial disparities, as well as negative effects on individuals and communities—not led to more substantial questioning of public policy that treats imprisonment as a major solution to social problems? This course is an interdisciplinary inquiry into the role visual culture plays in the maintenance of the prison industrial complex and an introduction to artistic practices that challenge law and social policy; the course also introduces fundamental concepts to the study of art and visual culture in relation to the movement for prison abolition.

Upper-Division

FMST 100 - Feminist Theories (5)

Core course for feminist studies. Serves as an introduction to thinking theoretically about issues of feminism within multiple contexts and intellectual traditions. Sustained discussion of gender and its critical connections to productions of race, class, and sexuality. Focus will change each year.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

FMST 102 - Feminist Critical Race Studies (5)

Working from the perspective that race is a cultural invention and racism is a political, economic, and social relation, investigates how race is produced as a meaningful and powerful social category, examines the effects of racism as a social relation, and argues for the necessity of combining feminist and critical race studies. By considering different historical periods and places, aims to equip students with the tools necessary to critically examine the production and reproduction of race and racism in the U.S.

Prerequisite: Prerequisite(s): one course from feminist studies. Enrollment is restricted to juniors and seniors.

FMST 105 - Feminist Methodologies (5)

Recommended for transfer students. Focuses on particular debates about feminist methodology. Specific methodological

debates vary each year but might include feminist theorizing of experience, epistemology, situated knowledges, notions of truth and the real. Feminist methods may include transnational approaches, as well as queer, decolonial, postcolonial, and critical race methodologies. Enrollment is by permission of the instructor. (Formerly FMST 75.)

FMST 112 - Women and the Law (5)

Interdisciplinary approach to study of law in its relation to category women and production of gender. Considers various materials including critical race theory, domestic case law and international instruments, representations of law, and writings by and on behalf of women living under different forms of legal control. Examines how law structures rights, offers protections, produces hierarchies, and sexualizes power relations in both public and intimate life.

Prerequisite: Enrollment is restricted to feminist studies, politics, legal studies, and Latin American and Latino studies/politics combined majors during first and second pass enrollment.

FMST 115 - Gender, Sexuality, and Transnational Migration Across the Americas (5)

Examines migration as a mode of inquiry into transnational practices across geographic locales and temporal zones. Analyzes migration in relation to the transnational formation of gender, race, and sexuality as well as processes of neocolonialism, the state, and globalization.

Prerequisite: Prerequisite(s): FMST 1, FMST 100, or FMST 145. Enrollment is restricted to sophomores, juniors, and seniors.

FMST 117 - Post Zora Interventions: Art, Activism and Anthropology (5)

This experimental course situates the pioneer and controversial ethnographer, novelist, and playwright Zora Neale Hurston as an avant-garde. Analyzing her influence on academics, activists and artists, students consider the complex ways anthropology functions as material (from the textual to the visual), a source of both inspiration and refusal. In the process of exploration, students critically ponder what constitutes an intervention in academia, on the streets, or in artistic settings?

FMST 120 - Transnational Feminisms (5)

Explores the emergence of transnational feminism through U.S. women of color and postcolonial feminism. Underscores the role of globalization, nationalism, and state formation in relation to feminist theorizing, activism, and labor across the Global South. In an attempt to understand the salience of inequalities, the course interrogates the continuation of feminist critique that is attentive to the war on terror, neocolonialism, and empire.

Prerequisite: Prerequisite(s): FMST 1. Enrollment is restricted to sophomores, juniors, and seniors.

FMST 123 - Feminism and Cultural Production (5)

Explores relationship between feminism and culture. Topics will vary and include different forms of cultural production such as film and literature. Regional/national focus will also vary.

Prerequisite: Prerequisite(s): FMST 1. Enrollment is restricted to sophomores, juniors, and seniors.

FMST 124 - Technology, Science, and Race Across the Americas (5)

Examines new ways of understanding the body and race through the intersection of technology and science. Addresses how broader structures of power and the rise of new technological and scientific discoveries mediate power relations and alter how race, national boundaries, the body, and citizenship are normalized and contested from colonialism to the present. Course content may vary; themes may include: U.S. eugenics, I.Q. tests, patenting debates, sterilization, assisted reproduction, biometrics, and genetics across the Americas.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior feminist studies majors.

FMST 125 - Race, Sex, and Technology (5)

Explores theories and case studies tied to race, gender, and technology. Covers the history of feminist and critical race analyses of technology as well as contemporary debates.

FMST 126 - Images, Power, and Politics: Methods in Visual and Textual Analysis (5)

Introduces the analysis of visual images and text with particular emphasis on feminist critical methodologies. Using case studies from photography, film, TV, advertising, and new media, students learn how to read and analyze culture.

FMST 129 - Reproductive Justice (5)

Situates current debates about reproductive rights and the repeal of Roe v. Wade in the United States in a transnational context of population governance and carceral power. Readings draw from ethnography, critical race, feminist and queer theory to trouble the concepts of privacy, bodily autonomy, and freedom that have shaped articulations of the "right to choose." Taking a comparative approach to reproductive justice movements in global norths and souths, students explore counter traditions of collective and social rights claims, belonging and responsibility, and practices of care and mutual aid in order to expand our vision of what is politically possible and necessary for a post-Roe era.

FMST 131 - The Politics of Matter and the Matter of Politics (5)

Considers how things--what we may think of as objects, matter, nature, technology, bodies--are constitutive elements of social and political life. What happens to the political as a category if we take this matter seriously?

Prerequisite: Prerequisite(s): FMST 1.

FMST 132 - Gender and Postcoloniality (5)

Postcolonial feminist studies. Explores how discourses of gender and sexuality shaped the policies and ideologies of the historical processes of colonialism, the civilizing mission, and anticolonial nationalism. Considers orientalism as a gendered discourse as well as colonial understandings of gender and sexuality in decolonialization. Explores Western media representations, literature, the law, and the place of gender in the current debate between cultural relativism and universalism. Provides an understanding of some key terms in postcolonial studies and an in-depth examination of the place of gender in these processes.

Prerequisite: Enrollment is restricted to juniors and seniors.

FMST 133 - Science and the Body (5)

Contemporary technoscientific practices, such as nano-, info-, and biotechnologies, are rapidly reworking what it means to be human. Course examines how both our understanding of the human and the very nature of the human are constituted through technoscientific practices.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100. Enrollment is restricted to juniors and seniors.

FMST 135 - Topics in Science and Sexuality (5)

Introduces the multiple debates animating the linkages between science, race, and sexuality. Interrogates the interrelated, epistemological frameworks of science and sexuality/queer studies across a range of interdisciplinary and geopolitical locations.

Prerequisite: Prerequisite(s): FMST 100 or FMST 145. Enrollment is restricted to sophomores, juniors, and seniors.

FMST 136 - Organizing for Water Justice in California (5)

Investigates, imagines, and practices movement toward water justice in California using feminist, Indigenous, and critical race theory. The course includes collaborative projects with environmental justice organizers in the Central Valley, and offers new ways of thinking about water inequity and access through racial capitalism, settler colonialism, and critical theories of place.

FMST 139 - African American Women's History (5)

Considers African American women as central to understanding of U.S. history, focusing on everyday survival, resistance, and movements for social change. Discussion of critical theories for historical research, gender, and race. Emphasis on biography, cultural history, and documentary and archival research.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

FMST 145 - Racial and Gender Formations in the U.S (5)

Introduces the defining issues surrounding racial and gender formations in the U.S. through an understanding of the term women of color as an emergent, dynamic, and socio-political phenomenon. Interrogates organizing practices around women of color across multiple sites: film and media, globalization, representation, sexuality, historiography, and war, to name a select few.

FMST 147 - Gender, Race, Power, Knowledge (5)

Explores the possibility that forces of social oppression, stratification, and domination emerge not first and foremost from ignorance, but rather from socially legitimated and institutionally embedded forms of knowledge. Primary engagement is with feminist of color texts, science studies, Black and Indigenous studies. Course supports students in building reading, writing, and analytic skills while investigating the intersections of knowledge, power, oppression, and liberation.

FMST 150 - Mediating Desire (5)

From a foundation in semiotics, considers the ways race and gender are constructed, understood, performed, embraced, commodified, and exploited through representations. Uses representations of, by, and for the margins to engage theories of communication, identity, and representation. Creative final projects encouraged.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior feminist studies majors or by permission of instructor.

FMST 175 - Gender and Sexualities in Latina/o America (5)

Advanced topics in gender and sexuality in Latin America and Latina/o studies. Analyzes role of power, race, coloniality, national and transnational processes in the production and analysis of genders and sexualities. Materials include memoir, fiction, ethnography, social documentary and history.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior feminist studies majors or by permission of instructor.

FMST 176 - Law, Prisons, and Popular Culture (5)

Examines the voluminous history of popular culture representing incarceration through new research in visual criminology, carceral aesthetics, and critical prison studies.

FMST 188 - Topics in Feminist Studies (5)

Focuses on a particular topic in feminist theory. Topics vary each offering but might include theorizing the gendered subject, racializing gender, politics and feminism, the relationship between queer theory and feminism, transgender studies, women of color feminisms, postcolonial and decolonial feminisms, feminist science studies.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

FMST 189 - Advanced Topics in Feminist Theory (5)

Focus on a particular problem in feminist theory. Problems vary each year but might include theorizing the gendered subject, racializing gender, the meeting points of psychoanalysis and social-political analysis in theorizing gender, the relationship between queer theory and feminist theory, postcolonial feminist theory.

Prerequisite: Prerequisite(s): FMST 100. Enrollment is restricted to juniors, seniors, and graduate students.

FMST 193 - Field Study (5)

Individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. Students submit petition to sponsoring agency.

FMST 193F - Field Study (2)

Individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor. Students submit petition to sponsoring agency.

FMST 194A - Feminist Jurisprudence (5)

Approaches legal reasoning from a feminist and intersectional perspective with attention to structures and jurisdiction, case materials, and emerging international frameworks for gender justice. Designed to facilitate completion of a substantial research essay based in feminist legal philosophy.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194B - Queer/Feminist Historiography (5)

Providing for a critical examination of canonical formations in history and archives, this course proposes new ways of thinking about history from the point of view of those who have been marginalized or excluded by race, class, gender, or sexuality.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194C - Gender and Iconicity (5)

Examines icons and the processes through which an iconicity is constructed and circulated in its complexity. Icons and iconicities often link or articulate various ideologies, affects, and systems of thought into a potent symbol or a mythology. Icons constitute norms, but also disrupt them; icons could articulate new technologies, aesthetics and their representations of the self with purportedly older modes of being in the world, such as a transcendent belief in a god, a faith, etc.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and FMST 1 and FMST 100. Enrollment restricted to senior feminist studies majors.

FMST 194D - Feminist Science Studies (5)

Examines different feminist approaches to understanding the nature of scientific practices. Particular attention paid to notions of evidence, methods, cultural and material constraints, and the heterogeneous nature of laboratory practices. Considers the ways in which gender, race, and sexuality are constructed by science and how they influence both scientific practices and conceptions of science. Also examines the feminist commitment to taking social factors into account without forfeiting the notion of objectivity.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194F - Chicana/Latina Cultural Production (5)

Traces the intersection between Chicana studies and Latin American studies through transnational forms of cultural production, imaginaries, and empowerment. Analysis of theories of cultural production and discussion of the political salience of culture as a site for resistance, critique, and creativity.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194G - Images of Africa (5)

Explores questions of colonialism, empire, race, gender, and geopolitics in the proliferating images--filmic, televisual, and media--of Africa in the United States. Facilitates the completion of a substantial research essay based on the study of popular culture.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194H - Michel Foucault: An Introduction (5)

French philosopher Michel Foucault's writings on modern forms of knowledge, power, and subjectivity provide a serious challenge to how we negotiate social oppression. Engages some of Foucault's most cited works, and grapples specifically with his primary claim that modern societies are marked less by freedom and autonomy than by discipline and docility.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194I - Feminist Oral History and Memoir (5)

Designed to train students in oral history and memoir writing. Emphasizes the specialness of transgressive voices; race, class, and sexuality, women's silence, erasure, censorship, and

marginalization are addressed. The politics of memory, narratives, storytelling, and editorial judgment are considered.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194K - Black Diaspora (5)

Seminar focuses on the historical and subjective processes that produce the concept of an African or Black Diaspora. In narrative, film, and cultural studies, themes of slavery, exile, home, identity, alienation, colonialism, politics, and reinvention are explored.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194M - Empire and Sexuality (5)

Explores the production of sexualities, sexual identification, and gender differentiation within multiple contexts of colonialism, decolonization, and emerging neo-colonial global formations.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194O - The Politics of Gender and Human Rights (5)

Examines human rights projects and discourses with a focus on the politics of gender, sexuality, race, and rights in the international sphere. Reading important human rights documents and theoretical writings, and addressing particular case studies, emphasizes the tensions between the ideals of the universal and the particular inherent in human rights law, activism, and humanitarianism.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194Q - Queer Diasporas (5)

Queer diaspora emerged from Third World/queer-of-color critique of queer theory and provides a framework for analyzing racializations, genders, and sexualities in colonial, developmental, and modernizing contexts. Readings from anthropology, history, literature, and feminist and cultural studies.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194R - HIstories of the Carceral State (5)

Surveys how over the course of the 20th century and into the present, the U.S. prison system has metastasized with more than 2 million people locked in cages and many millions more under forms of correctional supervision such as parole, probation, or deportation order, as well as the expansion of a policing apparatus that surveils, stops and frisks, asks for "papers, please," and shoots first. Recently, historians have produced works exploring the origins of this era of racialized police terror, criminalization, mass incarceration, and deportation. Course surveys key works in carceral studies while guiding students through the process of crafting their own original research projects.

Prerequisite: Prerequisite(s): FMST 1, FMST 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors. Corequisite: Prerequisite(s): CRES 10 and CRES 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior CRES majors.

FMST 194T - Transgender Studies (5)

Explores literature from the natural sciences, anthropology, history, cultural studies, and sociology. Provides theoretical approaches to complex questions in queer studies and geopolitics, and a framework for understanding embodiment, medical regulation, gender formation, the human/animal divide, etc.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194U - Touring War and Empire (5)

Senior seminar focusing on tourism, colonialism, and militarism. Considers case studies on tourism in colonial contexts and sites of U.S. empire across multiple geographies as students craft their projects, participate in writing workshops, and present research.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194V - Marxism and Feminism (5)

Explores critically the intersections and crisis points between feminism and Marxism as bodies of thought, theoretical formations, and forms of historical inquiry.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194W - Politics of Space, Time, and Matter (5)

Senior seminar focusing on questions of the politics of space, time, and matter. Readings informed by fields, such as indigenous studies, queer studies, afrofuturism, borderland studies, critical race studies, decolonial studies, disability studies, feminist science studies, and new materialisms.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194X - Genders, Archives, Histories (5)

Explores the entanglements of histories, genders and archives across a number of intellectual and imperial contexts. Our inquiry approaches the concept of the archive to reflect on who counts as a historical and/or gendered subject and what are the ethics of representation that guide such archival formations. In approaching these questions, students draw on literature from the disciplines of philosophy, gender/sexuality studies, anthropology, history, and literary criticism.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 194Y - Sonic Worlds: Voice, Sound, Music (5)

What would we learn about the pressing questions of our time if we centered sound, noise, voice, and music? To think with sound or to think sonically "is to think conjuncturally about sound and culture." Such a "sonic imagination," not only enables us to immerse ourselves in the questions and problems of our time but has the potential to "redescribe them from unexpected standpoints." Thinking with a feminist and sonic imagination, this course is interested in exploring conjunctures and culture by using sound as its point of departure. It serves as an immersive introduction to sound studies and as a senior seminar encourages students to center soundscapes in their own research.

Prerequisite: Prerequisite(s): FMST 1 and FMST 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior feminist studies majors.

FMST 195 - Senior Thesis or Project (5)

The senior thesis/project which satisfies the major requirement. Course is for independent research and writing. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; students submit petition to sponsoring agency.

FMST 198 - Independent Field Study (5)

Provides for individual study program off campus for which faculty supervision is not in person. Students submit petition to sponsoring agency.

FMST 198F - Independent Field Study (2)

Provides for individual study program off campus for which faculty supervision is not in person. Students submit petition to sponsoring agency.

FMST 199 - Tutorial (5)

Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency.

FMST 199F - Tutorial (2)

Individual directed study for upper-division undergraduates. Students submit petition to sponsoring agency.

Graduate

FMST 200 - Feminist Theories (5)

Introductory required course for feminist studies graduate students. Covers major theorists, debates, and current questions as well as foundational texts through which feminist critiques have been grounded. Content changes with instructor.

Prerequisite: Enrollment is restricted to graduate students.

FMST 201 - Topics in Feminist Methodologies (5)

Explores feminist theorizing across disciplinary and cultural contexts for both methodology (theories about the research process) and epistemology (theories of knowledge). Goal is to orient students toward changes in organization of knowledge and provide them with different feminist methodologies in their pursuit of both an object of study and an epistemology.

Prerequisite: Enrollment is restricted to graduate students.

FMST 202 - Disciplining Knowledge/Graduate Research (5)

Prepares students to develop research skills and initiate their research projects. Students consider what is meant by feminist research and undertake designing and performing feminist research.

Prerequisite: Prerequisite(s): FMST 200 and FMST 201. Enrollment is restricted to graduate students.

FMST 203 - Feminist Pedagogies (5)

Examines feminist pedagogies as projects in transgressing traditional disciplinary boundaries. Examines historical examples of alternative pedagogies and contemporary models for creating communities dedicated to social justice. Designed to assist graduate students develop teaching strategies in multiple fields.

Prerequisite: Enrollment is restricted to graduate students.

FMST 207 - Topics in Queer/Race Studies (5)

Explores the interrelated epistemological frameworks of critical race studies and queer studies. Through the study of a range of philosophical, scientific, literary, and cinematic texts, course historicizes and theorizes discourses of race and sexuality.

Prerequisite: Enrollment is restricted to graduate students.

FMST 208 - African(a) Genders and Sexualities (5)

Examines a number of classic and new critical texts in the field of African(a) Feminism and Sexuality. Focuses on how African(a) scholars have had to theorize genders and sexualities through an intersectional lens that takes into account questions of decoloniality and freedom. How might we rethink issues of oppression and domination in

relationship to race, nation, sex, gender, and sexuality in the global Black world using the tools provided by Africa(a) scholars?

Prerequisite: Enrollment is restricted to graduate students.

FMST 209 - Comparative Empires: Gender, Slavery, Race (5)

Explores the interrelated, epistemological frameworks of race, slavery and gender across multiple Oceanic and imperial networks. Histories of empire and slavery have been over-determinedly tethered to singular histories of nation-states, temporalities and/or geopolitics. Bypassing the idea of slavery and/or empire as a stable or temporal concept, students are guided instead by an interdisciplinary and comparative framework, seeking more the robust vernaculars and geo-histories that found our current understandings of face, gender and sexuality.

Prerequisite: Enrollment is restricted to graduate students.

FMST 210 - Sex and the Carceral State (5)

The expansion of the state's carceral capacity over the course of the 20th century and into the present has been intimately connected to ideas about sex, gender. This course examines the ways that sex has been a target of the carceral state at the same time that policing and incarceration have shaped our understanding of sexuality and gender. Rather than focusing solely on repression, course also examines how feminists and queer activists have challenged carceral logics and practices and imagined expansive forms of freedom, justice, and safety.

Prerequisite: Enrollment is restricted to graduate students.

FMST 211 - Sexuality, Race, and Migration in the Americas (5)

Analyzes the ways transnational processes intersect with changing notions of gender, sexuality, and race. Examines processes such as tourism, the Internet, capitalism, and labor spanning Brazil, the Dominican Republic, and the United States.

Prerequisite: Enrollment is restricted to graduate students.

FMST 212 - Feminist Theory and the Law (5)

Interrogation of the relationship between law and its instantiating gendered categories, supported by feminist, queer, Marxist, critical race, and postcolonial theories. Topics include hypostasization of legal categories, the contest between domestic and international human rights frameworks, overlapping civil and communal codes, cultural explanations in the law, the law as text and archive, testimony and legal subjectivity.

Prerequisite: Enrollment is restricted to graduate students.

FMST 213 - Colonialism, Racial Capitalism and Surveillance (5)

Course asks students to consider surveillance technologies beyond the history of modernity and the rise of bureaucratic governance as well as the framework of liberal understandings of the right to privacy. Instead, students examine the ways colonialism and racial capitalism are structured within surveillance technologies, or violent modes of "seeing" that contribute to the brutal genocide, dehumanization, containment, extraction, and enslavement of bodies and land.

Prerequisite: Enrollment is restricted to graduate students.

FMST 214 - Topics in Feminist Science Studies (5)

Graduate seminar on feminist science studies. Topics will vary and may include: the joint consideration of science studies and poststructuralist theory; the relationship between discursive practices and material phenomena; and the relationship between ontology, epistemology, and ethics.

Prerequisite: Enrollment is restricted to graduate students.

FMST 215 - Postcolonial and Postsocialist Transactional Analytics (5)

Addresses the intersection of the postcolonial and the postsocialist as theoretical ground. Considers how (neo)liberal ideologies about race, class, gender, secularism, and democracy are shaped by the intersection between postsocialist geopolitics and imperial legacies. (Formerly Postsocialism, Postcolonialism, Neoliberalism.)

Prerequisite: Enrollment is restricted to graduate students.

FMST 216 - Archives/Genders/Histories: An Introduction (5)

Explores the entanglements of archives, genders, and histories across a number of intellectual and imperial contexts. Approaches the concept of the archive to reflect on who counts as a historical and/or gendered subject and what are the ethics of representation that guide such archival formations. Draws on literature from philosophy, gender/sexuality studies, anthropology, history, and literary criticism.

Prerequisite: Enrollment is restricted to graduate students.

FMST 218 - Militarism and Tourism (5)

Positioning tourism and militarism as central sites of inquiry for feminist and ethnic studies, course draws from literature on colonialism and empire to illuminate how tourism functions and how tourists move, in sites of past and present warfare.

FMST 222 - Religion, Feminism, and Sexual Politics (5)

Focuses on the increasing importance of religion as a category of analysis in feminist theory. Addresses the relationship of religion, feminist politics, and activism in connection with nationalism, the family, sexuality, and geopolitics.

Prerequisite: Enrollment is restricted to graduate students.

FMST 224 - Reproductive Justice (5)

Explores practices of reproductive labor, care and justice, centering global south and transnational perspectives. Readings draw from ethnography alongside critical race, feminist, and queer theory to trouble the concepts of the body, agency, and freedom that have shaped dominant discourses of reproductive politics such as, the "right to choose," along with

secular liberal frameworks of justice more broadly. Aims to expand vision of what is possible and necessary in our contemporary moment of heightened contestation over reproductive life and rights.

Prerequisite: Enrollment is restricted to graduate students.

FMST 232 - Topics in Postcolonial Studies (5)

Variable topics that could include postcolonial approaches to questions of epistemology and knowledge production, theories of nationalism and nation-state formation, subaltern historiography, analyses of modernization and developmental theory, postcolonial approaches to globalization, and transnationalism. Significant component of feminist contributions to these literatures.

Prerequisite: Enrollment is restricted to graduate students.

FMST 243 - Feminism, Race, and the Politics of Knowledge (5)

Course takes as its central topic the institutional politics of feminist and critical race knowledges in the post-1960s United States university. Considers these fields' complex and contradictory relation to disciplinarity, the university's primary or default mode of arranging and legitimizing knowledge formations.

Prerequisite: Enrollment is restricted to graduate students.

FMST 260 - Black Feminist Reconstruction (5)

Re-visions and extends Reconstruction from 1865-1920 from a black feminist standpoint. Topics include: redefining democracy; labor; literacy and education; suffrage; re-visioning sexuality; childbirth; parenting, etc. Analyzes traditional historiography and the methodological implications of the boundaries between history and fiction, and archival and oral traditions.

Prerequisite: Enrollment is restricted to graduate students.

FMST 270 - Anthropology at Its Interfaces with Feminist, Postcolonial, and Decolonial STS (5)

Focuses on generative interfaces within and at the edge of the anthropological discipline, in particular, the way ethnographies and fields are being reconfigured by feminist, postcolonial, and decolonial perspectives and methodologies in science and technology studies (STS).

Prerequisite: Enrollment is restricted to graduate students.

FMST 290 - Pedagogical Training (2)

First-year graduate students meet with the teaching assistant trainer for bi-weekly meetings covering pedagogical approaches. Also includes class visits and shadowing. Enrollment is restricted to graduate students. (Formerly offered as First-Year Advising.)

FMST 291 - Advising (2)

Independent study formalizing the advisee-adviser relationship. Regular meetings to plan, assess, and monitor academic progress, and to evaluate coursework as necessary. May be used to develop general bibliography of background reading trajectory of study in preparation for the qualifying examination. Enrollment restricted to graduate students.

FMST 297A - Independent Study (5)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

FMST 297B - Independent Study (10)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

FMST 297F - Independent Study (2)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

FMST 299A - Thesis Research (5)

Prerequisite(s): advancement to candidacy. Enrollment restricted to graduate students.

FMST 299B - Thesis Research (10)

Prerequisite(s): advancement to candidacy. Enrollment restricted to graduate students.

FREN - FRENCH

Lower-Division

FREN 1 - First-Year French (5)

Introduction to French language and culture with practice in all four language skills: listening, speaking, reading, and writing. Intended for students with no previous study of French.

FREN 2 - First-Year French (5)

Further development of cultural competence and basic French language skills, both written and spoken. Students learn past tenses in this course.

Prerequisite: Prerequisite(s): FREN 1 or placement by assessment. .

FREN 3 - First-Year French (5)

Final quarter of first-year sequence. Students complete study of French language basics, including the future tense and the conditional and the subjunctive moods, while continuing to learn about French and Francophone cultures.

Prerequisite: Prerequisite(s): FREN 2 or placement by assessment. .

FREN 4 - Second-Year French (5)

First course in intermediate sequence. Students review and expand upon their previous study of the language through

short literary readings, vocabulary building, grammar study, composition, and discussions.

Prerequisite: Prerequisite(s): FREN 3 or placement by assessment. .

FREN 5 - Second-Year French (5)

Further development of intermediate-level oral and written skills through study of vocabulary and structures. Students also read and discuss a French or Francophone play.

Prerequisite: Prerequisite(s): FREN 4 or placement by assessment. .

FREN 6 - Second-Year French (5)

Final course of intermediate sequence includes grammar study, vocabulary building, extensive writing, and discussion. Reading of a French or Francophone novel is an integral part of course.

Prerequisite: Prerequisite(s): FREN 5 or placement by assessment. .

FREN 35 - Conversational practice and vocabulary development (5)

Students work on developing fluency and spontaneity in French conversation, focusing on oral expression in a range of common daily situations, including social interactions, navigating transportation systems, securing lodging and accommodations, ordering food in restaurants, and so forth. Students also focus on acquiring vocabulary related to each theme. This course aims to build students' oral proficiency as well as confidence, especially for students interesting in further French coursework or a sojourn abroad in a French-speaking context (such as one of the UCEAP programs in France).

FREN 85 - (De)constructing contemporary French identity (5)

Taught in English, this course examines core values and events in France, such as Republican values (in the French sense of "Republican"), secularism, globalization, immigration, that have helped shape current French society.

FREN 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

FREN 99 - Tutorial (5)

Students submit petition to sponsoring agency.

FREN 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

FREN 105 - French Regional Cultures Through Cuisine (5)

"Tell me what you eat, and I will tell you what you are." This famous quote is the title of a book by the French gastrosopher (philosopher of gastronomy) Brillat-Savarin in XIX-century France. His work was highly influential on brilliant authors such as Balzac and Barthes. This English course explores French regional cultures, traditions, and savoir-faire and their impact on the people.

FREN 108 - French Cinema (5)

Investigation of a variety of topics (historical, cultural, and linguistic) in France and the French-speaking world. Topics are explored through film. Conducted in English.

FREN 111 - Stylistics (5)

Intensive work in French composition with the aim of attaining fluency and accuracy of expression while developing literary appreciation. May be repeated for credit with consent of instructor.

Prerequisite: Prerequisite(s): FREN 6. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting.

FREN 114 - French Phonetics (5)

Introduction to the French sound system and basic phonetics. Extensive practice of French pronunciation and phonetic transcriptions of both written and spoken language samples.

Prerequisite: Prerequisite(s): FREN 6.

FREN 120 - French Linguistics (5)

Major topics in contemporary French linguistics, covering both formal and social properties of French. Descriptive and theoretical study of phonetics and phonology, lexicon, morphology, syntax, sociolinguistic variation, status of regional and minority languages, and language planning. Taught in French.

Prerequisite: Prerequisite(s): FREN 6 or equivalent proficiency in French or by consent of the instructor.

FREN 121 - History of the French Language (5)

Overview of the history and development of the French language from Latin to early modern French. Sound changes, grammatical and lexical changes, language policy (e.g., l'Academie francaise), external influences on the language. Taught in French.

Prerequisite: Prerequisite(s): FREN 6 or equivalent proficiency in French, or by permission of the instructor.

FREN 125A - French Civilization: 19th Century (5)

Survey of the important historical events, social changes, and artistic movements contributing to the development of French culture during the 19th century.

Prerequisite: Prerequisite(s): FREN 6.

FREN 125B - French Civilization: 20th Century (5)

A survey of the important historical events, social changes, and artistic movements contributing to the development of French culture during the 20th century.

Prerequisite: Prerequisite(s): FREN 6.

FREN 130 - French for Professions (5)

Students better understand administrative organization in France through preparation of their own professional dossier in French, and preparation to look for professional opportunities in France. Taught in French.

Prerequisite: Prerequisite(s): FREN 6, or equivalent proficiency in French, or by permission of the instructor.

FREN 131 - Social Activism in France: The Tradition of Chanson Française Engagée (5)

Explores the French tradition of musical activism from the French Revolution to the present. Societal issues such as war, racism, poverty, environmental issues, globalization, and terrorism are addressed.

Prerequisite: FREN 6 or by interview with consent of instructor.

FREN 136 - La Francophonie (5)

In-depth multidisciplinary study of one or more French-speaking regions of the world. Topics may include history, language, society, literature, and the arts. All coursework will be done in French.

Prerequisite: Prerequisite(s): FREN 6.

FREN 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

FREN 199 - Tutorial (5)

Students submit petition to sponsoring agency.

FREN 199F - Tutorial (2)

Students submit petition to sponsoring agency.

GAME - GAMES AND PLAYABLE MEDIA

To view planned offerings for the current academic year, please visit this page.

Graduate

GAME 200 - Game Design Systems (5)

Analyzes how games aggregate mechanics to create dynamic, interactive systems. Students analyze and design systems by general categories (e.g., movement, economy, conflict) to better understand their histories, relationships, and implementations.

Prerequisite: Enrollment is restricted to graduate students.

GAME 201 - Level Design (5)

Level design integrates architecture, psychology, and drama with the tools of game making. Course explores both 2D and 3D level design through both analysis and construction of video game levels, along with key readings, particularly in architecture.

Prerequisite: Enrollment is restricted to graduate students.

GAME 202 - Introduction to Build (Advanced): Physical Computing (5)

Advanced course on build methods in HCI, applicable to any computing domain including gaming. Course covers a combination of HCI theory and practice to design, build, deploy, iterate, document, and demo novel prototypes of varying purpose to multiple stakeholders. Advanced topics may include physical computing, input devices (e.g., alternative controllers), wearable computing, IoT, AR, VR, 3D fabrication, programmatic wireframing, and accessible designs. May be taught in conjunction with HCI 202B. Students cannot receive credit for this course and HCI 202B. (Formerly offered as Alternative Controllers, AR, and VR.)

Prerequisite: Enrollment is restricted to graduate students in games and playable media and serious games or by permission of the instructor.

GAME 210 - Game Art Intensive (5)

Teaches the basic vocabulary, concepts, and practices of creating 2D and 3D art assets for games, as well as their management and integration into game engines. Includes sprites, models, textures, animations, and an introduction to effects.

Prerequisite: Enrollment is restricted to games and playable media and serious games graduate students; others by interview.

GAME 215 - Audio Direction (5)

Introduces fundamentals of digital audio and its implementation into a game project. Explores elements of acoustic audio therapy, musical theory, and digital audio theory, coupled with hands-on creation. Students work with audio software, synthesis, plug-in processing and microphones to develop and create an audio direction.

Prerequisite: Enrollment is restricted to games and playable media and serious games graduate students, or by permission of the instructor.

GAME 221 - Professional Development for Game Makers (5)

Professional preparation for students in Games and Playable Media, and Serious Games master's degree programs. Includes entrepreneurship, employment rights, IP law, interview skills, business analysis, and other topics aligned with the dynamic industry of computer games.

Prerequisite: Enrollment is restricted to games and playable media and serious games graduate students; others by interview.

GAME 222 - Professional Development for Game Makers II (2)

Second course in a three-course sequence covering the game industry, game jobs, current thinking on games, and becoming a professional game maker. Focus on design considerations and methodologies employed in the game industry with emphasis placed upon the student's ability to develop designs beyond mere ideas through to execution.

Prerequisite: Enrollment is restricted to games and playable media graduate students.

GAME 223 - Professional Development for Games Makers III (2)

The third course in a three-course sequence covering the game industry, game jobs, current thinking on games, and becoming a professional game maker. Focuses on the business of the game industry, including funding, corporation types and formation, budgeting and burn rates, pitch decks, and marketing.

Prerequisite: Enrollment is restricted to games and playable media graduate students.

GAME 230 - Fundamentals of Game Engineering (5)

Deep introduction to technologies used in the construction of computer games. Principles of 2D game engine design, including architecture, object-oriented design patterns, collision detection, particle systems. Also examines artificial intelligence techniques including pathfinding, state machines, and behavior trees.

Prerequisite: Enrollment is restricted to games and playable media graduate students.

GAME 231 - Game Technologies (5)

Learn the fundamentals of at least two contemporary game engines. Develop 3D game prototypes using custom-level geometry and shaders. Understand common features of the engines and how engine-specific features shape the space games that are reasonable to implement.

Prerequisite: Prerequisite(s): GAME 230; or GAME 235 and GAME 236. Enrollment is restricted to graduate students.

GAME 232 - Advanced Game Technologies (5)

Exposes students to cutting-edge research technologies enabling the creation of games not possible with off-the-shelf techniques. Students learn how understand research to incorporate such technologies into a game. Students create rapid prototypes using several different technologies.

Prerequisite: Prerequisite(s): GAME 230; or GAME 235 and GAME 236. Enrollment is restricted graduate students.

GAME 236 - Game Development II (5)

Second in a two-course sequence providing an introduction to game programming using a modern object-oriented language. Intermediate technologies are used in the construction of computer games. Includes NPC behavior, scenes and shaders, physics, debugging, and managing game code. Students may not receive credit for this course and GAME 230.

Prerequisite: Prerequisite(s): GAME 235. Enrollment is restricted to graduate students.

GAME 238 - Computer Graphics for Games (5)

Advanced computer-graphics techniques for computer games. Covers a range of computer graphics techniques used in contemporary computer games, with emphasis on those that complement existing game engines. Subjects covered include: lighting for models and scenes, shader programming (including several visual effects), procedural mesh manipulation, advanced use of particle systems, and non-photorealistic rendering techniques.

Prerequisite: Prerequisite(s): GAME 230 or GAME 235. Enrollment is restricted to graduate students.

GAME 240 - Game Usability (5)

Research approaches to game usability, from direct interaction with players to game instrumentation methods. Students learn to understand, select between, and adapt research designs and analysis approaches. Includes defining and measuring impact and effect size of serious games.

Prerequisite: Enrollment is restricted to graduate students.

GAME 250 - Foundations of Serious Games and Gamification (5)

Provides an overview of serious games and its applications in health, education, training, and advertisements. Further, it introduces gamification and discusses various examples of gamifications used in the market today in various industries including social media, retail, health trackers, and food industry. Course also provides a practical guide of the process of design and development of serious games and gamification techniques. Through projects students apply these lessons and develop two serious games or gamification projects. (Formerly offered as Foundations of Serious Games.)

Prerequisite: Enrollment is restricted to graduate students in games and playable media, human computer interaction, and serious games, or by permission of the instructor.

GAME 251 - Games User Research (5)

Research approaches to user experience of games, from direct interaction with players to game instrumentation methods. Students learn to understand, select between, and adapt research designs and analysis approaches. Includes defining and measuring impact and effect size of serious games.

Prerequisite: Enrollment is restricted to Serious Games graduate students.

GAME 252 - Modeling and Simulation (5)

Introduces the concepts of models, including how models are created and represented both conceptually and computationally. Also delves into practical aspects of developing and evaluating simulations. Students introduced to the value of simulations for what-if analysis as well as a way

to explore and derive models around specific phenomena such as social and cultural structures, global warming, weather systems, among other applications within the field of serious games. Students introduced to various theoretical concepts and then asked to implement a project involving developing a model and simulation given a particular topic.

Prerequisite: Enrollment is restricted to computational media graduate students.

GAME 255 - Serious Games Studio I (5)

Focuses on developing innovative project concepts, rapid prototyping and playtesting, and the creation of concept presentations. Students identify appropriate sources of subject matter expertise, elicit knowledge to inform a game project, and integrate that knowledge into the core gameplay experience.

Prerequisite: Prerequisite(s): GAME 200, or GAME 230, or GAME 236, or GAME 250. Enrollment is restricted to graduate students.

GAME 256 - Serious Games Studio II (5)

Students work in teams to develop serious games. Involves multiple aspects of game production with emphasis on initiating production and coordination between requirements and design, and preparing a game iteration for efficacy measurement. Students receive frequent critiques on emerging game projects.

Prerequisite: Prerequisite(s): GAME 255. Enrollment is restricted to graduate students.

GAME 257 - Serious Games Studio III (5)

Students work in teams to develop serious games. Involves multiple aspects of game production with emphasis on performing efficacy measurements and responding through iteration. Students receive frequent critiques on final game projects.

Prerequisite: Prerequisite(s): GAME 256. Enrollment is restricted to serious games graduate students.

GAME 270 - Games and Playable Media Studio I (5)

First course in a three-course sequence covering the fundamentals and advanced topics in game and playable-media development. Focuses on developing innovative project concepts using methods ranging from prototyping to design documents, planning, and initiating project development.

Prerequisite: Enrollment is restricted to games and playable media graduate students; others by interview.

GAME 271 - Games and Playable Media Studio II (5)

The second course in a three-course sequence in which students work in teams to develop an innovative computer game. Coursework involves multiple aspects of game production, including agile methodology; game and level design; development of code to implement game behavior; art direction; and audio design. Students receive frequent critiques on emerging game projects.

Prerequisite: Prerequisite(s): GAME 270. Enrollment is restricted to games and playable media graduate students.

GAME 272 - Games and Playable Media Studio III (5)

The third course in a four-course sequence in which students work in teams to develop an innovative computer game. Coursework involves multiple aspects of game production including agile methodology; game and level design; development of code to implement game behavior; art direction; and audio design. Students receive frequent critiques on emerging game projects.

Prerequisite: Enrollment is restricted to graduate students in the games and playable media program.

GAME 273 - Game Production Intensive (10)

Fourth course in a four-course sequence in which students work in teams to launch an innovative computer game. Coursework involves multiple aspects of game production, including agile methodology, game and level design, development of code to implement game behavior, art direction, and audio design. The emphasis is on interacting with game media to publicize the game. Students receive frequent critiques on emerging game projects.

Prerequisite: Enrollment is restricted to graduate students in the games and playable media program.

GAME 280A - Games Proseminar (2)

Students learn through guest speakers, design exercises, master classes, and interactive group activities. Students prepare through reading texts, playing games, and developing their own materials. Features visitors from small and large developers, game scholars, and those using games in general. Can be taken for Satisfactory/Unsatisfactory credit only.

Prerequisite: Enrollment is restricted to games and playable media, and serious games graduate students, or by permission of the instructor.

GAME 280Y - Games You Should Know (2)

Examines games that produce novel experiences. Each session consists of game play and discussion of associated readings. Students learn to appreciate the range of possible game experiences, and understand key design ideas that enable those experiences.

Prerequisite: Enrollment is restricted to graduate students.

GAME 290A - Advanced Topics in Games (5)

In-depth study of current topics in digital and non-digital games. Topics vary, but are expected to include virtual reality, augmented reality, novel game interfaces, advanced computer graphics techniques, advanced game-design techniques, advanced procedural content generation, and autonomous characters.

Prerequisite: Enrollment is restricted to graduate students.

GCH-GLOBAL AND COMMUNITY

HEALTH

Lower-Division

GCH 1 - Foundations for Global and Community Health (5)

Interdisciplinary introduction to global and community health. It provides students with the foundational knowledge, vocabulary, and analytical tools to enter global health. It emphasizes the wide-ranging community meanings and contextual conditions shaping health from local to global scales. Co-taught by faculty from the natural sciences and social sciences, the course also introduces students to global and community health, highlighting opportunities for learning that involve collaboration and conversation between natural scientists and social scientists. (Formerly offered as POLI/ANTH/BIOL 89).

GCH 10 - COVID, Culture and Community Health (5)

Takes as its topic the still-unfolding story of COVID-19, its historical precursors, evolving scientific and policy questions, and present global challenges. It invites students from across disciplines to examine the medical, cultural, and public health concepts necessary in a post-pandemic world, and to explore the vital importance of rhetoric, representation, and narrative in the cultural politics of COVID more generally. A project-based, collaborative approach guides hands-on investigations to help students become audiences and advocates for health initiatives worldwide.

GCH 41 - Clinical AI Applications for Health and Society (5)

Provides an introduction to the field of Artificial Intelligence (AI) designed for healthcare applications. Topics include ethics, policy, and AI applications for medical and psychological care, including those related to the social determinants of health. Emphasis is on explainability and accountability in AI, and holistic approaches to applying AI in varying contexts.

Upper-Division

GCH 186 - Global Health Politics (5)

Examines the politics surrounding both global health problems and policy responses. Traces the evolving interrelationships between these problems and policies from colonial health to the impacts of austerity on postcolonial health systems to today's globally targeted responses. (Formerly POLI 186.)

GCH 123 - Migration as a Social Determinant of Health (5)

The WHO estimates that more than 280 million people today are migrants, with more than 30 percent of those forced migrants. Migration is an important social determinant for health, with holistic health shaped by experiences in the country of origin, the migration journey, and reception and integration in the destination country. Course examines the interconnections between migration and health to engage with holistic health issues experienced by the most vulnerable groups of migrants. Examines the underlying contextual factors for forced displacement, including climate change, conflict, political instability, economic insecurity, and persecution. Also explores community and global responses to migrant health and assess strategies for improving health outcomes.

GCH 166 - Global Health and Community Research (5)

Students engage topics in health research, including ethics and research design. They learn to describe, identify, and evaluate an array of data collection methods used in global health research including randomized control trials (RCTs), interviews, focus groups, and surveys. By engaging with qualitative, quantitative, and mixed-method approaches, students understand, discuss, and use a wide array of methodologies and evaluate “fit” between selected methods and research questions.

GCH 190 - Global and Community Health Task Force (5)

Students conduct rigorous research on real world health challenges with a view to describing the associated problems accurately and recommending responses. All the work of research and writing is highly collaborative and interdisciplinary. Task Force members are comprised of seniors from both the B.A. and B.S. degrees in GCH. They work closely together under the guidance of the instructor who prepares them to collaborate effectively. The final report always includes writing from all the students in the team. Students are responsible for all of the associated editing, as well as a final presentation of the report to an external evaluator.

Prerequisite: Prerequisite(s): GCH 1, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to seniors majoring in global and community health.

GCH 195 - Global and Community Health Communication (2)

Focuses on enabling students to assess and communicate their learning in global and community health (GCH) using an iterative process of writing, review, and website development. The e-portfolio webpages students complete by the end of the course will together comprise their capstone "GCH e-Record" designed to communicate their disciplinary and interdisciplinary learning in their degree to a specific audience beyond the university. These written reflections, in turn, involve meta-learning about how expert knowledge moves between different communities, and about how audience expectations and writing conventions condition communications about health expertise in particular.

Prerequisite: Prerequisite(s): GCH 1, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to seniors majoring in global and community health.

GCH 199A - Global and Community Health Senior Thesis (5)

Provides an alternative way to satisfy the capstone requirements in place of GCH 190. Course is designed especially to serve the needs of students who do an individualized practical internship or community service

project and who then want to reflect on its lessons and write it up as a form of academic research. To satisfy the DC requirements for the Global and Community Health B.A. degree, it is still necessary to also complete GCH 195. Thesis should be modeled after academic articles published in peer-reviewed journals and make a scholarly contribution based on original research and/or deep review of current literatures in global and community health. Prerequisite(s): GCH 1, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is by permission of the instructor and restricted to seniors majoring in global and community health. Please read the instructions for the senior thesis and secure the approval of GCH affiliate faculty mentor before enrolling.

Prerequisite: Prerequisite(s): GCH 1, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is by permission of the instructor and restricted to seniors majoring in global and community health. Please read the instructions for the senior thesis and secure the approval of GCH affiliate faculty mentor before enrolling.

GCH 199B - Global and Community Health Senior Thesis B (5)

For students who need an extra quarter, GCH 199B also provides 5 more credits in addition to GCH 199A while allowing them to complete their B.A. degree requirements. Provides an alternative way to satisfy the GCH capstone requirements in place of GCH 190. It is designed especially to serve the needs of students who do an individualized practical internship or community service project and who then want to reflect on its lessons and write it up as a form of academic research. To satisfy the DC requirements for the GCH B.A. degree, it is still necessary to complete GCH 195 as well as this Senior Thesis. An academic senior thesis should be modeled after academic articles published in peer-reviewed journals and make a scholarly contribution based on original research and/or deep review of current literatures in global and community health.

Prerequisite: Prerequisite(s): GCH 1, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to seniors majoring in global and community health.

GIST-GEOGRAPHIC INFO SYSTEMS, SCIENCE, & TECHNOLOGIES

Lower-Division

Upper-Division

Graduate

GIST 220 - Cartography and Visualization (5)

Theory, practice, and principles of cartography. Technical introduction to graphic representation and visualization of geographic information. Lectures cover compilation and classification of geospatial datasets, the role of scale and projections in thematic maps, and theory and practice in cartographic symbolization, visualization, and communication.

Prerequisite: Prerequisite(s): ENVS 215A and ENVS 215B and ENVS 215C.

GIST 230 - Remote Sensing (5)

Remote sensing is the study of the Earth's land, water, atmospheric and human-made features using imaging devices on both airborne and spaceborne platforms. The course includes the study of electromagnetic energy and the methods used to extract useful information from remotely sensed images. Students develop a strong understanding of the tools and techniques used to display, process, and analyze remotely sensed data as well as develop analytical workflows to derive remotely sensed products for a broad range of applications. Lab work involves image interpretation using aerial photographs and computer-based digital image processing.

Prerequisite: Enrollment is restricted to graduate students enrolled in the GISTAR M.A. Program.

GIST 240 - GIS Development and Programming (5)

Introduction to the foundational concepts, techniques, and skills of computer programming needed to tackle complex analyses and automate geoprocessing workflows in a geographic information system (GIS). Emphasis is on object-oriented programming and developing basic programming skills using the Python scripting language. Students learn essential programming concepts needed for processing spatial data variables and expressions, data typing, data structures, conditional branching, looping, functions, input/output, data manipulation, and debugging. Students also develop geoprocessing programs to edit, query, manipulate, and analyze spatial data (both vector and raster data) with ArcPy and other modules like NumPy, SciPy, and Pandas. No prior programming experience is required.

Prerequisite: Enrollment is restricted to graduate students enrolled in the Geographic Info Systems, Science, & Technologies program.

GIST 250 - Geospatial Technology Applications (5)

Variable-subject course focused on specific systems such as 3D/CAD systems and drone technologies, field-based advanced GPS and surveying systems, and server/infrastructure development and management. As a variable subject course, objectives vary depending on the specified subject.

Prerequisite: Enrollment is restricted to graduate students enrolled in the Geographic Info Systems, Science, & Technologies program.

GIST 290A - GISTAR Capstone Project (10)

Independent research course during which students work closely with faculty advisors toconduct applied geospatial research. Provides experience in geospatial research, applications, and analysis.

Prerequisite: Enrollment is restricted to GIST graduate students.

GIST 290B - GISTAR Capstone Project (10)

Independent research course during which students work closely with faculty advisors to conduct applied geospatial research. Provides experience in geospatial research, applications, and analysis.

Prerequisite: Enrollment is restricted to GIST graduate students.

GRAD-GRADUATE

Graduate

GRAD 200 - Academic Writing for Graduate Students (0)

Introduces best practices in academic writing including issues of citation, plagiarism, and structure in research. Students receive feedback from instructors and peers in order to encourage a "writing process" and an awareness of student/faculty roles.

Prerequisite: Concurrent enrollment in GRAD 200 and GRAD 202 is required. Enrollment is restricted to international graduate students in the Graduate Preparation Program.

GRAD 201 - Oral Communication for Graduate Students (0)

Focuses on understanding and being understood in seminar style classroom environments, including academic conversation techniques, pronunciation as needed, and using/identifying evidence in discussion. Introduces U.S. classroom approaches to presentation and student-centered teaching and learning.

Prerequisite: Concurrent enrollment in GRAD 200 and GRAD 202 is required. Enrollment is restricted to international graduate students in the Graduate Preparation Program.

GRAD 202 - Reading and Research Skills for Graduate Students (0)

Introduces reading strategies and techniques, including skimming and scanning, note-taking, and text analysis to improve critical reading skills. Also introduces students to UCSC library resources as well as the basic research skills of gathering and analyzing evidence.

Prerequisite: Concurrent enrollment in GRAD 200 and GRAD 201 is required. Enrollment is restricted to international graduate students in the Graduate Preparation Program.

GRAD 213 - Equity-Minded Mentoring in Higher Education: Fostering Inclusive Research and Learning Environments (2)

Supports enrolling graduate students and auditing postdoctoral scholars in STEM and Social Science programs to develop mentorship skills that create inclusive research and learning environments in higher education. Mentors engage with recent research and practice evidence-based strategies that help historically marginalized students excel in science through an equity-centered approach. To apply insights from educational research, mentors create mentoring statements that articulate their equity values and the specific strategies they use to enact equity in mentoring. Enrollment is by permission of instructor and prioritizes graduate students in STEM or Social Science discipline. Contact the instructor for a permission code. The instructor will review enrollees as needed to ensure priority is being met. Postdoctoral scholars in these fields may audit the course.

GRAD 215 - Equitable Course Design for Graduate Student Instructors (2)

Supports current and emerging graduate student instructors (GSIs) to discuss and apply research-based frameworks for developing college-level courses that center significant student learning, antiracism, accessibility, and equitable outcomes. To put the insights of educational research into practice, GSIs create the essential components of an original college-level course, including course learning outcomes, assessment plans, an equity-minded syllabus, and an engaging course structure. First priority of enrollment is given to graduate students who have been appointed to teach as GSIs in the upcoming summer sessions. Open on a space-available basis to all other graduate students.

GREE - GREEK

Lower-Division

GREE 1 - Elementary Ancient Greek (5)

Instruction in the grammar of Attic Greek, together with readings from ancient authors, designed to prepare for the study of classical literature. The sequence begins in the fall quarter only.

GREE 2 - Elementary Ancient Greek (5)

Instruction in the grammar of Attic Greek, together with readings from ancient authors, designed to prepare for the study of classical literature.

Prerequisite: Prerequisite(s): GREE 1, or permission of instructor.

GREE 99 - Tutorial (5)

Students submit petition to sponsoring agency.

GREE 99F - Tutorial (2)

Students submit petition to sponsoring agency.

HAVC - HISTORY OF ART AND VISUAL CULTURE

To view planned offerings for the current academic year, please visit this page.

Lower-Division

HAVC 10 - Introduction to African Visual Culture (5)

An interdisciplinary approach to the study of the basic structures (gender, art within political sphere, and spiritual aspects of visual culture) and cultural institutions (initiations, closed associations, kingship, title association, etc.) around which the study of African visual culture revolves.

HAVC 20 - Visual Cultures of Asia (5)

An introduction to the art and architecture of East Asia, including China, India, Southeast Asia, and Japan. In order to achieve a fuller understanding of the arts of these countries a historical, cultural, and religious context is provided.

HAVC 22 - Religion and Visual Culture in China (5)

Introduction to the study of religious currents and practices in China and their visual expression. In addition to religious art, topics include such pivotal matters as body concepts and practices, representations of the natural world, and logics of the built environment.

HAVC 24 - Southeast Asia Visual Culture (5)

Introduces the visual cultures of Southeast Asia. Topics include indigenous megalithic art, textiles, and jewelry, as well as Hindu and Buddhist art and architecture. Also considers shadow play and dance performance as alternative lenses to looking at ritual and visual narratives rendered on stone temples.

HAVC 27 - Image and Ideology in Indian Art (5)

Examination of the ways social, religious, and political patronage have affected the production and reception of art in the Indian subcontinent. The course is designed as a series of case studies from different periods of Indian history.

HAVC 28 - Ghosts, Haunting, Memory, and Erasure in the Films of Asia (5)

Explores the theme of memory, haunting, ghosts and the politics of erasure and remembrance in films made by Asian filmmakers and contemporary artists in Asia. Examines the intersecting themes of haunting, memory, and ghosts and how selected filmmakers and visual artists in Asia go about framing and unframing this topic in their work. The goal of the course is to see, through a comparative lens, how these selected filmmakers and artists treat the topic of specter and the politics of memory and erasure in their respective films from a national and transnational perspective.

HAVC 30 - Introduction to European Visual Culture (5)

General survey of European art and architecture with a focus on the southern, Mediterranean ancient cultures. Course consists of a number of case studies of works from various periods from ancient to modern.

HAVC 35 - European Visual Culture in a Global Context 1500-1900 (5)

Survey of the visual and material products of European contact with Africa, Asia, Oceania, and the Americas between 1500 and 1900 focused both on object-specific case studies and thematic discussions of contact, colonialism, appropriation, and the visual construction of race.

HAVC 39 - African-American Art (5)

Interdisciplinary investigation of the construction of race in the United States, tracing the impact of European art on American artistic production, exploring its influence on African-American art and culture, including the Harlem Renaissance, black internationalism, and the vibrant Negritude movement. Explores how a definable black aesthetic crystallized during the late 1950s-70s African anti-colonial, Civil Rights and Black Power eras, and continued to flourish through the 1990s—all of which gave rise to new artistic forms such as black queer, feminist, and conceptual art. Also studies the phenomenon of post-black art, popular visual culture, as well as discourses on African modernity and globalization.

HAVC 40 - Museum Cultures: The Politics of Display (5)

Explores the history of collecting and displaying art (museums, galleries, fairs) since the mid-19th century and the effect of institutional changes on aesthetic conventions. Follows the history from the origins of museums and collections to contemporary critiques of institutional exclusion and misrepresentation.

HAVC 41 - Introduction to Modern Art (5)

Examines the social, economic, and political significance of European and U.S. modernist art and architecture, moving from French realism to American minimalism. Provides the historical background and theoretical frameworks needed to make sense of modernist art and culture.

HAVC 43 - History of Modern Architecture (5)

Examines the origins and development of modern architecture, from the Enlightenment and the Industrial Revolution to the 20th Century and beyond. Buildings, urban plans, and works of art and design are discussed in relation to political, social, and cultural currents.

HAVC 44 - Designing California: Architecture, Design, and Environment (5)

Introduces the complex interplay between design--including architecture, art, engineering, and city planning--and conceptions of environment during the 20th Century in the American West.

HAVC 45 - Photography Now (5)

Explores recent methods and approaches in photography. Surveys significant aesthetic, conceptual, and theoretical shifts occurring in the photographic medium and related discourses. Special attention given to the current landscape of contemporary photography (1980-present).

HAVC 46 - Introduction to U.S. Art and Visual Culture (5)

Overview of U.S. art and visual culture from the late 18th Century to the present. Examines art as evidence for understanding evolving beliefs and values of Americans. Explores the social and political meanings of art, and pays particular attention to how artists, patrons, and audiences have constructed nationalism, race, class, sexuality, and gender.

HAVC 47 - Introduction To Contemporary Art (5)

Introduces students to major debates and practices in contemporary art from 1960 to the present. Not a strict chronological survey or exhaustive catalogue, the course attends to movements and theoretical frameworks that still fuel contemporary practice and criticism.

HAVC 48 - Climate Justice Now! Art, Activism, Environment Today (5)

As climate change grows more severe, artists and activists are creating strategies of consciousness-raising, mass mobilization, and sustainable living. This course investigates the convergence of climate justice and cultural politics, exploring imperatives for a just transition to a post-carbon future.

HAVC 49 - From Memes to Metadata: an Introduction to Digital Visual Culture (5)

Introduction to digital visual culture including critical and historical approaches to memes; social media and politics; and the many intersections of data, images, and society. Sample topics include: digital art, digital activism, and surveillance.

HAVC 50 - Ancient Mediterranean Visual Cultures (5)

The role that ancient art and visual culture play in constructing social identities, sustaining political agendas, and representing various cultural, ritual, and mythological practices in Mesopotamia, Egypt, Greece, and Rome, including the sociology of ancient cultures, mythology, religious studies, gender studies and history.

HAVC 51 - Greek Eyes: Visual Culture and Power in the Ancient Greek World (5)

The central role of visual communication in ancient Greek civilization: examines the construction of cultural, social, political, religious, and gender identities through material objects and rituals. Includes discussions of images of the public and private sphere, athletic and theatrical performances, mythology, pilgrimage, and magic.

HAVC 55 - Unclothed: The Naked Body from Antiquity to the Present (5)

The human body without clothing in European and European-American art and visual culture from ancient Greece to the present day. Among the themes to be addressed: gender, youth and age, sexuality and sexual preference, fecundity and potency, erotic art and pornography, primitivism and the naked body of the non-European. (Formerly HAVC 31, The Nude in the Western Tradition.)

HAVC 58 - Gardens of Delight: Fifteen Centuries of Islamic Visual Culture (5)

Examines some of the most representative creations of Islamic visual culture from the 7th Century to the present in order to appreciate the richness of this tradition and its extensive influence on other cultures. Focuses on the social, political, and religious role of a variety of materials, from mosques, palaces, and gardens to visual narratives, ceremonies, dance, and contemporary films.

HAVC 60 - Indigenous American Visual Culture (5)

Selected aspects of art and architecture of the first peoples of the Americas, north, central, and south, from ca. 2000 B.C.E. to present. Societies to be considered may include Anasazi, Aztec, Inca, Northwest Coast, Maya, Navajo, Plains, and others.

HAVC 64 - Indigenous North American Materiality and Resistance (5)

Through case studies of contemporary and historical practices, course examines the rich visual cultures of the United States and Canada. Students learn about the role artists play in resisting colonization and sustaining community knowledge.

HAVC 65 - Native American Art and the Environment (5)

Introduces students to the work of Native American artists that either reflects environmental knowledge or which reacts against threats to natural resources. By studying current issues such as fossil fuel extraction, invasive species, and wildfires, students learn how artists contend with threats to their ancestral homelands and how art functions as a powerful medium for raising awareness of these challenges.

HAVC 70 - Visual Cultures of the Pacific Islands (5)

Interdisciplinary course examines visual cultures of Australia, Melanesia, Micronesia, and Polynesia from the archaeological past through contemporary periods.

HAVC 80 - Colonial Histories and Legacies: Africa, Oceania, and the Indigenous Americas (5)

The arts and visual cultures of selected cultures that developed outside the spheres of influence of major European and Asian civilizations, with an emphasis on the history and influence of colonialism in creating current ethnic and racial categories.

HAVC 85 - Introduction to Global Architecture (5)

Introduces the study of architecture and the built environment from a global perspective, focusing on architecture's relation to themes, such as ritual, power, the city, technology, and climate.

HAVC 99 - Tutorial (5)

Supervised study for undergraduates. Students submit petition to sponsoring agency.

Upper-Division

HAVC 100A - Approaches to Visual Studies (5)

Introduction to major issues of method and critique in study of art and visual culture. Focuses on understanding disciplinary and critical modes of scholarly inquiry in the visual arts, including role of historical research. Emphasizes intensive reading, discussion, and writing. HAVC 100A is a prerequisite for all History of Art and Visual Culture seminars.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to sophomore, junior, and senior History of Art and Visual Culture majors and minors.

HAVC 110 - Visual Cultures of West Africa (5)

Explores visual cultures of West Africa through time (Nok to present). Attention paid to relationships between peoples and impact of European/Arab presence on visual cultures. Prerequisite(s): HAVC 10 or HAVC 80 recommended.

HAVC 111 - Visual Cultures of Central Africa (5)

Examination of visual cultures of Central Africa within a historical sequence from the Sanga archaeological excavations to contemporary easel painting.

Prerequisite: Prerequisite(s): HAVC 80 suggested. Enrollment is restricted to sophomores, juniors and seniors (recommended).

HAVC 115 - Gender in African Visual Culture (5)

In Africa, relationships exist between gender and visual culture. Course examines where categories come from, differences in men's and women's visual cultures, and how visual cultures teach, reinforce, and negotiate gender definitions. When are male/female boundaries crossed, and why?

HAVC 116 - African Architecture (5)

Study of the built environment in Africa. The course explores the diversity of architectural types and how gender, politics, religion, and culture shape and are shaped by architectural spaces and how the natural environment shapes the built environment.

HAVC 117 - Contemporary Art of Africa (5)

Examines contemporary arts in post-colonial Africa, 1960-present, including new popular cultural forms; arts resulting from new class and national structures; commodification of culture; Pan-Africanism; exhibitionism; and questions of destiny.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 118 - Art of the Contemporary African Diaspora (5)

Considers contemporary art by African artists operating in metropolitan centers, as well as Afro-British, Afro-Caribbean, and African-American production. Topics are organized thematically and address constructing and deconstructing the idea of Africa; cultural authenticity; diaspora; Creolite and creolization; hybridity; cosmopolitanism; post-black; and globalism in the arts.

Prerequisite: Background in history of art and visual culture recommended. Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 119 - Arts and Politics of African Urban Space (5)

Using contemporary art and other visual materials, examines how select African cities are structured, imagined, and contested, and how migration, colonialism, race, ethnicity, and globalization inform their spatial politics. Draws from urban studies, political theory, memoire, anthropology, and visual studies.

HAVC 122A - Sacred Geography of China (5)

An examination of the close relationship of religious traditions and the natural world in China, and its expression in visual representation. Particular emphasis on the ways in which competing groups sought to define or re-envision an understanding of the terrain.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 122B - Constructing Lives in China: Biographies and Portraits (5)

Consideration of biographies and portraits in China as representations of human types and individuals, and the use of these representations as models for constructing lives. Attention to historical and social contexts, early times to present. Special focus on Chinese Buddhist traditions. A previous course that focuses on traditional China or Buddhist studies strongly recommended.

HAVC 122C - Writing in China (5)

Examines material and conceptual phenomena of writing in Chinese visual culture. Focuses on the intersections of places and practices of writing through various inscribed sites, ranging from oracle bones, seals, and mountain facades to hand scrolls, architecture, and contemporary art.

HAVC 122D - Chinese Landscape Painting (5)

Examines the history and significance of the subjects most prominent in Chinese painting since the Han Dynasty, focusing on the cultural factors that made landspace a fundamental value in the Chinese tradition and the methods whereby painters created pictorial equivalents.

HAVC 122E - Art and Propaganda in China (5)

Examines painting, photography, sculpture, film, mixed-media works, propaganda posters, and performance art from the mid-19th century to the contemporary period. Investigates how transcultural exchanges shaped the trajectory of Chinese arts; the roles new mediums played in changing Chinese art and national identity; the impact of politics on the

development of visual culture; and the varied styles and movements that burgeoned since the post-Mao period. Course provides students with a firm understanding of the development of modern and contemporary Chinese art and visual culture within social, political, and historical contexts.

HAVC 122F - Bodies in Chinese Culture (5)

Introduces images, thoughts, and practices of bodies in Chinese culture. In China and Taiwan, the body is to be cherished, adorned, nourished, cultivated, and gazed upon, but also disciplined, altered, and controlled. Examines texts and images of the Chinese body in relation to religion, gender, ethnic politics, martial arts, sports, nationalism, food, medicine, and death. No knowledge of the Chinese language is required.

HAVC 123A - Modernity and the Arts of India (5)

Deals with artistic responses to the forces of modernity, colonialism, industrialization and globalization in India during the 19th and 20th centuries. Addresses the complex and often painful climb toward re-establishing a truly Indian artistic identity. (Formerly Modernity and Nationalism in the Arts in India.)

HAVC 123B - Religions and Visual Culture of South Asia (5)

South Asia is the home of many religions (Hinduism, Buddhism, Jainism, Islam, and Sikhism). Introduces the role images (painting, sculpture, architecture, photography, film) play in shaping these diverse religious traditions.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 124A - Arts of Ancient Southeast Asia (5)

Focuses on Hindu and Buddhist arts of ancient Southeast Asia (Indonesia, Cambodia, Vietnam, and Thailand). Materials covered include indigenous megalithic arts, stone sculptures, and monumental temple architecture such as Angkor Wat, Borobudur, Prambanan, and the Bayon.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 124B - History of Photography in Southeast Asia (5)

Examines how photography was used in Southeast Asia to document the racial difference and the exotic Others under the regime of colonialism. Considers the role photography played in documenting the Vietnam-American War and how contemporary Southeast Asian-American artists challenge this photographic history in their art.

Prerequisite: Enrollment is restricted to sophomores, juniors and seniors.

HAVC 124C - Arts and Politics in Theravada Traditions (5)

Consideration of the arts and architecture in Theravada Buddhist traditions in Sri Lanka and Southeast Asia. Topics and themes include ritual, relics, visual narrative, mural painting, contemporary art, mass-meditation movement, and political protest.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 124D - Contemporary Art of Southeast Asia and its Diaspora (5)

Examines the respective national notions of modernity in the region through a comparative lens. How global capital flow and transnational cultural exchanges impact the production of arts of Southeast Asia and its diaspora. Themes and issues include: colonialism and art education; nationalism; identity politics; memory; trauma; gender; race; sexuality; and the body.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 124E - Southeast Asian-American and Diasporic Visual Culture (5)

Focuses on Southeast Asian refugee visual culture in the United States. Themes and issues include: trauma; memory; the politics of race and ethnicity; gender and sexuality; and the politics of inclusion and exclusion from the nation-state.

HAVC 127A - Buddhist Visual Worlds (5)

Introduction to the study of Buddhist visual traditions, from their beginnings to the present day. Case studies examined with careful attention to historical, social and cultural contexts; particular emphasis on the relation of visual traditions to Buddhist practices.

HAVC 127B - Buddhist Pure Lands (5)

Explores Buddhist imaginative worlds of the "pure lands": worlds in outer space, sacred mountains, internal states of mind. Study of related practices, including expression and representation of these concepts in paintings, scriptures, poetry, and built environments. Focus is on Chinese traditions.

HAVC 127C - Ritual in Asian Religious Art (5)

Examination of interaction between image and ritual in Asian religious art. Case studies from different historical periods and geographical locations (e.g., China, Tibet, Japan, Indonesia, India). Examples include mandalas, ritual bronzes, tankas, sacred caves, temples, tea ceremonies, and calligraphy.

HAVC 127D - Storytelling in Asian Art (5)

Combination of theoretical perspectives on narrative from literary criticism, rhetoric, folklore, and film theory with art historical focus on images (cave temples, stone reliefs on stupas, scrolls, dance-drama, etc.) from India, Pakistan, China, Japan, Cambodia, and Indonesia.

HAVC 127E - Modern/Contemporary Architecture of the Asia Pacific (5)

Examines 20th- and 21st-century architecture in the Asia Pacific. Examines how aesthetic, socio-political, economic, and technological networks have contributed to Asia Pacific's dynamic and experimental approaches to contemporary architecture.

HAVC 127F - The Politics of Exclusion: Asian American Visual Culture (5)

Examines Asian American artists as well as representations of Asian Americans through U.S. history. Addresses such themes as migration and dislocation, race and identity, intergenerational relationships, origins and diasporas, and American foreign policies in Asia.

HAVC 133A - Themes in the Study of Medieval Visual Culture (5)

Many issues associated with contemporary artistic production and visual culture originated in the Middle Ages. Themes to be considered: role of secular art; women as artists and patrons; aesthetic attitudes; relationship between cultures in holy war, crusade, and pilgrimage.

HAVC 135B - German Art, 1905-1945 (5)

Expressionism, agitprop, the Bauhaus, New Objectivity, attacks on modernism, National Socialist realism. Painting, sculpture, graphic art, and some architecture and film, studied in the context of political events from the eve of World War I to the end of World War II.

HAVC 135D - Art, Revolt, and Revolution in Europe 1750-1850 (5)

Lecture course focusing on the dynamics of art and politics in France, Britain, and to a lesser extent Spain, from 1750 to 1850. This period of dramatic social change gave rise to new conceptions of subjectivity, freedom, nationhood, and the public address of visual culture. (Formerly French Painting, 1780-1855.)

HAVC 135E - Jewish Identity and Visual Representation (5)

An exploration of the theoretical and practical or experiential applications of Jewish identity in European visual representation. Brief background on pre-emancipation textual and cultural issues followed by study of the Jewish subject and Jewish subjectivities in modernity.

Prerequisite: Enrollment is restricted to juniors and seniors.

HAVC 135F - Art of the Book in Western Europe 500-1600 (5)

The history of European books circa 500-1600, primarily medieval, illuminated manuscripts and the first years of printing. Focuses on the relationship between text and image. Topics include techniques of book production, the archeology of the book, and the life and travels of individual books. (Formerly course 191R.)

HAVC 135G - Blood, Guts, and Gore: Representing War from Leonard da Vinci to Abu Ghraib (5)

Examines images of war from 1400 to the present. Class discusses the many aspects of war while considering major painters of the last 600 years, including da Vinci, Rubens, Goya, Picasso. Class also discusses Callot, Marinetti, etc., and other media, including film, photography, and public monuments.

HAVC 135H - Topics in European and Euro-American Visual Culture (5)

Consideration of how and why Europeans in Europe and Europeans and European-Americans in North America blended nature and human response between 1600 and the present in a variety of media and practices (painting, maps, photography, tourism, film, scouting, artist colonies).

HAVC 135K - Art and Science in Europe 1500-1900 (5)

Examines a select number of case studies from 1500-1900 to see how thinkers and makers relied upon science and art to help them understand the world, asking how have scientists and natural philosophers used art to make their claims more convincing, how have artists relied on scientific research to do the same, and what practices do they have in common.

HAVC 135L - Nineteenth-Century Europe in Prints (5)

Focuses on the public lives of printed pictures in Europe between 1789 and 1914. In lectures and in written assignments, the class analyzes how artists created works in multiple, which were then circulated by publishers and dealers and consumed by viewers across Europe. In-class discussions compare 19th-century print cultures to our current practices of engaging socially with digital images to see what each illuminates about the other.

HAVC 135P - Paris, Capital of the 19th Century (5)

Examines the places, spaces, practices, and representations of Paris in the 19th century. Tracing the changing face(s) of Paris by way of its literary and visual representations, students consider the experiences and constructions of the modern city.

HAVC 137A - Northern Renaissance Art (5)

Considers the painting and prints produced in Northern Europe in the 15th and 16th centuries. Major issues include the status of realism and classicism, the role of religion and religious reform, and the rise of popular imagery.

HAVC 137E - Renaissance Prints (5)

Examines the issues surrounding the technology and uses of printed images from the early Renaissance through the end of the early modern period. Topics may include the political, religious, and satirical uses of prints and the representation of women in prints.

HAVC 140A - America in Art (5)

Introduction to American visual arts: architecture, painting, photography, sculpture, and performance art, from the nineteenth through the twenty-first century. Explore social and political meanings of art and what art reveals about our nation's values and beliefs, in particular, gender and race.

HAVC 140B - Victorian America (5)

Examines how American writers and artists negotiated complexities of U.S. society during the 19th century. Emphasis on issues ranging from women's rights to laissez-faire capitalism, and from Reconstruction to manifest destiny. Considers how the era's cultural products provided artists, patrons, and audiences with metaphorical coping strategies to

counteract what Victorians perceived to be the period's overwhelming social and political changes.

HAVC 140C - Race and American Visual Arts (5)

Investigation of the role played by visual arts in fashioning the racial identities of European-Americans, African Americans, Asian Americans, Native Americans, and Latinos in the United States.

HAVC 140D - Chicano/Chicana Art: 1970-Present (5)

Taking the terms Chicano and Chicana as a critical framework, addresses cultural and conceptual themes in visual art production since 1970. Questions concerning aesthetics, identity, gender, and activism in painting, photography, murals, and installation art explored.

HAVC 140E - Art and Science in America: Contact to circa 1900 (5)

Examines the relationship between art and scientific inquiry in American visual culture from earliest European exploration through the 19th century, when new scientific theories and technological advancements challenged earlier modes of understanding vision, spirituality, and the physical world.

HAVC 140F - Black Visual Culture (5)

Explores critical debates concerned with the visualization of African-American identity. In the 21st century, we have seen a renewed interest in racial justice and a sense of urgency around eradicating the enduring scourge of intolerance and inequity. As a result, there is a great necessity to explore the complexities of race and representation. By surveying a range of visual forms—from narrative and documentary film, to Internet-based and print media—the course explores the current landscape of black cultural representation. Also looks at the intersection of gender, race, and sexuality as intersecting phenomena.

HAVC 140P - Pop Culture as High Art (5)

Examines how Pop Art and popular culture in the Untied Stateswere (re)formulated into public icons that challenged the visual and ideological associations between high and low art.

HAVC 141A - Modern Art: Realism to Cubism (5)

Modern art in Europe and America, 1848-1914. Consideration of painting, graphic arts, and sculpture in Realism, Impressionism, Post-Impressionism (Symbolism) Art Nouveau, Fauvism, and Cubism as well as exploration of photography's changing status and influence.

HAVC 141B - Death, Desire, and Modernity (5)

Explores war, consumption and desire in the art of the 20th century. From Paris to New York, Cubism to Feminism, explores the relationship between the visual arts and intellectual movements such as psychoanalysis, existentialism, and phenomenology with particular attention to racial and sexual politics.

HAVC 141C - Modern Art: Pop to Present (5)

Surveys the art forms and critical ideas that have shaped artistic practice from the 1950s to the present, including an overview of the socio-political, economic, and cultural forces that inspire artists to articulate human experience in visual form. Examines how popular culture in the post-war United States became intertwined with visual art, forming into the artistic genre known as Pop Art. This important aesthetic shift challenged the political, ideological, and representational value systems that inform our understanding of so-called "high art."

HAVC 141E - Histories of Photography (5)

Introduction to the histories of photography and the critical debates around different photographic genres such as medical photography, art photography, and political photography. Students will develop a critical language in order to analyze photographs while considering the importance of social and institutional contexts.

HAVC 141F - The Camera and the Body (5)

Through the study of historical and contemporary visual texts (from ethnography and portraiture to advertising and erotica), this course explores how photographic images of the body, while masquerading as natural, self-evident, or scientific, participate in highly coded sign systems that influence who looks at whom, how, when, and why.

HAVC 141H - Media History and Theory (5)

An introductory examination of the writing about the issue of medium and media theory in visual culture. Technologies, discourses, and practices from all periods that use the comparison of media as a major approach to understanding the problems of the visual are highlighted. New media, film, television, video, traditional arts are also treated.

HAVC 141I - Be Here Now: Art, Land, Space (5)

From the "happenings" of the late 1950s to contemporary ecological art, this course will examine temporary, site-specific projects of the U.S and Western Europe. Students will be introduced to theories of public art and the social production of space, and invited to explore practices that change the role of the audience, remake museum spaces, situate art in nature, or transform urban life.

HAVC 141J - Critical Issues in Contemporary Art and Visual Culture (5)

Explores how theory can illuminate various forms of cultural production from art and cinema to popular and material cultures. Considers how scholars and visual producers utilize theory creatively and in the study of aesthetic objects and experiences.

HAVC 141K - Activist Art Since 1960: Art, Technology, Activism

Students explore art and technology produced for social change since 1960 within the context of major historical ruptures, such as the Vietnam War, the women's movement,

environmental protection, AIDS activism, anti-capitalist, and international human rights movements.

HAVC 141L - Museums in the Internet Era (5)

Explores the world of museums in the age of digital technologies and the Internet. Key themes include digital repatriation, social media, interactivity, participation, net art, and digital aesthetics. Background in history of art and visual culture (e.g., at least one HAVC or equivalent course) is recommended.

HAVC 141M - Museum Practices (5)

How are museums organized, categorized, visited? How are objects physically handled, documented, and displayed? Course explores various concepts upon which museum practices are based and the impact these concepts have on society and cultures.

HAVC 141N - Data Cultures: Art, Technology, and the Politics of Visual Representation (5)

Through critical readings, interactive assignments, and primary sources, this course explores cultural and political issues around data, emphasizing the impacts of relevant technologies and practices on art and visual culture. Sample topics: digital art, critical mapping, social media, and surveillance.

HAVC 141O - Sex, Lies, and Surveillance: Contemporary Documentary Arts (5)

Focuses on contemporary experiments in artistic documentary practice, including photography and digital imagery, moving-image media, and artistic installations. Considers artistic case studies and leading theoretical and critical elaboration in relation to international cultures of documentary practice.

HAVC 141P - Networks and Natures: Art, Technology, and the Nonhuman (5)

Through critical readings and primary sources, this course explores the historical and theoretical developments in the interactions of art, culture, nature, and technology. Sample topics include environmental art; media infrastructures; concepts of nature and the nonhuman; and climate change and visual culture.

HAVC 141Z - Deep Dive: Museums of the Bay Area (5)

This intensive course introduces students to Bay Area museums, their exhibition histories, and curatorial practices. Field trips allow students to have private conversations with museum curators, go behind the scenes, and engage in direct study of objects in exhibitions.

Prerequisite: Enrollment is restricted to juniors and seniors.

HAVC 142 - Contemporary Art and Ecology (5)

Investigates contemporary art and the politics of ecology. Examines the intersection of art criticism, politico-ecological theory, environmental activism, and postcolonial globalization, considering geopolitical areas diverse as the Arctic, Nigeria, Bangladesh, India, Europe, and the Americas.

HAVC 142M - Museum Exhibitions (5)

Students work in collaborative teams to create an exhibition prospectus. Students take the roles of museum departments, in the process learning about how a museum works. The impact exhibitions make in culture and society is examined throughout each step of the process.

HAVC 143A - Contemporary Architecture and Critical Debates (5)

Examination of practitioners, projects, issues, and theories in contemporary architecture circa 1968 to the present. Topics include the architecture of aftermath, the ethics of memory and memorialization, the corporatization of museums, the role of criticism and exhibitions, and the cult of the brand-name architect.

HAVC 143B - History of Urban Design (5)

Examines urban design from the Renaissance to the present, including Latin American colonial cities, Utopian plans, and sites such as Brasilia and Chandigarh. The course focuses on social justice, diversity, and the role of art and architecture.

HAVC 143C - Latin American Modern Architecture (5)

HAVC 143D - Architecture and the City in Modern and Contemporary Visual Culture (5)

Examines the modern and contemporary depictions of cities in visual and material culture, from paintings and photographs to logotypes and souvenirs. Also examines the roles of narrative in spatial representations, including literature, film, and television productions.

Prerequisite: Enrollment is restricted to juniors and seniors.

HAVC 143E - History of Design: The Objects of Technology, 1850-The Present (5)

Traces the connections between key movements in modern design and the evolution of technology in society. Also provides a framework for engaging critically with the proliferation of technology in society today.

HAVC 143F - Memory, Place, and Preservation in Modern Architecture (5)

How have architects engaged with ideas of memory and place in architectural projects and built landscapes from the 18th century to the present? This course examines topics such as memorializing, erasure of place, historic preservation, and cultural heritage in modern architecture. (Formerly Memory, Place and Architecture.)

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HAVC 143G - After Utopia: Architecture and the City, 1968-Present (5)

Explores critical issues in the history of architecture and urbanism from 1968 to the present. Major themes in the development of contemporary architecture are introduced, including the uneven legacy of modernism, the growth of

cities, changing technologies, environmental issues, and the social and political context of design.

HAVC 143H - City on a Hill: The Architecture of the Campus (5)

Explores the history of campus design in North America. Traces the ways designers have used the campus for staging new ideas of education and work, stimulating social relations, and connecting architecture with the natural world. Emphasis is devoted to UCSC and the Silicon Valley tech campus. (Formerly course 191U.)

HAVC 144A - Latin American Art and Visual Culture (5)

Investigates Latin American and Caribbean art and visual culture. Studies decolonial resistances, alternative modernisms, examining the shaping of race and ethnicity under global capitalism. Looks at practices by Latin American and Latinx artists, focusing on Afro-Latinx and indigenous knowledges.

HAVC 151 - Greek Myths Antiquity to the Present (5)

Myths dominated the culture and visual production of the ancient Greek world, and their presence is still strong today. How did they codify social, political, and religious realities and needs? How were they perceived in different time periods? In addition to ancient Greek and Roman and later European sculptures and paintings, this course considers less conventional sources, such as modern films, comics, and advertisements. HAVC 51 recommended as preparation.

HAVC 152 - Roman Eyes: Visual Culture and Power in the Ancient Roman World (5)

Visual culture in the ancient Roman world, from temples and public monuments to houses and tombs, performances, and rituals. Examines the construction of social and cultural identities, including class, gender, and sexuality, through architecture, sculpture, painting, household objects, jewelry, etc.

HAVC 153 - Neither Venus Nor Virgin: Women's Lives Beyond Men's Constructs in Late Antiquity and Byzantium (5)

Explores the lives of women in Late Antiquity and Byzantium through a critical analysis of primary visual and textual sources, most of which were produced by men. Looking beyond social expectations, we attempt to understand female experiences and agency.

HAVC 154 - Byzantine Visual Culture: Politics and Religion in the Empire of Constantinople, 330-1453 A. C (5)

Centered on the capital city of Constantinople (modern Istanbul), the Hellenized and Christianized Roman Empire of the Easter Mediterranean today known as Byzantium played a major, yet often overlooked, role in European history for more than a millennium. This course examines its visual production and relation to politics and religion in court and church ceremonial, expressions of Christian faith, and cultural interactions with Western Europe, Islam, and the Slavic world.

HAVC 155 - Constructing Cleopatra: Power, Sexuality, and Femininity Across the Ages (5)

The construction of female identity and the production of history through the myth of Cleopatra. Critical analysis of archeological data and ancient sources, later sculptures and paintings, and contemporary films, movies posters, Internet sites, advertisements, comics, games, dolls, and household objects.

HAVC 157B - Italian Renaissance: Art and Architecture (5)

Lives of Italian Renaissance people from birth to death, examining the nature and roles of the institutions which defined human existence in this period. Uses visual arts both illustratively and to study how institutions fashioned their images through art and architecture.

HAVC 157C - High Renaissance (5)

An investigation of the High Renaissance as a period and stylistic concept, using the major artists and monuments of the period 1480–1525 to discuss issues of theory, history, and art. Artists considered include Leonardo da Vinci, Michelangelo, and Raphael.

HAVC 157D - Art of the Venetian Renaissance (5)

Considers Venetian art in the 15th and 16th centuries. Topics include major artists (the Bellini, Carpaccio, Titian, Tintoretto, Veronese, Palladio) and the relationship of the city to outside forces (Byzantine Empire, Turkish Empires) and other Italian cities.

HAVC 160A - Indigenous American Visual Culture Before 1550: Mexico (5)

Art and architecture of selected pre-Hispanic cultures from the gulf coast, central, western, and southern Mexico including the Olmec, Zapotec, Toltec, Mixtec, Mexica (Aztec), and others.

HAVC 160B - Indigenous American Visual Culture Before 1550: The Andes (5)

The art of selected pre-hispanic cultures of Colombia, Ecuador, Peru, and Bolivia including the Nazca, Moche, Chimu, and Inca.

HAVC 162A - Special Studies in Early Indigenous American Visual Culture: The Ancient Maya (5)

The art and architecture of the Maya of southern Mesoamerica from the first century C.E. to ca. 1500. HAVC 80, HAVC 60, or HAVC 160A are recommended as preparation. (Formerly Advanced Studies in Early Indigenous American Visual Culture: The Ancient Maya.)

HAVC 162B - Special Studies in Early Indigenous American Visual Culture: The Inka (5)

The visual culture of the Inka of the Andean region of western South America including textiles, metalwork, and the built environment. HAVC 60 or HAVC 80 are recommended as preparation. (Formerly offered as Advanced Studies in Early Indigenous American Visual Culture: The Inka.)

HAVC 163 - The Native in Colonial Spanish America (5)

Indigenous contributions to colonial Spanish American visual culture including architecture, manuscripts, sculpture, painting, textiles, feather-work, and metallurgy. Focus on colonial Mexico, the Andes, and California.

HAVC 164A - Art and Visual Culture of Indigenous California (5)

Examines the diverse art and visual culture of California's Indigenous communities, by learning about historic practices and revitalization, artistic engagement with the built environment, performance and public art, activism through visual culture, and the deconstruction of stereotypes.

HAVC 165 - Indigenous Artists and the Borderland Missions (5)

The Missions of California, Arizona, New Mexico, Texas, Georgia and Florida impacted the lives of Indigenous peoples who were vital to the artistic and architectural development of these spaces. Course examines Indigenous contributions and ongoing reactions to these sites.

HAVC 170 - Art of the Body in Oceania (5)

Explores art of the body, defined broadly, from various perspectives. Examines colonial representations of Oceanic bodies, self-representation through bodily adornment and display (including tattoo, scarification, body painting, ornament, and dress), and bodily metaphors in Oceanic visual cultures.

HAVC 172 - Textile Traditions of Oceania (5)

Investigates how textiles contribute to cultural fabric of Oceania. Explores women's roles in socioeconomic exchanges and cultural production; gender issues regarding production and function of Oceanic textiles; and history of processes, functions, and aesthetics. Prerequisite: Prior coursework related to Oceania recommended.

HAVC 176 - Visual Sovereignty (5)

Focuses on oceanic studies as a paradigm for decolonial/anti-colonial art practices. By engaging theorizations on visual sovereignty,course emphasizes the need for trans-Indigenous worldmaking that deploys individual and community assertions of what representation means in art. Readings are organized by connecting Indigenous theories of Oceania in the Pacific across networks of Indigenous coalitions of resistance across the globe to connect divergent narratives, positions, times, and spaces.

HAVC 178 - Museums and Cultural Heritage in Oceania (5)

Examines representations of Pacific Island cultures. Explores the history of indigenous communities' relationships with museums and heritage institutions, and strategies to represent Oceanic histories, knowledges, and futures. Studies how stakeholders in cultural representation develop collaborative approaches to pursuing decolonized heritage practices.

HAVC 179 - Topics in Oceanic Visual Culture (5)

Examines selected and changing topics in the study of oceanic visual culture. The specific topic varies with each offering in order to keep up with recent directions in scholarship. Possible topics include: archaeological material and visual cultures; colonial-era images, objects, and spaces; architecture and environments; performance; gender; race and ethnicity; modern/contemporary art and visual culture; and/or a regional focus.

HAVC 180A - Contemporary Art in a Globalized World (5)

Examines major developments in art and theory, 1980s-present. Close consideration of how artists from around the globe innovatively respond to often fraught social, political, and economic circumstances. Topics include: experimental social relations, diaspora, migration, decolonization, institutional critique, globalization, the commons, and ecology. (Formerly Global Contemporary Art.)

HAVC 185 - Community Engagement Through the Arts (5)

Explores a variety of professional practices related to art history and visual studies. Focuses on critical issues central to community-engaged professional practice. Topics include: museums and communities, art and civic engagement, managing visual archives and collections, art law, cultural property, heritage preservation, art conservation, community arts organizations, public art, arts administration, academia, pedagogy, the vital role of the arts and the humanities in contemporary life. (Formerly Art and Community: Arts Professions and Community Engagement.)

HAVC 186 - Horror and Gender in Art and Visual Culture (5)

Explores the theme of horror in 20th/21st-Century visual culture. Unpacks how horror is often reflective of entrenched cultural anxieties around the interplay between gender, morality, and female sexuality.

HAVC 186I - Indigenous Art and Activism (5)

Examines how indigenous artists and activists visually respond to issues related to land and sovereignty. Looks at a broad range of media used by indigenous creative practitioners, including documentary filmmaking, printmaking, photography, and performance.

HAVC 186Q - Queer Visual Culture (5)

Students gain critical skills to grapple with queer art, visual culture, and theory of diverse histories and geographies. Students consider how queer is applied and appropriated in the scope of in/visibility in a transnational context.

HAVC 188A - Introduction to Curatorial Studies (5)

Investigates display histories of natural, ethnographic, and historical objects as well as contemporary art curation practices. Explores how curatorial methodologies can reinforce or challenge inequalities implicit in choosing what and how objects are seen.

HAVC 188B - Biennials and Mega-Exhibitions (5)

Explores the recent history of curatorial practice. Through studying important exhibitions produced in recent decades, students learn about the range of social, political, and economic factors influencing how art is conceived and displayed today.

HAVC 188C - Site-Specific Art, Installations, Artists and Institutional Practice (5)

Examines key moments and projects in site-specific art since the 1960s, including Earth Works, the rise of installation art, and the interplay between artists and institutional venues sponsoring such projects, including museums, private galleries and patrons, and biennials.

HAVC 188M - Visual Culture of Memory (5)

Considers visual and material culture (art, architecture, heritage sites, monuments, and museums) from around the world to explore how expressions of collective memory address the present through memorializing, commemorating, changing, or forgetting the past. (Formerly Heritage, Memory, and Material Culture.)

HAVC 190A - African Art and Visual Culture (5)

Advanced seminar requiring intensive research and writing on changing topics related to a specific area of African art and/or visual culture chosen to demonstrate critical mastery of this subject.

Prerequisite: Prerequisite(s): HAVC 10 or HAVC 80.

HAVC 190B - Play and Ritual in Visual Cultures (5)

Compares how play and ritual construct worlds and regulate visual cultures—from dolls to ritual objects and performances. Attention given to areas where play and ritual overlap and the visual cultures that result.

HAVC 190C - The Mediterranean from the Rise of Christianity to the Rise of Islam (5)

Examines the visual culture of the Mediterranean from the 3rd to the 7th centuries A.D., focusing on the historical and cultural developments which led to the survival of the Eastern Roman Empire and its transformation to what we call Byzantium.

HAVC 190D - The World of the Lotus Sutra (5)

Close study of the principal text of East Asian Buddhism as a self-enclosed vision of reality, with careful consideration of the forms and functions of the world of visual and aural representation that it has inspired.

Prerequisite: Prerequisite(s): HAVC 127A or by permission of instructor.

HAVC 190E - Huayan Visions (5)

Explores the distinctive conceptual world of the Buddhist Huayanjing (Avatamsaka-sutra) and its expression in visual forms. This long text, composed in Sanskrit and later translated into Chinese, is a principal scripture of the international Mahayana Buddhist traditions of Asia.

Prerequisite: Prerequisite(s): HAVC 127A or by permission of instructor.

HAVC 190F - Chan Texts and Images (5)

Examines selected issues in history of Chan (Zen) Buddhist traditions in China from medieval times to the present day. Concepts, methods, and visual expression of Chan practice situated through study of texts and visual materials.

Prerequisite: Prerequisite(s): HAVC 127A or by permission of instructor.

HAVC 190G - Buddhist Wisdom Traditions (5)

Careful study of Mahayana Buddhist perfection-of-wisdom traditions--texts and related material culture, including visual imagery and illustrated books--with focus on the particular vision of reality that they aim to produce or reveal.

Prerequisite: Prerequisite(s): HAVC 127A or by permission of instructor.

HAVC 190H - Constructions of Identity in 20th c. Tibetan Visual Culture (5)

This course on the construction of identity in modern and contemporary Tibetan visual cultures examines artworks in Tibetan communities from the early 20th century to the present. Students learn to analyze how visual mediums helped to construct different aspects of Tibetan identity. Broad themes include: the role of visual representations in constructing race, ethnicity, and gender; the impact of transnational and national politics on identity formation; and the role of imperialism and colonialism in the construction of race and ethnicity in present-day Tibet and the diaspora.

HAVC 190J - Visual Cultures of the Vietnam-American War (5)

Examines the visual culture of the Vietnam-American war and its legacy in contemporary art of Southeast Asia. Considers representations in different media: painting, drawing, photography, film, novels, and material cultures. Issues addressed include memory, trauma, identity politics, body, race, gender, pornography, and prostitution.

HAVC 190K - Thematic Approach to Visual Cultures of Southeast Asia and Its Diaspora (5)

Undergraduate seminar that takes topical and thematic approaches to looking at the visual cultures of Southeast Asia and its diaspora. Media and themes include textile, film and literature, comparative modernity, race, gender, and sexuality. The specific topic and them varies from year to year.

HAVC 190M - Representations of Women in Indian Art (5)

Deals with representations of the female divinity in Indian religious imagery, and of women in secular and courtly paintings. Also examines roles women play in the production of art in the Indian subcontinent.

HAVC 190N - Topics in Mediterranean Visual Culture (5)

Examines selected and changing topics in the study of Mediterranean visual culture. Topics vary with each offering to keep up with recent directions in scholarship. Possible topics: Bronze Age Aegean cultures; myth, ritual, and religion in the Near East; Greek and Roman gender and sexuality; seafarers and cross-cultural interactions in the ancient Mediterranean; Islamic cultures of North African and Spain.

HAVC 190O - Berlin: History and the Built Environment (5)

Explores Berlin's urban and architectural history through themes: the meaning of memory in architecture; the political and cultural implications of preservation, globalization, and tourism. Because these questions are relevant beyond Berlin, course draws comparisons with other cities.

HAVC 190P - Death and Patriotism: The Case of the French Revolution (5)

What are the relations between the mortal body and politics in times of crisis? What purposes can death, or the threat of death, serve? Examines representations of executions, assassinations, and funerals during the French Revolution, with an emphasis on the Terror.

HAVC 190Q - Portraiture: Europe and America, 1400-1990 (5)

Western portraiture and self-portraiture at certain key moments (early modern Italy, 16th-century Germany, 17th-century Holland, France from the reign of Louis XIV to the Revolution, contemporary U.S.) are explored by reading 20th-century interpretations and some primary sources. This course can be taken for senior exit credit only by permission of the instructor.

HAVC 190R - 19th-Century European Art Now (5)

Reframes and recontextualizes works of 19th-century European art by looking at recent scholarly approaches as well as the critical commentary offered by contemporary artists. (Formerly 19th-Century Art Now.)

HAVC 190S - New Directions in Contemporary Art (5)

Explores how critical theory illuminates forms of cultural production, from art and cinema to popular culture. Considers how scholars, artists, and filmmakers use critical theory both creatively and in the study of aesthetic objects and experiences.

HAVC 190T - Topics in Pre- and Post-Columbian Visual Culture (5)

Seminar on changing topics related to the current scholarship on pre-Hispanic and colonial Spanish American visual culture.

HAVC 190U - Word and Image in Illuminated Byzantine Manuscripts (5)

Religious, scientific, and secular manuscripts of Byzantium: examines how words and images interacted to express and promote central concepts of Byzantine culture; serve liturgical needs of private devotion; reflect imperial ideals; diffuse moral values and knowledge; and proclaim social status and cultural affiliations.

HAVC 190V - Cult of Mary in Byzantium (5)

Why did the cult of the Virgin Mary become so important in Byzantine culture? Examines historical, cultural, theological, political, and social reasons for this development, seen through the interaction of Byzantine visual culture and literature.

HAVC 190W - Art and Culture Contact in Oceania (5)

Examines impact of culture contact on Oceanic and Euro-American visual cultures in context of discovery, colonialism, and postcolonialism. Topics include 18th-century visual culture, colonial identities, primitivism, syncretism, impact of Christianity, contemporary art/market, media, tourism, transnationalism, and globalization. Prior coursework related to Oceania recommended but not required.

HAVC 190X - Art and Identity in Oceania (5)

Theoretical discussions and Pacific Basin case studies on 1) definitions of cultural, ethnic, and national identities; 2) relationship between art, museums, and construction of historical and cultural narratives; 3) ways tradition defined in art practices and used by groups to assert an identity in their present. Participants first develop a theoretical framework and vocabulary for analyzing artistic production in a variety of cultures. Through specific case studies, will explore how art, architecture, and museums actively contribute to define and challenge ethnic and national identities. Prior course work related to Oceania recommended but not required.

HAVC 190Y - Art and the Sea: Visualizing Knowledge and Political History in Europe and North America (1500-1900) (5)

Seminar focusing on European and North American representations of ocean spaces, species, and human travelers made between 1500 and 1900. Students read recent scholarship on oceans, art, and science and consider an array of visual materials (including maps, oil paintings, and glass models) to ask how oceans served as the conduits for producing knowledge about the natural world and as the arenas in which arguments about national and cultural differences were staged.

HAVC 191A - Iconoclasm (5)

What happens when, to control an object, it is destroyed? Examines destruction of art as a way of ending the object's life cycle, as a device of social tension/change, and as a colonial and post-colonial mechanism of religious/political control.

HAVC 191B - The Virgin of Guadalupe: Images and Symbolism in Spain, Mexico, and the U.S (5)

Focus on the histories of miraculous images of La Virgen de Guadalupe de Extremadura (Spain) and La Virgen de Guadalupe de Tepeyac (Mexico). The foundations and growth of the cult of the Mexican Guadalupe during the colonial period is examined along with the multivalent symbolism of her image. Considers contemporary appearances of the Virgin

of Guadalupe, from the miraculous images on a tree in central California and the compositions of Chicano artists, to mass-produced kitsch.

HAVC 191C - Subalternatives: Representing Others (5)

Explores how visual representation (in fine art, popular art, film, and television) encodes difference in selected cultural and historical contexts. Considers (post)colonial image-making both as a strategy of domination as well as resistance.

HAVC 191D - Semiotics and Visual Culture (5)

How can visual culture be understood as the production, circulation, and recirculation of signs? This course offers a history of semiotics and its methodological application in the analysis of images in popular culture and within the discipline of art history.

HAVC 191E - Feminist Theory and Art Production (5)

A close reading of works of art and theoretical texts by feminists working from 1970 to the present. The course encourages debate around the past, present, and future relevance of feminist theories to visual cultural studies, paying particular attention to issues of cultural and ethnic difference.

HAVC 191F - Image and Gender (5)

Examines what visual representations (feminine and masculine) reveal of gender in 19th- and 20th-century European and American culture; how images reflect norms of gender; and how we are conditioned to read images in gendered terms. Explores how femininity and masculinity were conceived during historical periods and how gender ideals changed in response to social, political, and economic pressures. Students encouraged to consider the fluid nature of 21st-century notions of ideal femininity and and masculinity and possible alternatives.

HAVC 191G - Art, Cinema, and the Postmodern (5)

Considers the relationship between art, cinema, and postmodernism. Specific, thematically oriented topics are considered including: the impact of cinema aesthetics on contemporary art; film and digital technology; cinematic structure as cultural critique; and filmic strategies as an ideological tool.

HAVC 191H - Climate Havoc: Art and Environmental Crisis Today (5)

Examines contemporary art visual culture in relation to climate havoc. Climate-change threats and impacts grow more widespread, frequent, and severe wreaking environmental havoc worldwide. In the absence of effective governance and international leadership in addressing adequate solutions, artists and activists are inventing and participating in creative strategies of consciousness-raising, mass mobilization, and ecologically sustainable modes of thinking and living. Seminar focuses on creative practices of climate justice, considering ecological transformation in relation to justice-oriented frameworks that both stress socio-political and economic inequities, and seek ways to rectify such inequalities. Also maps out new trajectories of practice and methodologies of scholarship at the convergence of art history, visual cultural studies, and climate breakdown.

HAVC 191I - Topics in Architecture and Urban History (5)

Focuses on selected topics in the history of art and visual culture. Topics vary depending on instructor.

HAVC 191K - Decolonial Visual Culture (5)

Examines contemporary visual culture and processes of decolonialization in relation to topics including: petrocapitalism, indigeneity, ecology, race, gender and sexuality, and multispecies ontology. Case studies include cultural practices in North America and Mexico, with diverse theoretical approaches.

HAVC 191L - Topics in Native American Visual Culture: Indigeneity and Pop Culture (5)

Examines the history of racist imagery and stereotypes that have shaped public perception of Indigenous American peoples. From imperialist propaganda through current-day manifestations, class examines the negative impacts misrepresentations have on Native communities and Indigenous responses.

HAVC 191N - Topics in Renaissance Art and Visual Culture (5)

Seminar on changing topics related to the current scholarship on the art and visual culture of the Renaissance.

HAVC 191O - Topics in Oceanic Visual Culture (5)

Seminar on current scholarship on Oceanic visual culture. Topics include pre-colonial, colonial, and post-colonial visualities; place and the built environment; performance; race; gender; travel and tourism; cultural institutions. Prior coursework related to Oceania recommended but not required.

HAVC 191P - Topics in Contemporary Art and Visual Culture (5)

Advanced seminar requiring intensive research and writing on changing topics in contemporary art and visual culture. (Formerly Topics in Contemporary Art.)

HAVC 191S - Topics in American Art and Visual Culture (5)

Advanced seminar requiring intensive research and writing on changing topics related to a specific area of American art and/or visual culture chosen to demonstrate critical mastery of this subject.

HAVC 191V - The Edge of the Sea: Architecture and Design on the California Coast (5)

The history of architecture and design along the California coast. Through a series of case studies selected from topics in twentieth century design, course explores the roles of designers in mediating relationships between infrastructure and landscape, technology and natural forces, ideas of the artificial and natural, as well as between humans and non-human species.

HAVC 191W - Art, Disaster, and Resilience (5)

Explores how art and other visual cultural practices--like participatory mapping, data visualization, and image sharing--negotiate the material and social consequences of both sudden and slow-moving disasters. Emphasizes critical, activist, and regenerative methods of representation, collaboration, and response.

HAVC 193F - History of Art and Visual Culture Service Learning (2)

Integrates academic study with meaningful community service to enrich the learning experience, teach civic responsibility, and strengthen communities. Projects may serve non-profit agencies, schools, or art/culture institutions. Enrollment is restricted to junior and senior history of art and visual culture majors and minors. Enrollment is by instructor permission.

HAVC 195 - Senior Thesis (5)

Students submit petition to sponsoring agency.

HAVC 198 - Independent Field Study (5)

Independent field study away from the campus. Students submit petition to sponsoring agency.

HAVC 198F - Independent Field Study (2)

Independent field study away from the campus. Students submit petition to sponsoring agency.

HAVC 199 - Tutorial (5)

Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency.

HAVC 199F - Tutorial (2)

Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency

Graduate

HAVC 201A - Introduction to Visual Studies and Critical Theory (5)

Introduces the visual studies discipline, providing students with an overview of the field's development, its primary texts, and its issues of central concern. Features intensive readings and student-led discussions.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 202 - Introduction to Visual Studies Methods (5)

Examines research methods and approaches in a variety of materials, cultures, periods, and subjects that are relevant in the discipline of visual studies. Discussions focus on research and readings by history of art and visual culture faculty who share practices, experiences, and advice.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 204 - Grant Writing, Pedagogy, and Professional Development (5)

Students work on grants for educational support, dissertation funding, or both; learn about effective, accessible, and equity-minded TA- and GSI-related pedagogy (including developing course content, logistics, assessment, and grading criteria); and cultivate professional skills in relation to the publication process, CV preparation, and gaining employment in academia and beyond. (Formerly Grant Writing.)

Prerequisite: Enrollment is restricted to visual studies graduate students or by permission of the instructor.

HAVC 205 - Grant Writing in Visual Studies (3)

Devoted to grant-writing. Students work on composing and peer-reviewing research proposals, personal statements, bibliographies, CVs, and writing samples. Readings include literature on grant-writing and scholarly writing in the humanities.

Prerequisite: Enrollment is restricted to visual studies students or by permission of the instructor.

HAVC 212 - Yoruba Visualities and Aesthetics (5)

Yoruba conceptions of visuality are explored and compared to seeing through Western eyes. Critical reading focuses on Western and Yoruba scholars' work on visualities and complementary theoretical writings on Yoruba aesthetics and philosophy.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 213 - Theories and Visual Cultures of Iconoclasm (5)

Examines theories that attempt to explain iconoclasm, the willful destruction of religious or political objects, by applying the theory (including theories of cultural heritage) to various case studies. The universal aspect of iconoclasm and the differences in understanding and practice are explored.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 220 - Topics in Asian Visual Studies (5)

Examines selected and changing topics in the visual studies of Asia. The specific topic varies with each offering to keep up with recent directions in scholarship.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 222 - The Image of Arhat in China (5)

Indian Buddhist sage-monks (arhats) are portrayed in China in ways that represent a remarkable variety of visual/historical/practice traditions. This seminar examines these depictions and explores the ranges of means and functions attached to this theme.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 224 - Engaged Buddhism and Visual Culture (5)

Begins with an analysis of photography and films capturing the Gandhian and Dalit movement in India. Students then read key Buddhist texts on engaged Buddhism, and look at the rise

of engaged Buddhism in Southeast Asia in the 1960s and how it impacted modern and contemporary art in Southeast Asia and its diaspora.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 230 - Race, Aesthetics, and Art in 18th Century Europe (5)

Looks at the 18th-century connections of theories of beauty to practices of art-making, the production of knowledge about the natural world, and the construction of race. Students discuss not only the debates of this era but the impacts they have made on the study of visual culture.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 231 - Visualizing Waterways and Water Ways (5)

Examines visual culture from 1500 to the present in conversation with texts about the relationship between material practices and water spaces. This aquatic focus allows us to learn together across a broad range of materials, periods, and geographies, calling into question static boundaries.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 232 - The Monument Since 1750 in Relation to Nationhood and the Experience of War (5)

Investigates modern monuments (1750 to present) and the creation or maintenance of a nation, especially in terms of war and its immediate aftermath. Destruction or alteration of monuments and production of anti- or counter-monuments are also examined.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 233 - Visuality, Blackness, and the Human (5)

Focuses on recent scholarly approaches engaged with the representation of African-American culture and identity, with a specific emphasis in the visualization of blackness. Utilizing a cross-disciplinary approach, students explore the evolving critical discourses concerned with blackness and the human. (Formerly Topics in Contemporary Art and Visual Culture.)

Prerequisite: Enrollment is restricted to graduate students.

HAVC 235 - Photography and History (5)

Investigates the complex relationship between photography and history. Considers the evolving perceptions of photography's capacity to capture reality, the discursive means by which photographic truths are produced, and the utility of photographs as primary evidence.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 236 - Contemporary Art and Theories of Democracy (5)

Interdisciplinary approach to the study of democratic political theory of the last two decades and its relation to contemporary art practice with an emphasis on activist art, public art, and theories of speech and performance.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 240 - Seeing Race (5)

Investigates how discursive systems racialized the sight of various racial and ethnic groups in 19th- and 20th-century U.S. society. Focuses on the construction and maintenance of racial values systems and on the historically specific ways in which an eclectic assortment of visual artifacts have been read by groups over time. Considers the visual and material implications of race-based sight.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 241 - Decolonizing Nature: Contemporary Art and Ecology (5)

Considers how visual culture intersects with environment. Considers how, in the age of neoliberal globalization, documentary and neo-conceptual practices confront the biopolitics of climate change; the financialization and rights of nature; climate refugees; and indigenous ecologies.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 242 - Radical Futurisms (5)

Examines and compares radical futurisms-Indigenous, Afro, Chicanx/Latinx, multispecies, Postcapitalist-and situates them in relation to experimental visual cultural, media, and aesthetic practices, asking critical and creative speculative questions about what comes after end-of-world narratives.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 243 - Alternative Architecture (5)

Focuses on what is commonly left out of architectural history: the ephemeral, informal, illegal, and uncertain. Topics include: anonymous and collective architecture; temporary interventions; everyday urbanism; and vestigial urban spaces. These topics are understood through theories of space as socially produced (Henri Lefebvre, Michel de Certeau, among others), and through cultural movements and manifestoes (Situationist International, Aesthetics of Hunger, etc.)

Prerequisite: Enrollment is restricted to graduate students.

HAVC 244 - Reinventing "Reinventing Nature:" Visual Culture and Environmentalism, circa 1995 (5)

Departing from an interdisciplinary seminar held at the UC Humanities Research Institute in 1994 entitled "Reinventing Nature," course engages discourses around ecology, technology, environmental politics, and visual representation that emerged in the 1990s through debates about the idea of nature.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 245 - Race and Representation (5)

Explores how human subjects come to be visually defined and marked by race discourse. Covers diverse theoretical literatures on the topic, primarily in visual studies, but also in cultural studies, post-colonial studies, and psychoanalysis.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 249 - How to Do Things with Pictures: Media, Culture, and Performance (5)

An interdisciplinary exploration of the performative dimensions of art, visual culture, and new media. Investigates theories of performance and action across multiple fields and considers their relevance to themes, problems, and contexts of interest to those enrolled.

HAVC 250 - The Cult of Mary in Byzantium: Visualities of Political, Religions, and Gender Constructs (5)

Through the study of the Byzantine cult of Mary, we examine diverse modalities in the construction and interaction of political, religious, and gender values, and we investigate the interrelated role of images, rituals, and text in human experience, expression, and communication.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 260 - Visual Literacy in Spanish America, 1500-1800 (5)

Visual literacy is considered as a particular predicament of colonial societies. Students consider the legibility of artifacts in colonial Spanish American contexts given its culturally diverse audiences and examine specific instances of (mis)interpreted images and transcultured representations.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 264 - Contemporary Native American Art (5)

Seminar focusing on the work of contemporary Native American artists. Students explore ecological activism, the relationship of Native artists with the art market and factors that shape artistic production, and what it means to be an Indigenous artist.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 270 - Colonial Cultures of Collecting and Display (5)

Examines collections and exhibitions of colonized people, places, and objects through primary sources, theoretical texts, and analytical case studies (with some emphasis on Oceania). Focuses on visual discourses of race, science, religious conversion, colonial settlement, nation-building, education, and entertainment.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 273 - Imaging Colonial Borderlands (5)

Considers 18th-century to 21st-century colonialisms, especially in Oceania. Concentrates on representations conditioned by particular cross-cultural engagements in colonial peripheries rather than focusing on metropolitan representations. Explores the construction and transgression of rigidly defined colonial identity categories, as expressed in visual/material form. (Formerly offered as Imaging Colonial Peripheries and Borderlands.)

Prerequisite: Enrollment is restricted to graduate students.

HAVC 275 - The Visual Cultures of Travel and Tourism (5)

Explores the visual cultures of travel and tourism with some focus on Oceania. Travel and tourism are implicated in the histories of colonialism, ethnography, and globalization, and offer rich sites for critical engagement with theories of transnationalism, imperialism, diaspora, and identity.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 280 - Visual Studies Issues (5)

Examines selected and changing issues in visual studies. The specific issue varies with each offering to keep pace with recent directions in scholarship.

Prerequisite: Enrollment is restricted to graduate students.

HAVC 294 - Teaching-Related Independent Study (5)

Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency.

HAVC 295 - Directed Reading (5)

Directed reading that does not involve a term paper. Students submit petition to course-sponsoring agency. Enrollment is restricted to graduate students.

HAVC 297A - Independent Study (5)

Independent study or research for graduate students. Students submit petition to sponsoring agency.

HAVC 297B - Independent Study (10)

Independent study or research for graduate students. Students submit petition to sponsoring agency.

HAVC 297F - Independent Study (2)

Students submit petition to course-sponsoring agency. Enrollment is restricted to graduate students.

HAVC 299A - Thesis Research (5)

Students submit petition to course sponsoring agency. Enrollment is restricted to graduate students.

HAVC 299B - Thesis Research (10)

Students submit petition to course sponsoring agency. Enrollment restricted to graduate students.

HEBR - HEBREW

Lower-Division

HEBR 1 - First-Year Hebrew (5)

Speaking, listening comprehension, reading, and writing fundamentals. The use of Modern Hebrew is encouraged through classroom practice supplemented by work with computer tutorials. The first-year sequence (1-2-3) begins in fall quarter only.

HEBR 2 - First-Year Hebrew (5)

Speaking, listening comprehension, reading, and writing fundamentals. The use of Modern Hebrew is encouraged through classroom practice supplemented by work with computer tutorials.

Prerequisite: Prerequisite(s): HEBR 1 or by consent of instructor.

HEBR 3 - First-Year Hebrew (5)

Speaking, listening comprehension, reading, and writing fundamentals. The use of Modern Hebrew is encouraged through classroom practice supplemented by work with computer tutorials.

Prerequisite: Prerequisite(s): HEBR 2 or by consent of instructor.

HEBR 4 - Second-Year Hebrew (5)

Development of the students' familiarity with the spoken and written language through grammar review, discussions, and vocabulary building. Varied readings on literary and cultural topics related to modern Israel.

Prerequisite: Prerequisite(s): HEBR 1B or HEBR 3 or by consent of instructor.

HEBR 80 - Introduction to Biblical Hebrew (5)

Introduces students to the basic lexicon and grammatical structures of biblical Hebrew, with an emphasis on the development of a set of useful translation strategies. Throughout the course, students apply their emergent skills to translating a variety of biblical texts.

HEBR 82 - Hebrew: Travel Abroad (5)

Class is designed for students planning to travel to Israel with one of many funded or unfunded programs offered to students by different agencies. The main course focus is to learn reading and communication skills in Hebrew. Students learn about Israeli culture, with a focus on its differences from U.S. cultures. These communication skills can be used while in Israel for either traveling purposes or attending classes in one of the universities as part of the learning abroad programs. Students acquire the skills required for practical use of Hebrew in order to communicate everyday life activities along with specific functional tasks, such as understanding directions; ordering in a restaurant; health issues; dealing with security issues and emergency situations; understanding tour guides; and addressing historical, political, and geographical issues.

HEBR 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

HEBR 99 - Tutorial (5)

Students submit petition to sponsoring agency.

HEBR 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

HEBR 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

HEBR 199 - Tutorial (5)

Students submit petition to sponsoring agency.

HEBR 199F - Tutorial (2)

Students submit petition to sponsoring agency.

HISC - HISTORY OF CONSCIOUSNESS

Lower-Division

HISC 1 - Introduction to History of Consciousness (5)

What does it mean to speak of consciousness in an age of AI, ecological crisis, and future uncertainty? Can “raising consciousness” result in meaningful social change? Or is human consciousness an obstacle to be overcome? This course examines the history of the concept of consciousness within the Western philosophical tradition, focusing on its relationship to political action. Students are introduced to major debates in the fields of phenomenology, political philosophy, and philosophy of mind. Readings include Descartes, Hegel, Marx, Husserl, Sartre, Fanon, Merleau-Ponty, and Thao.

HISC 9 - Ecological Marxism (3)

In recent years, numerous scholars and activists have turned to Karl Marx's thought to help make sense of our present ecological predicament—and imagine ways out of and beyond it. This class introduces Marx’s fundamental ideas about labor, nature, and capital, with a focus on the ecological dimensions of his thinking. It also examines current Marxist perspectives on ecological crisis and their convergence with ecofeminist, anti-colonial, and Indigenous standpoints.

HISC 12 - Historical Introduction to Philosophy (5)

Focuses on moral, metaphysical, and epistemological issues using classical texts along with some contemporary readings on related philosophical problems. Plato, Kant, and Sartre provide the central readings on ethics, while Descartes, Hume, Kant (again), and Wittgenstein provide the central metaphysical and epistemological discussions. Issues of philosophy of language and method are highlighted throughout.

HISC 20 - Democracy and Dictatorship (5)

Although democracy is generally accepted as the best and most legitimate form of government, there is little agreement

on what it means and how it should function. This course explores the concept and theories of democracy, with a focus on the “People”—who constitutes the people, how popular will is embodied, and how it may be expressed. Course explores debates about different models of democracy and examines how alternatives to democracy, such as dictatorship, autocracy, and tyranny, have been conceptualized. Also studies democracy and its “others” in relation to a constellation of concepts including power, equality, participation, accountability, resistance, legitimacy, and the rule of law.

HISC 60A - What is Revolution? (5)

Studies the modern concept of revolution. Course proposes to inquire into the concept of revolution, insurgency, revolt and resistance in theory and practice. The course aims to analyze thinkers such Thomas Hobbes, Jean-Jacques Rousseau, Immanuel Kant, G.W. F. Hegel, Karl Marx, Carl Schmitt, Hannah Arendt, V.I. Lenin, Rosa Luxemburg, and the revolutionary declarations from the French Revolution to the Zapatista insurgency.

HISC 60C - What Is Resistance? (5)

Explores the politics of resistance and how different thinkers have conceptualized what it means to resist, why it is necessary, and with what methods it should be done. Side by side with the theorists of resistance, the course analyzes examples of resistance from around the world, traversing different time periods, geographies, and cultures. Examples range from peasant revolts to labor movements, feminist struggles to anti-war mobilizations, prisoner uprisings to anti-colonial wars and contemporary forms of corporeal, self-sacrificial resistance. Relying upon the concrete political problems posed by each historical instance as springboards into larger theoretical concerns, the course focuses on questions such as the nature of power relations, different forms of political organization and representation, the relationship between means and ends, the role of violence, and the function of different media, especially as they become manifest in the complexity of real politics.

HISC 65 - What is Belief? (5)

Explores the historical and political conditions in which “belief” has come to characterize people’s relationships to a nonmaterial, spiritual, or supernatural reality. Analyzing the historically recent genesis and differentiation of categories like “religion,” “politics,” and “science,” course examines how the rise to prominence of “belief” is constitutive of modernity as a whole. From these theoretical-historical foundations, course goes on to explore the realms of so-called belief themselves, through case studies on the bodily practices of mystics, prophetically inspired peasant uprisings, and the uncanny reality of UFOs. (Formerly offered as HISC 123, What is Belief? Mystics, Heretics, and Aliens.)

HISC 70 - Gandhi and Us (5)

Places the anti-imperial radical and thinker Mohandas Gandhi in the context of twentieth-century global politics, philosophy, and history. Studies political and philosophical history through the global prism of empire and modernity.

HISC 73 - Can We Really ‘Save’ Animals? (5)

What does animal conservation mean in our contemporary world of deforestation, climate change, and unchecked capitalism? This course explores the intersections between animal behavior and ecology and the environmental humanities to assess the forms animal conservation takes in the contemporary era, and investigates discourses that humans employ to ‘save’ our fellow animals. Course navigates the competing interests and actors that come into conflict in the world of animal conservation, as well as the possibilities of survival in our entangled futures.

HISC 75 - Ecological Crisis and Human Freedom (5)

From climate change to the Sixth Great Extinction to the threat of nuclear warfare, we live in a time of growing ecological devastation and peril. As a result, the very meaning of human societies’ relationships to the ecological worlds they inhabit is increasingly up for question. What is the proper role of humans in nature? How are we to live, and who are we to become, in an age of ecological unraveling? What is to be done in the realms of politics and culture to ensure a livable future? Course examines histories of freedom as both a concept and practice, giving particular focus to forms of collective liberation that consist in acting together with the earth and the other creatures with whom we share this world.

HISC 80N - Prophecy Against Empire (5)

In the core of a London slum, with wars raging all around him, the printer William Blake sounded the trumpet of prophecy. This course channels Blake's war-time revelations, laying bare the antimonies of imperial violence and the prophetic tradition.

HISC 80O - Understanding Popular Music (5)

Students develop the skills necessary to analyze popular music. First, challenging common-sense understandings of how music functions. And second, understanding how history works its way into musical forms.

HISC 80P - The Black Panther Party: History and Theory of a Political Movement (5)

Examines the history and theory of the Black Panther Party (BPP). Texts situate the historical conditions leading to the BPP's rise; theoretical inspirations and contributions; national and international reach; and decline following state repression, electoral campaigns, and guerrilla warfare.

HISC 80R - What is Space? (5)

Examines space as it relates to questions of politics, philosophy, and everyday life. Space, rather than a neutral background or setting, is socially produced, making it a site of constant struggle. Course studies space in its relationship to class conflict and racialized violence, but also as a terrain of collective dreams, experimentation, and political possibility. Themes include: questions of orientation and disorientation, production and annihilation, city and hinterland, interior and exterior, subjection and liberation. Also focuses on problems of race and class as they inform capitalism, and experiments with practices of psycho-geography on walks or "drifts"

across campus. Thinkers discussed include Benjamin, Bachelard, Merleau-Ponty, Lefebvre, Debord, Harvey, Jameson, Gilmore, and others. (Formerly offered as Urban Consciousness: Life, Inequality, and the City.)

HISC 80S - War and the Media (5)

Examines how histories of war are inextricably tied to histories of media, with a focus on the global War on Terror. Interrogates dominant media and policy approaches to terrorism and their construction of the Islamist "enemy" through tropes of backwardness and fanaticism. Seeks instead to situate Islamist movements historically and politically, and in doing so, to consider how Islamist radicalism is deeply intertwined with capitalist modernity, mutually constitutive with contemporary militarism and imperialism, and might darkly mirror other key aspects of contemporary political life.

HISC 80T - What is the Witch: Terror, Subjectivity, Modernity (5)

What is the witch? A historical person? A vestige of pre-colonial European ancestry? A cultural object whose image and identity are shaped by film, paintings and literature. Class considers the witch's development in Europe. Also reviews the witch as a tool of racial, economic and social stratification in society. By looking at how the witch is represented through visual and literary culture, students develop an understanding of the witch as a historic symbol of shifting relations of gender, class and power.

HISC 80U - Labor and Globalization (5)

Taking a long view of globalization from the 19th century to the present, course offers a historical survey of how strained trade routes, production networks, and supply came to be, by focusing on the workers, labor processes, and labor regimes that produce and reproduce this gargantuan "factory without walls." Explores what concepts should be used to define globalization, must capitalism be global, and how many "globalizations" have there been since the 19th century, and what distinguishes them? What forces have caused and maintained inequalities in labor forces across the globe? How does global production isolate, divide, and separate workers from one another? How does it bring them together?

HISC 80V - Introduction to Marxism (5)

The goal of this course is to introduce students to the thought of Karl Marx and some of the major thinkers working in the Marxist tradition. The majority of the course centers on Marx's writing, though students also read texts that extend and develop Marx's ideas into areas that Marx himself did not explore. Course addresses questions central to the Marxist tradition: What is capital? What is capitalism? What is a capitalist state? How did Marx understand colonialism and national liberation struggles? What is the specific nature of gendered oppression and exploitation under capitalism? What is the relationship between capitalist production and cultural production?

HISC 80W - What is Imperialism? (5)

Course takes, as its starting point, the formation of the Marxian concept of imperialism in the early 20th century, in the context of centuries of colonialism and the late 19th-century scramble for Africa. Course surveys debates about imperialism in the post-World War period, particularly as they relate to the history of capitalism in the Global South and developments in world trade, finance, and production, leading to consideration of the present moment and grappling with what is novel in global capitalism today.

HISC 82 - Another Brick in the Wall (5)

Pink Floyd's album, The Wall, guides us into exploring what the walls are that make up our world, what they divide and imprison, and how they perpetuate power, but also limits that protect us. From the borders that enclose nation-states to the bodies that give us the illusion of contained selves, students encounter, build or tear down the walls that define knowledge, human, or nonhuman experience. By reading "the wall" as a metaphor through a range of texts and media, course investigates the meaning of place, consciousness, and objectivity, while critiquing power structures and systemic oppression in our society.

HISC 83 - White Like Me: Whiteness and the Racial Imaginary (5)

Survey course of antiracism literatures in the U.S. that introduces students to critical whiteness studies, a field of research, thought, and embodied antiracist practice that emerged in the 1980s and 1990s and is currently provoking renewed interest. Students think through the genealogy of whiteness studies and its origins in Black studies and movements to gain ethnic studies programs on campuses in California. Also considers the position of whiteness studies within the fields of critical race and ethnic studies, gender and sexuality studies, and political economy. It is important to note that this course is less a critical response to whiteness studies than an introduction to and survey of the field.

HISC 85 - Politics and Religion (5)

Considers both the religious sources of political ideas and the political sources of religious ideas, addressing topics, such as sovereignty, justice, love, reason, revelation, sacrifice, victimhood, evil, racism, rebellion, reconciliation, and human rights.

HISC 86 - After the Human: Artificial Intelligence and the End of the World (5)

Starting from Donna Haraway's "A Cyborg Manifesto," course explores theoretical and myth-making texts that articulate visions of a future beyond humanity. Examines manifestations of the posthuman in film, fiction, and scholarly work. Readings include Haraway, Plato, Descartes, and others. Explores the concept of artificial intelligence as a fascination of science fiction, an engineering objective, a field of study, a philosophical problem, etc. Discussions on: (a) the figure of the thinking machine, its promises and attendant anxieties; (b) the history of ideas leading up to the birth of the field of artificial intelligence in the early 20th century; and (c)

the philosophical roots of underlying concepts, such as intelligence, artificiality, agency, mechanism, identity, rationality, logic and free will.

HISC 87 - What is Utopia? (5)

Utopia translates to "no place" though it sounds identical to another Greek word, "eutopia," or "good place." This double meaning speaks to the desire for the ideal society coupled with the very impossibility of its creation. While the term utopia originated in the tradition of political philosophy, this course opens up discussion to a range of utopian thinking in the domains of literature, philosophy, and theory. Some of the questions students tackle are: What are some common elements of utopian imaginaries? Are utopias always already dystopias? How is the concept of utopia connected to the way we shape and experience space? Close reading and discussion of written and visual texts is complemented by analytical and creative writing exercises that engage the themes.

Upper-Division

HISC 102 - Philosophy and Poetics (5)

Introduction to the relationship between philosophy and poetics in some major 19th- and 20th-century poets and thinkers.

Prerequisite: Enrollment restricted to juniors and seniors.

HISC 103 - The Problem of California (5)

From Muir Woods to Hollywood and Silicon Valley to the Central Valley, California has been a path breaker that has shaped politics and cultural production. The state's rich diversity makes it an especially exciting site for studying the relations between divergent social, economic, cultural, political, and ecological forces. Course investigates the histories, cultures, and geographies of California by exploring relations between power and place through ethnographic, archival, critical, and aesthetic lenses. Also examines the role of identity within constructions of inequality and struggles for political change. Course fulfills one upper-division course requirement for the minor in the history of consciousness.

HISC 104 - Political Writing (5)

Explores the politics of writing by moving beyond rehearsals of established form into an analysis of the politics of writing, asking: What are the philosophical and political implications of the writing forms we choose?

HISC 105 - Antisocial Media (5)

Provides an introduction to critical scholarship on media infrastructures with a focus on cybernetic systems, internet protocol, surveillance, logistics, and finance. It explores how these configurations of power are reorganizing our societies and restructuring our subjectivities.

HISC 106 - The U.S. Horror Film: Race, Capitalism, and Monsters (5)

Analyzes films and images to consider how the genre of horror has screened the problems, expectations, and fantasized afterlives of racism, labor exploitation, ruin, and war.

HISC 107 - The Idea of Reality (5)

Examines the "real" in a variety of registers—from realism in art to reality TV, from virtual reality to the real number system—and asks what, if anything, these usages have in common, what distinguishes the real from the unreal, from the ideal, and from the lie. Through writing, films, and television ranging from the serious to the whimsical, course looks at the ways in which the idea of "reality" is invoked, how it is represented, and to what ends.

HISC 108 - Parables for a Warming Planet: The Politics of Climate Change (5)

Examines the literary forms of parables, allegories, fables, and other kinds of storytelling as a way of understanding and responding to ecological crises. How can these stories capture the scale and myriad agents of climate change, sea level rise, and species collapse while helping us explore options for a planetary future? What kinds of attention do these forms demand of their readers and how is their simplicity matched by a complexity of possible interpretations? Course also examines the role of figurative language and speculation in the discourse of science. What are the stories that science tells itself? Texts span literature, science, and philosophy with a special interest in the fields of Black feminism, science studies, and Indigenous thought of the Island Pacific.

HISC 109 - Liberalism and Violence (5)

Explores the meanings of modernity, religion, and violence and examines the conceptual status that war and sovereignty, long associated with religious belief, have since been accorded within the modern humanist and secular tradition. Also explores aspects of this tradition and their relationship to questions of morality and violence and how violence-and its relationship to secularism-can be better understood today as a mode of negotiating human existence in a world dominated by technology and its myths.

Prerequisite: Enrollment is restricted to juniors and seniors.

HISC 110 - Histories of the Atom (5)

This interdisciplinary course considers the atom in four respects: as philosophical idea, as weapon, as catastrophe, and as clock. Students will learn about ancient atomisms, radiometric dating, the Manhattan Project, the bombing of Hiroshima, and the Chernobyl nuclear disaster.

HISC 111 - States, War, Capitalism (5)

Survey of seminal work on ancient origins of the state, diverse geo-political systems of war and diplomacy, and consequences of the formation of the world market on the evolution of geo-political systems up to and beyond the wars of today.

Prerequisite: Enrollment restricted to juniors and seniors.

HISC 112 - Foundations in Critical Theory (5)

Concentrates on the Marxist tradition of critical theory, centering on classical texts by Marx and by writers in the Marxist tradition up to the present.

HISC 113 - History of Capitalism (5)

Surveys major developments in the capitalist world economy from the 13th century to today. Topics include: the transition to capitalism in Europe; the emergence of banking; colonization, slavery, and uneven development; industrialization; and globalization.

HISC 114 - Histories of Miseducation (5)

Examines the history of the idea of "miseducation" through a transnational lens. Focuses in particular on histories of the (mis)education of people of African descent, drawing on historical cases and theorizations from both the Continent and the diaspora. This class will trace the emergence of the concept and proximate theorizations of "education" itself through an array of different social movements, institutional formations, and texts.

HISC 115 - The Radical Right, A Symptom of Capitalism (5)

Provides the historical context and the theoretical tools necessary for understanding today's radical right. Specific focus on considering the far right in the context of radical constructions under conditions of late capitalism.

HISC 116 - What is Species? (5)

Examines the rise of species-thinking within the Western philosophical tradition and how different thinkers have defined what distinguishes the human species from others. A critical and close examination of Charles Darwin’s role as a thinker of species is at the center of the course, with interest in its theoretical and political implications for discourses on gender and race. Readings include Kant, Feuerbach, Marx, Plessner, Grosz, Haraway, and others.

HISC 117 - Making the Refugee Century: Non-Citizens and Modernity (5)

Examines the material, discursive, and racialized conditions that have produced refugees in the last century. Also examines the social claims made by refugees, institutional responses to them, and political alternatives to state belonging

HISC 118 - What is Money? (5)

Explores what happens if money is examined as a material and politically contingent phenomenon in its own right, rather than assuming the classic "three functions of money" (unit of account, means of exchange, and store of value). Students examine these functions separately with an eye to the tensions that arise between them, and trace a deep history of monetary systems as the outcome of a process of negotiation and contestation. Topics considered include palace economies, cowrie shells, metallic coinages, the modern monetary revolution, and contemporary struggles over student debt.

HISC 119 - Politics of Recognition (5)

Course touches on the philosophical roots of Hegel's text, starting from the pre-World War II rereading of Hegel's master/slave dialectic that became the kernel of postwar thought arising from struggles over capitalism, communism, fascism, racism, colonialism, and feminism.

HISC 120 - What is a State? (5)

Examines the modern concept of state, its anthropological assumptions, categories, its critique, and its crisis. Inquires into the concept of representation, borders, security and control in thinkers, such as Thomas Hobbes, John Locke, Jean-Jacques Rousseau, Immanuel Kant, G.W.F. Hegel, Karl Marx, Carl Schmitt, and Lenin.

HISC 121 - What Is Politics? (5)

Reviews the concept and practice of politics, its anthropological assumptions, categories, its critique, and its crisis. Students inquire into the concept of politics, justice, conflict, and law.

HISC 122 - What is the Psyche? (5)

Surveys the history of psychoanalysis, emphasizing Sigmund Freud’s foundational role in shaping the concept of the psyche. Explores psychoanalysis’ relevance to contemporary issues, particularly its intersection with ongoing developments in psychiatry, neuroscience, and artificial intelligence. Through critical engagement with key texts, students investigate how psychoanalytic concepts continue to influence our understanding of mind, behavior, and subjectivity.

HISC 124 - What is Cinema? (5)

Explores the fundamental question "What is Cinema?" Drawing inspiration from André Bazin’s seminal collection of essays, course traces the historical evolution of cinema, its national traditions, genre development, and philosophical inquiries. Through readings and screenings, students engage with the ideological, artistic, and theoretical frameworks that define cinema’s role in shaping emotional and intellectual experiences.

HISC 125 - Queerness and Race (5)

Gives students a grasp of different definitions and uses of the concept queerness in its relationship to race and how it's tied to the politics of lesbian, gay, bisexual, and transgender (LGBT) identity.

HISC 127 - What is Modernity? (5)

Is modernity a Western concept? Are there plural modernities? How many modernities? Is the concept of modernity a polemical concept? Modernity was born as a new epoch in opposition to the dark age, as a new beginning in opposition to old traditions, as a tabula rasa in opposition to previous forms of knowledge. This course investigates the concept of modernity, its philosophical and political categories, and the underlying notion of time and history. The course proposes to inquire into the concept of modernity and its critics in texts by Descartes, Thomas Hobbes, Immanuel

Kant, G.W.F. Hegel, Walter Benjamin, Simone Weil, Dipesh Chakrabarty, Sylvia Wynter.

HISC 128 - Why Obey? (5)

We are everyday confronted with countless expectations of obedience—at home, work, while studying or at worship; with parents, teachers, the police. Some demands are formal and public, others are informal, unwritten norms, or habitual codes of conduct. Basic observation of the vast range of rules, norms, and codes that demand compliance invites a range of questions, from a diverse set of perspectives. In response to this challenge, this course examines the theory and practice of disobedience across a range of time periods and contexts. Course considers examples of conscientious objection, riots, strikes, direct action and the like, ultimately seeking to answer: why and how do people disobey?

HISC 129 - Politics of Violence (5)

Inquires into the relationship between politics and violence as articulated by early modern, modern, and contemporary political theorists. Investigates the role of violence in the constitution and maintenance of sovereign power and the construction of the modern subject of politics.

HISC 130 - Blackness and the Psychoanalytic Imaginary (5)

Scholars in African and Black Studies have critiqued Freudian and post-Freudian psychoanalysis for its claim of universality, emphasizing its conscious and unconscious failures in accounting for the psycho-historical effects of racial violence. Drawing on thinkers and practitioners situated in both disciplines, this seminar examines Freudian notions of instinct, drive, desire, death, and sexuality in relation to blackness. Our critical study of Freud is guided by the following questions: how should we make sense of the seeming incommensurability between psychoanalysis and blackness?

HISC 131 - Postcolonial Paths (5)

How postcolonial thought occasions the reconsideration of the Western tradition of political philosophy and the discovery of alternative pathways of modernization within it.

HISC 132 - How to Break a Nation? De/Anti/Post-Colonial Discourses (5)

Nationalism is making a comeback, with far-right movements advocating protectionism, border control, and rejection of international regulations under the banner of decolonization. Historically, national liberation movements also sought freedom through nationalist claims. But is the anti-colonial struggle compatible with nationalism? This course explores key texts on nationalism, anticolonial, postcolonial, and decolonial theory, applying them to historical cases to examine the complex relationship between nationalism, the modern state, and emancipation.

HISC 133 - What Freedom is to Me (5)

Offers an opportunity to study with established artist and Distinguished Professor Sir Isaac Julien and gain insight into production and the critical reception of moving image, video art, and installation work by examining historical and contemporary art practice from the 1960s to the present, focusing on artists and curators working in the field of film art. Julien's film installations are the result of research that combines insights from many different disciplines with the recurring question of freedom present and treated throughout his work. His poetic artworks question the established preconceptions around the understanding of history and the Western aesthetics and encourage liberation in face of political injustices and artistic constraints.

HISC 135 - What is Freedom? (5)

Seminar in modern political thought. The focus and outcome of the course is developing the skill of analytical thinking and clear formulation of concepts in writing. Raises and discusses a set of fundamental questions around the method and methodology of moral and political thought, to which every member in the seminar contributes.

HISC 136 - Latin American Thought (5)

Does Latin American thought have to appeal to quintessential Western philosophical questions regarding knowledge, ethics, reality? Course explores how concepts such as identity and abstraction, as well as realities of indigeneity and diversity, both cause and effect the development of analytical and political frameworks across Latin America. Examines what difference social, political, and ethnic inequality might make to the development of core conceptual and philosophical questions and frameworks.

HISC 137 - Why Should I Care? (5)

Have you ever wondered why you should care? Or wished you wouldn't? Caring can be overwhelming. But most people need care, feel they care, or encounter care in one way or another. Caring can feel good, and also awful; it can do good but also be used to control or hurt others. Care can be rigged by inequalities, and power. Care is complicated, but also vital to people, non-humans, and the planet. It matters what happens with care, when we care, and if we don't. It matters who gets the care they need, and who doesn't. In this course we explore what care means from a range of interdisciplinary perspectives.

HISC 138 - Fascism and Film (5)

Provides students with an opportunity to try to understand what fascism is, what it looks and sounds like. Course investigates the conditions from which fascism arises, attempting to answer such questions as: Why is fascism always nationalist? How does it relate to liberalism and capitalism? A wide variety of literature is studied to answer these questions – from Marx's writing to the Futurist Manifesto to early-20th century analyses of fascism to contemporary psychoanalytic and political economic analyses. The course pays special attention to a few themes, including economy, ideology, culture, psychology and fascism's social movement quality.

HISC 140A - Africa: How to Make a Continent (5)

Introduces the histories of exploration, museum collection, and photography that shape historical and contemporary ideas about race, culture, and place in Africa.

HISC 142 - What is a Person? (5)

The question ‘what is a person?’ may seem simple, but upon reflection it is revealed to be complex and contentious. Consider: the vast majority of human beings have historically been denied the status of “persons,” including most women and racialized peoples. Conversely, there are many non-human entities that have been granted recognition as persons, including corporations, artificial learning systems, even rivers and mountains. So, if ‘persons’ are not merely synonymous with individual biological humans, what are they? This course examines these questions through the scope and nature of personhood from the medieval world to the present, exploring how they touch upon fields such as philosophy, law, politics, science, and the arts.

HISC 144 - World-Making and Power (5)

One who comprehends the substance of things can shape change. Numerous narratives link power to the elements of air, fire, earth, water. Others perceive the world as composed of molecules, particles, materials. Some find cosmologies, experience, or spirit. What is the world made of? We read philosophy and analyze popular culture; engage with the matter around us; observe, create and play; think with science studies and poetry; discuss power, liberation, justice; inquire about cosmology; explore art and the environmental humanities; and, most importantly, imagine making alternative worlds.

HISC 147 - Truth, Ideology, And Power (5)

Amid a resurgence of explicitly ideological politics married to what some consider to be a dearth of concern for empirical truth, how should we think about the relationship between truth and ideology? This class pursues an interdisciplinary approach, spanning literatures from the fields of epistemology and language philosophy, intellectual history, political theory, and semiotics, in order to consider how the problem of truth surfaces in theorizations of ideology, what differentiates ideologies from truths, and what the function of “truth” is in our conceptions of ourselves today.

HISC 150 - Radical Political Theory (5)

Introduction to texts of radical political theory, a body of work that critically examines fundamental premises of politics. Addresses the question "What is the 'political'?" Explores political theory of the word "radical" Examines texts of contemporary political theory, ideas of politics and the political that are original, defy convention, and challenge our notions of what is acceptable; and examines etymological origins of the word. Weekly readings include new "little" books, contemporary essays, manifestos, and zines, that touch on the current edges of political theory. Course fulfills the ;Textual Analysis and Interpretation (TA) general education requirement. This means that students are expected to read attentively, exercising critical and analytical thinking, and evaluate the effectiveness and persuasiveness of the theories contained within these readings, as well as the modes of writing used to convey them.

HISC 152 - Critical Ecologies: Thinking, Practice, Change (5)

As the environmental crisis deepens in vastly unequal ways across the planet, people and societies are compelled to prevent the collapse of living environments by becoming more ecological. This course explores how ecological notions deploy across different terrains of thinking and practice, changing how we conceive the place of humans in the world. The focus is on more than human interdisciplinary approaches that question dominant environmental relations, de-center the traditional place assigned to humans as the highpoint of nature, and seek for more caring ways of living with non-humans.

HISC 155 - Science, Technology and Social Transformation (5)

Can we revolutionize the world with science and tech? How do science and technology shape the societies and the environments we live in? How can we create radical social and ecological change through new innovations and inventions? The course introduces students to Science and Technology Studies (STS) and to critical perspectives on the history, social aspects, ecological dimensions, culture, and politics of science, technology, and medicine in the context of contemporary real-world issues. The course is open to everyone. Students from all departments and disciplines across the arts and humanities, sciences, engineering, and social sciences are welcome.

HISC 160 - Advanced Topics in History of Consciousness (5)

Provides students an opportunity for in-depth analysis of advanced topics within the history of consciousness arena. Course topic changes; see the Class Search for current topic.

HISC 163 - Freud (5)

The development of Freud's concept of mind. Extensive reading tracing the origins and development of Freud's theories and concepts (e.g., abreaction, psychic energy, defense, wish-fulfillment, unconscious fantasy, dreams, symptoms, transference, cure, sexuality) and emphasizing the underlying model of the mind and mental functioning.

HISC 164 - Monster Theory (5)

Examines the shift modernity has introduced to our understanding of monstrosity and the roles and functions monsters have played in the construction of homogenous nation-states and national subjects. How did colonial projects justify themselves based on the alleged monstrosity of the Other? How have monsters come to be tools through/against which the dominant ideas of religion, science, secularism, gender, and sexuality are constructed and subverted? What are the promises of monsters? Reading theories of monsters, we see how monsters inform and unsettle our social and political imaginations. (Formerly Modern Monsters.)

HISC 166 - Race, Science, and Humanities (5)

Is race a social construct or (partially at least) a biologically grounded reality? Which medical, biological, social, and political agendas are at play with respect to the genomics of race? Genomic results of the past few decades have added significant complexity to the view that race is primarily a social construct. The debates rage, and the stakes are high. Course engages the history, philosophy, and anthropology of the genetics and genomics of race from the 19th century to today, also introducing the basic science on a "need-to-know" basis.

HISC 167 - Liberation Technology (5)

Explores technologies for social change, self-affirmation, and more-than-human connection. Investigates technologies of liberation in an era of enclosure, control, domination, and regressive universalisms. Envisions alternative technologies for transgression, self-government, collective autonomy, and ecological interdependence. Students read critical social theory; experiment with alternative technologies and alternative futurities; create speculative objects, media, relations; explore image, sound, and the body; think with art, continental philosophy, cultural studies; discuss power, liberation, and justice; and, most importantly, learn to know your escape routes.

HISC 169 - Blue Humanities: Oceans, Humanity, and the Future (5)

As steerers of planetary climate systems, loci of biodiversity, sources of food, and cradles of inspiration to poets, philosophers, artists, and society in general, the oceans are essential to our future. Course combines history, philosophy, literature, and cinema, using them as lenses through which to analyze, understand, and effect positive change on troubled oceans. Course fits well with UCSC's oceanside location and marine campus.

HISC 185C - Comparative Religion: A Critical Introduction (5)

Introduces the comparative study of world religions and provides critical entry points toward the understanding of its history as a discipline. Special emphasis on the troubled history of imperialism, orientalism, and facile generalizations that have always accompanied the attempt to understand foreign or dead cultures.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HISC 185T - Marxism and Feminism (5)

Critically engages with feminist-Marxist perspectives on social-reproduction. Introduces the foundation of Marxism and feminist-Marxist critique while examining the international feminist struggle historically from the origins of capitalism to the present moment.

HISC 187 - The Emergence of the Avant-garde from Disenchantment to Dada (5)

Examines the socio-political and cultural origins of early 20th-century avant-garde movements focusing on the vanguard movement of futurism, the roles played by the disenchantment of the world, and technological rationalization as it relates to warfare and aesthetic production.

HISC 190 - Nature or Nurture? (5)

Examines baseline philosophical and scientific views of human nature in the context of the debate about existence and the role of human nature., Considers whether human nature is singular or plural, genetic or environmental, and what role it plays in political and social thought. Examines race and sex/gender as biological and/or cultural categories and realities. Concludes with explicit attention to theoretical and conceptual frameworks highlighting nurture, the environment, and social construction, vis-a-vis human "nature." As a critical and exploratory course, no ultimate position on human nature is endorsed. Prerequisite(s): HISC 166 and by permission of instructor.

HISC 199 - Tutorial (5)

A program of individual study arranged between an undergraduate student and a faculty member. Students submit petition to sponsoring agency.

Graduate

HISC 203A - Approaches to History of Consciousness (5)

An introduction to history of consciousness required of all incoming students. The seminar concentrates on theory, methods, and research techniques. Major interpretive approaches drawn from cultural and political analysis are discussed in their application to specific problems in the history of consciousness. Prerequisite(s): first-year standing in the program. See the department office for more information.

HISC 203B - Approaches to History of Consciousness (5)

Writing-intensive course based on readings in HISC 203A.

Prerequisite: Prerequisite(s): HISC 203A. Enrollment is restricted to graduate students.

HISC 205 - Global Political Thought (5)

Seminar anchored in a question fundamental to the history of ideas in the modern history of empire: How to think globally about political thought. Through sustained examinations of classic texts in the history of moral and political philosophy, the seminar explores how the "global" itself becomes a universal framework essential to understanding politics worldwide.

Prerequisite: Enrollment is restricted to graduate students.

HISC 207 - Undisciplining Theory (5)

Deep, critical reading of key authors in contemporary philosophical and social thought, focusing on the undisciplined elements that inform and drive their work. Exploring the reach and potential of thinking that moves beyond fixed theories and conceptual allegiances, course avoids the disciplining and self-referential inertia that generates rigid disciplines, fields, or dogma. What problems

and events prompted a specific theoretical intervention? What practices are invited in a text? Course explores how emerging problems can challenge a theory's relevance and inspire our own thinking to creatively engage with change.

HISC 208 - Humanism and its Critics (5)

Examines modern humanism and its critics in a trajectory composed of three moments: foundational texts of 19th century humanism and some of their 20th century interpreters, the critiques of humanism launched by structuralist/post-structuralist continental theory in the 1960s that dealt with the essentialization of the human (theoretical anti-humanism), and contemporary critiques that take issue with anthropocentrism (posthumanism/transhumanism). Students consider thematics that have shaped humanism and the controversies surrounding it including questions of secularism, morality, and materialism, essentialism and class/gender/racial identity, anthropocentrism, and universalism. Readings include Feuerbach, Marx, Sartre, Heidegger, Foucault, Althusser, Haraway, Braidotti, and Ferrando.

Prerequisite: Enrollment is restricted to graduate students.

HISC 209 - Hegel’s Phenomenology of Spirit (5)

Students read Hegel's Phenomenology of Spirit from cover to cover. This book has been critical for many disciplines such as philosophy, politics, psychology, anthropology, sociology

Prerequisite: Enrollment is restricted to graduate students.

HISC 210 - New Left Theory (5)

The “New Left” refers to a wave of Leftist organizations, progressive movements, protests and revolts across the globe that emerged between the mid-1950s and the 1970s. It includes the worker and student rebellions of May 1968; Third Worldism, Eurocommunism, and international Maoism; as well as protest movements organized around feminism, gay liberation, civil rights, environmentalism, anti-war and nuclear disarmament. This seminar examines key debates in the intellectual and political formation of the New Left, with an eye to their contemporary relevance for us today.

Prerequisite: Enrollment is restricted to graduate students.

HISC 214 - What is a Subject? (5)

Examines major streams of theorization about the subject in postwar and contemporary continental and critical theory. Thinkers include Althusser, Badiou, Balibar, Butler, Fanon, Foucault, Honneth, Laclau and Mouffe, Mbembe, Ranciere, and Sartre.

Prerequisite: Enrollment is restricted to graduate students.

HISC 215 - History of Unconsciousness (5)

There is a history of political consciousness that culminated in the project of enlightenment. There is a history of individual, collective, and political unconscious, which culminated in fascism. These two histories are intertwined, but their outcome is not preconceived. On the contrary, their relationship and integration constitute a field of possibilities for social, political, and human experimentation. This course inquires into the concept of political unconscious by exploring thinkers, such as Kant, Foucault, Adorno, Horkheimer, Freud, Jung, Reich, Fromm, Marcuse, and Klein.

Prerequisite: Enrollment is restricted to graduate students.

HISC 216 - Critical Race/Ethnic Studies (5)

Explores foundational and emergent theoretical and methodological approaches to the study of race. Issues examined include the production of race within and across various spheres of human activity and how race has shaped notions of difference and commonality in the past and present.

Prerequisite: Enrollment is restricted to graduate students.

HISC 217 - Critical Human Rights Theory (5)

Addresses about 10 of the significant critiques of human rights discourse published in the past decade by authors, such as Moyn, Douzinas, Fassin, Ticktin, J. Slaughter, D. Chandler, Mamdani, Weitzman, Badiou, and Meister.

Prerequisite: Enrollment is restricted to graduate students.

HISC 218 - French Hegel (5)

Students expected to locate with fluency and precision their own research projects within the conceptual and methodological frameworks defining the late-20th century constellation of thought to be laid out systematically over the course of the term.

Prerequisite: Enrollment is restricted to graduate students.

HISC 219 - Radical Futures and Visual Culture (5)

Attempts to break through the pervasive dystopia and catastrophism of the present and open up speculative proposals regarding the not-yet and what's to come. Students critically consider methodologies of futurity among varieties of radical imaginaries grounded in the traditions of the oppressed—including Afrofuturisms, Indigenous, Chicanx/Latinx, multispecies, postcapitalist, and communist proposals—and place them in relation to threatening reactionary, neo-fascist tendencies.

Prerequisite: Enrollment is restricted to graduate students.

HISC 220 - Theories of Democracy and Dictatorship (5)

Although democracy is generally accepted as the best and most legitimate form of government, there is little agreement on what it means and how it should function. This course explores the concept and theories of democracy, with a focus on the “People”—who constitutes the people, how popular will is embodied, and how it may be expressed. Course explores debates about different models of democracy and examines how alternatives to democracy, such as dictatorship, autocracy, and tyranny, have been conceptualized. Also studies democracy and its “others” in relation to a constellation of concepts including power, equality, participation, accountability, resistance, legitimacy, and the rule of law.

Prerequisite: Enrollment is restricted to graduate students.

HISC 221 - Surveillance Culture: Privacy, Publicity, Art, and Critical Social Practice (5)

Examines how artists and activists are responding by using surveillance technologies to look over "big brother's" shoulder and to create greater awareness of privacy issues. Course pays particular attention to metadata, big data, bio-power, and the relationship between various forms of surveillance with respect to privacy, publicity, and free speech.

Prerequisite: Enrollment is restricted to graduate students.

HISC 222B - Theories of Late Capitalism (5)

Writing-intensive course based on readings in HISC 222A.

Prerequisite: Prerequisite(s): HISC 222A. Enrollment is restricted to graduate students.

HISC 223 - Althusser (5)

Through close readings of Althusser's major texts, this course systematically examines the political and philosophical thought of Louis Althusser and analyzes why he is one of the most important thinkers of the 20th century.

Prerequisite: Enrollment is restricted to graduate students.

HISC 224 - Marx's Capital Vol. 1 (5)

Investigates the many layers of Marx's Capital.

Prerequisite: Enrollment is restricted to graduate students.

HISC 226 - Liberty and Resistance (5)

Examines modern conceptions of liberty from a non-liberal perspective. Proposes to inquire into the concept of liberty as an individual and collective right by exploring its philosophical justifications and criticism in thinkers, such as Kant, Hegel, and Marx.

Prerequisite: Enrollment is restricted to graduate students.

HISC 227 - Carl Schmitt (5)

Provides a careful contextualization and a critically informed interrogation of the major works of Carl Schmitt, a figure at the center of many contemporary debates in political and legal thought.

Prerequisite: Enrollment is restricted to graduate students.

HISC 228 - Deleuze and Guattari: A Thousand Plateaus (Readings in Continental Theory) (5)

Students read Deleuze and Guattari’s “A Thousand Plateaus” (1980) to explore its contemporary relevance for mobilizing radical alternatives, for liberating bodies and ecologies, for undoing noxious universalities and majoritarian politics, and for remaking vision, technics, and affect. Course, co-taught by Professor Dimitris Papadopoulos and Professor Maria Puig de la Bellacasa. “A Thousand Plateaus” is examined within the context of poststructuralist thought through a detailed chapter-by-chapter analysis, alongside related works.

Prerequisite: Enrollment is restriced to graduate students.

HISC 229 - Walter Benjamin (5)

Investigates Walter Benjamin's thought through a close reading of some of the texts in his production that will enable students to address his conceptions of religion, politics, art, and history.

HISC 230A - Poetry, Language, Thought (5)

Introduces the relation between philosophy and poetics in some major 20th-century poets and thinkers.

Prerequisite: Enrollment is restricted to graduate students.

HISC 230B - Poetry, Language, Thought (5)

Writing-intensive course based on readings in HISC 230A.

Prerequisite: Prerequisite(s): HISC 230A, or permission of instructor.

HISC 231 - From System to Fragment (5)

Explores the rise and fall of the philosophical system. It proposes to inquire into the origin of the systematic philosophy, its development, its crisis, and its disintegration. This theoretical trajectory will be investigated together with alternative trajectories in thinkers, such as I. Kant, G. Fichte, Novalis, K.W.F. Schlegel, G.W.F. Hegel, M. Stirner, S. Kierkegaard, K. Marx, F. Nietzsche, L. Wittgenstein, T.W. Adorno, W. Benjamin, Empedocles.

Prerequisite: Enrollment is restricted to graduate students.

HISC 232 - Music, Social, Thought (5)

Examines the various modes through which intellectuals, artists, and other commentators have written about music as a socially situated art as well as the ways they have theorized the social through examinations of musical phenomena. Focus changes with course offering.

Prerequisite: Enrollment is restricted to graduate students.

HISC 236 - 20th Century Critical Theory (5)

Focuses on the critical-theoretical approaches that are associated with an interdisciplinary group of scholars affiliated with the Institute for Social Research, known as the "Frankfurt School". Surveys some of their most important contributions to the critique of capitalism, the authoritarian state, instrumental reason, culture, historical progress, law, and social organization. Discusses whether or not these different works fit together into a single tradition called "critical theory" and what theoretical and political implications the gesture of such naming entails. Investigates the normative foundations of critique and the philosophical influences that shape them. Course also explores the different "generations" of the Frankfurt School and map out the relationship of these thinkers to the traditions of Western Marxism, psychoanalysis, and social theory. Concludes by analyzing the limitations of critical theory and the intellectual challenges it faces in the contemporary world.

Prerequisite: Enrollment is restricted to graduate students.

HISC 237A - Historical Materialism (5)

Students read landmark works of classical and contemporary Marxism. Writings from Marx, Lenin, Trotsky, Lukacs, Gramsci, Adorno, Benjamin, Sartre, Althusser, Anderson, Jameson, and Zizek are addressed.

Prerequisite: Enrollment is restricted to graduate students.

HISC 237B - Historical Materialism (5)

Writing-intensive seminar based on HISC 237A. Students read landmark works of classical and contemporary Marxism. Writings from Marx, Lenin, Trotsky, Lukacs, Gramsci, Adorno, Benjamin, Sartre, Althusser, Anderson, Jameson, and Zizek are discussed.

Prerequisite: Enrollment is restricted to graduate students.

HISC 240 - Basic Principles of University-Level Pedagogy (2)

Provides training for graduate students in university-level pedagogy in general. Under the supervision of the department chair, coordinated by a graduate student with substantial experience as a teaching assistant.

Prerequisite: Enrollment is restricted to graduate students.

HISC 242A - Violence and Phenomenology: Fanon/Hegel/Sartre (5)

Study of the work and influence of Frantz Fanon from a range of viewpoints: existential, phenomenological, psychoanalytic, and political; a variety of genres: film, literature, case history, and critique; and a set of institutional histories: clinical, cultural, and intellectual.

Prerequisite: Enrollment is restricted to graduate students.

HISC 242B - Violence and Phenomenology: Fanon/Hegel/Sartre (5)

Writing intensive course based on readings in HISC 242A.

Prerequisite: Prerequisite: HISC 242A. Enrollment is restricted to graduate students.

HISC 244 - Racial Capitalism (5)

Includes readings of selected foundational texts in the intellectual lineage now known as "racial capitalism." Focus is on critical appropriation of and/or engagement with Marxism by key thinkers in what is now sometimes known as the "Black radical tradition." Authors may include Karl Marx, W.E.B. DuBois, Eric Williams, Oliver Cox, Walter Rodney, Stuart Hall, Cedric Robinson, Angela Davis, and/or Ruth Wilson Gilmore. Course is organized around the close reading of a set of key texts. In addition to developing knowledge of the substantive topics, the course is organized to facilitate the development of key skills in textual interpretation and analytic argumentation.

Prerequisite: Enrollment is restricted to graduate students.

HISC 246 - Black Radicalism (5)

Examines the history of black radical intellectual, cultural, political, and/or social movements. May take the form of a survey of different aspects of black radicalism or may focus on a particular individual, groups, period, etc.

Prerequisite: Enrollment is restricted to graduate students.

HISC 248 - Black Critical Theory (5)

Offers a critical introduction and overview of black critical theory across multiple fields and genres. Beginning with the question of race and ontology, students go on to consider questions of sovereignty and domination, freedom and liberation, identity and difference, and conclude with a study of race and the post-human. Major thinkers studied include: Sylvia Wynter, Achille Mbembe, Frantz Fanon, and W.E.B. DuBois, as well as contemporary figures, such as Frank Wilderson, Fred Moten, and Hortense Spillers.

Prerequisite: Enrollment is restricted to graduate students.

HISC 249 - Black Ecological Thought (5)

Surveys writings that bridge the divide between Black studies and environmental studies and, by extension, between environmental/ecological and postcolonial/antiracist movements. Considers the work of theorists, historians, and other academics, as well as that of activists engaged in on-the-ground struggle. Encourages an understanding of how colonialism and slavery and their legacies have been intertwined with the destructive ways of inhabiting the earth that have contributed to environmental crises facing the planet today. Draws upon such an understanding to assess present-day forms of critique and mobilization around racism and the environment.

HISC 252 - Poststructuralism (5)

French poststructuralism, with particular attention to the main philosophical texts of Jacques Derrida and Michel Foucault. Other representative theorists as well as critics of poststructuralism are studied as time permits.

Prerequisite: Enrollment is restricted to graduate students.

HISC 261 - Modern Intellectual History (5)

Survey of 19th- and 20th-century intellectual history that focuses on a cross-section of major works from Hegel to Levi-Strauss.

Prerequisite: Enrollment is restricted to graduate students.

HISC 262 - Critical Theory After Habermas (5)

Examines key works of Frankfurt School theorist Jurgen Habermas, his followers, and critics, on topics such as the public sphere, the theory of communicative action, power and domination, and religion and secularism.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students.

HISC 263 - European Philosophies of Difference (5)

Survey of European philosophies of difference, tracing the evolution of philosophical concepts and frameworks from Nietzsche, Kierkegaard, Bergson, and Heidegger through later 20th-century French post-structuralist, feminist, and Frankfurt School theory.

Prerequisite: Enrollment is restricted to graduate students.

HISC 264 - The Idea of Africa (5)

Examines the position of Africa in cultural studies and the simultaneous processes of over- and under-representation of the continent that mark enunciations of the global and the local. Themes include defining diaspora, the West as philosophy, and Africa in the global economy.

Prerequisite: Enrollment is restricted to graduate students.

HISC 265A - Biopolitics l: Problematics (5)

Focuses on the theorization of life and death in relation to power as proposed by 20th-century thinkers. Investigates how a biopolitical problematic has emerged and what insights into politics it offers. Explores the different ways in which thinkers have conceptualized biopolitics and its broader implications.

Prerequisite: Enrollment is restricted to graduate students.

HISC 265B - Biopolitics II: Corporealities (5)

Focuses on the exploration of biopolitics and necropolitics on the body. Examines how the body has become deeply integrated into power relations in modern society. Also explores different forms of corporeality that are conduits of political struggle and sites of transgression, resistance, and refusal.

Prerequisite: Enrollment is restricted to graduate students.

HISC 267 - Capital and Democracy in an Age of Finance (5)

What is the connection between capital accumulation and democracy in an era when creating financial assets has been decoupled from producing goods and services? Democracy can pose a threat to capital accumulation when an accelerated rise in asset values deepens historical inequality; financial markets can pre-empt such threats by becoming suddenly illiquid, thereby bringing on an event of disaccumulation unless/until restoring the confidence that capital markets have in their own continuing appreciation becomes the highest political priority of the state. This course examines what it means–both politically and theoretically–for this consensus to break down.

HISC 268A - Rethinking Capitalism (5)

Readings include works by speakers at UCSC's Rethinking Capitalism Initiative. Topics are: (1) financialization versus commodification (how options-theory has changed capitalism); (2) material markets (how this theory performs); and (3) valuation and contingency (how economies make worlds).

Prerequisite: Enrollment is restricted to graduate students.

HISC 268B - Rethinking Capitalism (5)

HISC 268A addressed changes in the theory and practice of capitalism as derivatives markets have become increasingly central to it. This course, which can be regarded as either background or sequel, concerns questions that surround recent debates about derivatives from the standpoint of broader developments in law, culture, politics, ethics, ontology, and theology. What would it mean to see questions of contingency and value as a challenge to late-modern understandings of these modes of thought?

Prerequisite: Enrollment is restricted to graduate students.

HISC 269 - Property and Possession (5)

Covers modern conceptions of property and their critique. Inquires into the concept of property as an individual right by exploring its philosophical justifications and criticism in thinkers, such as John Locke, Jean-Jacques Rousseau, Immanuel Kant, G.W. F. Hegel, Pierre-Joseph Proudhon, and Karl Marx.

Prerequisite: Enrollment is restricted to graduate students.

HISC 271 - Historical Temporalities (5)

Explores the critique of the unilinear historical time through the prism of Reinhart Koselleck, Walter Benjamin, and Ernst Bloch's attempts to reconfigure the concepts of time and history. During the course, students investigate how time affects both representation of reality and political praxis.

Prerequisite: Enrollment is restricted to graduate students.

HISC 272 - Deprovincializing Marx (5)

Course aims to rethink Marx against the grain, from the debate with Russian populists to Capital and the Grundrisse. Investigates formal subsumption not as a historical stage, but as a form that denotes how capitalism encounters, incorporates, and combines existing modes of production without creating a homogeneous world.

Prerequisite: Enrollment is restricted to graduate students.

HISC 275 - Sovereignties (5)

The guiding thought of this seminar is the question of what is, and is not, sovereign. Exploring a wide range of authors (such as Bodin, Hobbes, Spinoza, Rousseau, Kant, Schmitt, Bataille, and Fanon), this seminar addresses the most salient problems in recent discussions of sovereignty.

Prerequisite: Enrollment is restricted to graduate students.

HISC 276 - Critical STS (5)

How do science and technology enable or hinder ecological resurgence, cultural articulation, racial justice, and political liberation? Course examines current works from the multidisciplinary field of critical, cultural, and feminist STS (science and technology studies), exploring their relevance for a wide range of research in anthropology, race studies, art,

environmental studies, social studies and political theory, history, and philosophy. Beyond engaging with these recent works, students have the opportunity to learn foundational concepts and methods of STS and workshop written work.

Prerequisite: Enrollment is restricted to graduate students.

HISC 278 - Speculative Ecologies (5)

The planetary environmental debacle has exposed the damaging consequences requiring the re-invention of eco-social arrangements. Knowledge fields have responded by assimilating ecological concepts, frameworks, and methods into ways of thinking and acting in the world, sometimes taking the sciences as a normative blueprint for the realignment of social, political, and ethical values. Course identifies the reclaiming of a speculative orientation in research dedicated to creatively fostering a diversity of ecological futures and explores the relevance of speculative thought for research and writing.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students.

HISC 279 - Earth-Land-Soil: Geophilosophies in Troubled Grounds (5)

Explores the grounds for thinking that may be opened by engagements with earth, land, and soil as figures, places, and materialities in contemporary social and cultural theory. Engages with re-emergences of Earth as a ground for shared ecological consciousness and belonging and with critiques of planetary epistemic colonialisms that erase human and non-human experiences and conflicts from Indigenous land relations to the reclaiming of soil materialities. Amid anxieties for the planet's future, we give attention to tensions between place-based ecological attachments and the perpetuation of nativist and nationalist exclusions, and to how Earth, land, and soil world-makings may appear uneven, unequal and divergent, common and uncommon, as well as inevitably interdependent.

Prerequisite: Enrollment is restricted to graduate students.

HISC 282 - Art of Independence, Liberation and the Cold War (5)

Explores art movements that played a role in major struggles for independence and liberation from colonial regimes or reflected upon them subsequently. These art movements are examined though international art and media exhibitions. Case studies vary with each course offering. (Formerly HAVC 282.)

Prerequisite: Enrollment is restricted to graduate students.

HISC 283 - Autonomy and Autonomist Politics (5)

What is the meaning of autonomy in the midst of the current socio-ecological crisis? Is autonomist politics possible in the 21st century? The course discusses different dimensions of autonomy–self-determination, self-institution, self-valorization, self-definition—and focuses on the relevance and limits of autonomist politics across different social fields and across a multiplicity of unfolding translocal and transnational struggles. As we de-center, provincialize, and posthumanize autonomism, we examine the meaning of refusal and exodus in a contentious multi-polar geopolitical order and in a manifestly more-than-human world.

Prerequisite: Enrollment is restricted to graduate students.

HISC 285 - Topics in Political Theology (5)

Readings focus on the early 20th-century rediscovery of political theology; its use in theorizations of the Holocaust; and its return in 21st-centurty debates on empires, war, terror, enmity, reconciliation, fanaticism, human rights, political economy, and global catastrophe. Students cannot receive credit for this course and HISC 85.

Prerequisite: Enrollment is restricted to graduate students.

HISC 291 - Advising (2)

Independent study formalizing the advisee-adviser relationship. Regular meetings to plan, assess and monitor academic progress, and to evaluate coursework as necessary. May be used to develop general bibliography of background reading and trajectory of study in preparation for the qualifying examination.

HISC 292 - Practicum in Composition (5)

A practicum in the genres of scholarly writing, for graduate students working on the *composition* of their qualifying essay or doctoral dissertation.

Prerequisite: Enrollment is restricted to graduate students.

HISC 293A - Field Study (5)

Research carried out in field settings, based on a project approved by the responsible faculty. The student must file a prospectus with the department office before undertaking the research and a final report of activities upon return.

HISC 293B - Field Study (10)

Research carried out in field settings, based on a project approved by the responsible faculty. The student must file a prospectus with the department office before undertaking the research and a final report of activities upon return.

HISC 293C - Field Study (15)

Research carried out in field settings, based on a project approved by the responsible faculty. The student must file a prospectus with the department office before undertaking the research and a final report of activities upon return.

HISC 294A - Ind Study-Teaching (5)

Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency.

HISC 294B - Ind Study-Teaching (10)

Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency.

HISC 294C - Ind Study-Teaching (15)

Directed graduate research and writing coordinated with the teaching of undergraduates. Students submit petition to sponsoring agency.

HISC 295 - Directed Reading (5)

Systematic working through a prearranged bibliography which is filed as a final report at the end of the quarter with the signature of the instructor. Students submit petition to sponsoring agency.

HISC 295A - Directed Reading (5)

Systematic working through a prearranged bibliography which is filed as a final report at the end of the quarter with the signature of the instructor. Students submit petition to sponsoring agency.

HISC 295B - Directed Reading (10)

Systematic working through a prearranged bibliography which is filed as a final report at the end of the quarter with the signature of the instructor. Students submit petition to sponsoring agency.

HISC 295C - Directed Reading (15)

Systematic working through a prearranged bibliography which is filed as a final report at the end of the quarter with the signature of the instructor. Students submit petition to sponsoring agency.

HISC 296 - Special Student Seminar (5)

A seminar study group for graduate students focusing each quarter on various problems in the history of consciousness. A statement and evaluation of the work done in the course will be provided each quarter by the students who have participated in the course for that quarter, and reviewed by the responsible faculty.

HISC 297A - Independent Study (5)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

HISC 297B - Independent Study (10)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

HISC 297C - Independent Study (15)

Independent study and research under faculty supervision. Students submit petition to sponsoring agency.

HISC 298 - Doctoral Colloquium (5)

Under the supervision of a History of Consciousness faculty member, students finishing their dissertation meet weekly or bi-weekly to read and discuss selected draft chapters, design difficulties and composition problems.

HISC 299A - Thesis Research (5)

Prerequisite(s): advancement to candidacy.

HISC 299B - Thesis Research (10)

Prerequisite(s): advancement to candidacy.

HISC 299C - Thesis Research (15)

Prerequisite(s): advancement to candidacy.

HIS - HISTORY

Lower-Division

HIS 2A - The World to 1500 (5)

Surveys the rise of complex societies: the formation of classical civilizations in Afroeurasia and the Americas, post-classical empires and cross-cultural exchange, technology and environmental change, the Mongol Empire, and oceanic voyages and the origins of the modern world.

HIS 2B - The World Since 1500 (5)

Examines major world issues over the past 500 years. Topics include European expansion and colonialism, the Muslim empires, East Asia from Ming to Qing, the Americas, Africa, the scientific-technological revolution, decolonization, and modern environmental problems. Designed primarily for first- and second-year students, it provides a time frame for understanding events within a global framework.

HIS 4 - History of the Present: Investigating the Historical Origins of Contemporary Problems (5)

This course answers big questions about the present state of the world by excavating their historical development. Each year, instructors identify four new contemporary questions to explore through lecture, podcasts, readings, and videos. Students learn historical methodologies, including gathering and evaluating evidence, and developing compelling arguments and narratives. Students use these skills to investigate questions that matter to them through a collaborative research project, learning that everything has a history, including the issues grabbing our attention right now.

HIS 5B - Cult, Church, Empire: History of Early Christianity, 0-431 C.E. (5)

Christianity from its origins as a Jewish messianic movement, its expansion in multiple forms in the Greco-Roman world and the East, to its transformation into the major religion of the Roman and Byzantine empires. (Formerly offered as Early Christianity: First to Fourth Century A.D.)

HIS 5C - The Bible in History, Culture, and Controversy (5)

The Bible is a sacred text for Jews, Christians, and Muslims. It is also a cultural artifact of human history, preserving ancient debates about political and religious identity, slavery and immigration, sexual ethics, and environmental stewardship. What can we know about the Bible's origins and interpretations, the relationships between its texts and others, and the people who wrote it? Course introduces the history and literature of the Bible through close readings of famous portions in a manner that introduces literary-critical

methodologies for the study of religion. (Formerly Introduction to the Bible.)

HIS 5D - Religions of Abraham (5)

The phrase "Religions of Abraham" describes three religions—Judaism, Christianity, and Islam—that claim Abraham as chief patriarch. This course examines the formation of these diverse traditions chiefly through primary source material: literature, letters, and legal documents. The historical period of the ancient Near East from the height of the Babylonian Empire to the fall of the Umayyad Caliphate is covered, while students also learn about the variety of beliefs, texts, and practices that comprise these vibrant world religions.

HIS 9 - Introduction to Native American History (5)

Introduction to the interdisciplinary field of Native American Studies and the Indigenous experience. Topics include: history of United States-Indian relations; colonialism; sovereignty; identity; representation of Native Americans in popular culture; and contemporary efforts toward decolonization in indigenous communities.

Offered: Spring.

HIS 9C - California Indian History (5)

California encompasses the nation's largest Native population and the state's policies create a complex political and legal structure. This course provides a history of early California in the 18th and 19th centuries and a review of the urban Indian experience in the 20th century. The first part sets the historical foundation and traces early California Indian history. The second part shifts to 20th-century urban Indian issues and the contemporary moment for California Indian peoples. Covers topics such as Indian labor exploitation, genocide, termination, relocation, and federal recognition. (Formerly FMST 13.)

HIS 10A - United States History to 1877 (5)

Focuses on the building of British American colonies and the establishment, disintegration, and reconstruction of the nation with an emphasis on how class, race, ethnicity, and gender impacted colonial development and structured the nation's agenda and the definition of citizenship.

HIS 10B - United States History, 1877 to 1977 (5)

Surveys the political, social, and cultural history of the United States from 1877 to 1977. Focuses on national politics with emphasis on how class, race, ethnicity, and gender changed the nation's agenda.

HIS 11A - Latin America: Colonial Period (5)

Introduces the social, cultural, economic, and political history of the New World through a close examination of the process of European conquest in the 16th century and its consequences for both native and settler peoples. Medieval and Renaissance European and African backgrounds; Inca, Maya, Aztec, plains, woodland, and tropical rainforest native American societies; processes of military and cultural conquest; epidemics and ecological changes; native resistance and the establishment of the fundamental institutions of colonial society.

HIS 11B - Latin America: National Period (5)

An introduction to the study of Latin American history from the Independence Wars in the early 19th century to the present. Topics include changing economic models of development, U.S. role, rural and urban life, women, nationalisms, populism, revolution, the military in politics, and the problem of democracy.

HIS 12 - Introduction to Latino American History (5)

Introduces students to the history of U.S. Latinos drawing on the experience of Central Americans, people of Mexican descent, Puerto Ricans, Dominican Americans, and Cuban Americans. Emphasizes international processes that fundamentally shape U.S. Latino communities.

HIS 13 - Introduction to American Religious Culture (5)

Introduction to the many communities found within the American religious landscape, balancing extraordinary diversity characterizing American pluralism against the dominant religious culture. Proceeds historically, engaging major problems and developments including utopianism, the rise of evangelicalism, religion and reform, manifest destiny, secularization and modernity, and the intersection of politics and religion.

HIS 15 - The United States of America from its Founding through Our Time (5)

Takes students through five critical moments in United States history: the American Revolution, the Civil War, the New Deal, the Civil Rights era, and the years following the attack on the United States on Sept. 11, 2001. Designed for non-majors.

HIS 20 - U.S. Popular Music Movements (5)

Focuses on the development of popular music genres in the United States and the social contexts that have produced them, from the 19th Century to the present. Promotes an understanding of how music influences and reflects our political lives.

HIS 31A - African History to 1900 (5)

Introduces students to African History, from the very beginning of Homo sapiens to the dawn of European colonialism across the continent. In this long journey, we are guided by the contributions brought by Africanist historiography to history as a field of knowledge and to the public debate. Course considers the way we think of history, how it impacts non-Western societies, and how learning about the African past enables us to better understand the historical roots of our time. To achieve this, course looks attentively at African societies from within.

HIS 32A - Islam in Africa and the African Diaspora (5)

Introduces the History of Islam, its spread over Africa, and the role of the African diaspora in making Islam a global religion. Course delves into the role of African and African diasporic communities in globalizing Islam, and considers the relationship between Islam and local cultures to understand how religious unity and cultural diversity within Islam interact. It also aims to develop tools to interpret how race and ethnicity have been used by and applied to African Muslims within the global Muslim community.

HIS 39D - Floods, Epidemics, and Famine: Environmental History of the Early Modern Atlantic World (5)

Familiarizes undergraduates with environmental history as a discipline, as well as introduce them to the early modern period and the Atlantic World as a region of study by focusing on themes such as climate shifts and crises, the spread of epidemic disease, and the relationship between the environment and colonialism. Course does not assume previous experience with history courses and is intended to be a broad survey encompassing several regions of study. It is arranged both thematically and geographically and emphasizes environmental change throughout the early modern period to give a broad geographical overview of major environmental topics during the 15th through 18th centuries.

HIS 39E - Monsters, Media, and the History of the Supernatural in Modern Japan (5)

Study of modern Japanese history from the late Edo period to the present day. Examines the cultural lives of monsters and transformations in meaning through major events in Japanese history. Examines the intellectual, cultural, and social histories of monsters and their entanglement with the emergence of science and folklore; the formation of the nation-state; racism, politics, and war; urbanization and kinship structures; and capitalism and virtual worlds.

HIS 39F - Expansion, Power, and Change: Christian World Missions and Missionaries (5)

Course stretches students' reflections on the nature of Christian mission and the work of missionaries, their imbroglio with and involvement in state and society, and how historical sourcing may impact the way we see things, lives, and our past. Begins in the 1st century BCE where Christianity emerged in West Asia and is organized chronologically through the 21st century. Course examines Christianity's expansion and external power and the competing views of it as rebellious, revolutionary and justice-oriented momentum versus a repressive conversion institution working politically, militarily, and economically. Also examines how the perception and strategy of Christian mission changed in time, region, groups, and individual missionaries, and how Christian mission, as a power, contributed to the regional and global changes.

HIS 39G - History in Action: Oral History in Practice (5)

Introduces the methodology of oral history as well as its varying applications for the public humanities. Students learn about the ethical, practical, and methodological strategies for creating an oral history project, as well as initiate at least their first interview by the end of the course.

HIS 39H - U.S. Bases in Asia Pacific: Power, Pollution, and Protest (5)

Survey of U.S. military bases and influence in the Asia Pacific Region since the end of the Second World War. Using the geographic scope of PACOM (Pacific Command), the course covers an area including Japan, Guam, Hawai'i, and Korea. Despite the failure of President Obama's "Pivot to the Pacific" campaign, there remains a long history of U.S. presence in and across the Pacific Ocean; sometimes this presence is in the form of U.S. soldiers stationed on bases abroad, sometimes this presence is landscape altering in the form of nuclear testing. Students are introduced to key themes in the creation of "America's Lake," as well as movements of resistance against the U.S. empire.

HIS 39I - Social and Economic History of U.S.-Mexico Borderlands, 1848-Present (5)

Examines the history of lived experiences and struggles throughout the U.S.-Mexico Borderlands since 1848. Examines the region's contested legacies of settler colonialism, border imperialism, and transnational resistance from the perspective of Indigenous communities, Mexican-descended peoples, and migrant laborers. Uses historical literature, film, and primary sources to assess how these communities have responded to the region's shifting borders and why it is significant in our contemporary political climate.

HIS 40A - Early Modern East Asia (5)

Surveys the history of East Asia from 1500 to 1894. Covers political, social, economic, and cultural histories of China, Japan, and Korea with the goal of perceiving a regional history that encompassed each society.

HIS 40B - The Making of Modern East Asia (5)

A broad introductory survey of the political, social, economic, philosophical, and religious heritage of modern China, Japan, and Korea. Emphasis on the historical foundations of modern nationalism, the colonial experience, and revolutionary movements.

HIS 41 - The Making of the Modern Middle East (5)

History of the modern Middle East from 1800 to the present, with special reference to the 20th century and forces which have shaped the area. The impact of imperialism, nationalism, and revolution in the area, with particular attention to the history of four countries: Turkey, Iran, Egypt, Israel.

HIS 44 - Modern South Asia, 1500 to Present (5)

Provides an introductory survey of South Asian history and society from the beginning of the 16th Century until the dawn of the 21st Century. Students gain an understanding of major events and long transformations in society, economy, culture, and politics.

HIS 50 - When Pharaohs Reigned: The History of Ancient Egypt (5)

Introduces the political and social history of ancient Egyptian civilization from the Predynasitic through the end of the Pharaonic period. (Formerly Pyramids and Papyrus: the History of Ancient Egypt.)

HIS 51 - Pyramids of Earth: Religion and Symbol in the Ancient World (5)

Investigates the use of the pyramid architectural form in ancient societies across the globe, including Egypt, Mesopotamia, the Americas, and Southeast Asia. The social, political, and religious motivation for building pyramids is explored.

HIS 58 - From Pirates to Refugees: The History of the Modern Mediterranean (5)

Covers the history of the Mediterranean from the end of the Ottoman Empire to the present. It focuses on the role of empire in shaping patterns of economic and cultural exchange.

HIS 61 - Classical Mythology (5)

Introduces the philosophy of myth, and surveys classical Greek mythology. Students explore the mythic mode of thinking and its distinguishing characteristics as well as the repertoire of Greek myths and their cultural contexts.

HIS 62A - Classical World: Greece (5)

An overview of Greek history from the beginnings through the Hellenistic period, with emphasis on the Archaic and Classical periods (ca. 800 B.C. through 323 B.C.).

HIS 62B - Classical World: Rome (5)

A lecture course offering an overview of Roman history and civilization from the legendary founding of Rome in 753 B.C. to the collapse of the Roman Empire's central administration in the West in 476 A.D.

HIS 65B - Plagues, Peasants, and Pirates: Late Medieval Europe, 1000-1500 (5)

Reviews major social, political, economic, and cultural developments in Europe from 1000 to 1500 and themes including gender, warfare, ethnicity and religion, through primary sources and secondary readings. Primary focus is Western Europe: England, France, the Iberian Peninsula, the Holy Roman Empire, the Low Countries, and Italy. (Formerly Europe, 1000-1500.)

HIS 70A - Modern European History, 1500-1815 (5)

Surveys the economic, social, cultural, and political history of Europe since the late 15th century: 1500-1815. Course 70A is not a prerequisite to course 70B.

HIS 70B - Modern European History, 1815-present (5)

Surveys the political, social, and cultural history of Europe from the era of the Industrial Revolution to the beginning of the second millennium. Course 70A is not prerequisite to 70B.

HIS 74 - Introduction to Jewish History and Cultures (5)

Surveys 3,000 years of Jewish history. Themes include origins of the Jews in the ancient world, formation and persistence of the Jewish diaspora, coherence and diversity of Jewish experience, Jewish narrative and textual traditions, interaction between Jews and other cultures, productive tensions between tradition and modernity in Jewish history and literature.

HIS 74A - Introduction to Middle Eastern and North African Jewish History: Ancient to Early Modern (5)

Popular media present Muslims and Jews as age-old enemies; this is far from the truth. Through primary sources, secondary texts, and films, students examine this fraught and politicized history, challenging conventional narratives of the region and its Jewish population.

HIS 74B - Introduction to Middle Eastern and North African Jewish History, 1500-2000 (5)

Surveys modern Jewish history from Morocco to Iran, 1500-2000. Studying these populations through original documents, scholarly works, and literature imparts a unique perspective on both modern Jewish history and that of the region, challenging and complementing standard narratives of each.

HIS 74G - Graphic Novels and Jewish History (5)

Graphic novels are a powerful conduit for conveying historical information. Students examine a variety of graphic novels touching on Jewish historical themes and geographies, including: medieval Judeophobic persecution, crypto-Jews in the American southwest, a Sephardic boxing hero in 18th century London, the experiences of mid-20th century Algerian Jews under French colonial rule, the Holocaust both in Europe and as it touched North Africa, nostalgia for the Iraqi Jewish past, Jewish experiences in British Mandate Palestine, and more. Students gain in-depth contextualization for these works and themes, and become well-versed in major themes and debates in Jewish history.

HIS 75 - Film and the Holocaust (5)

Examines a series of distinguished documentary and feature films about the destruction of European Jewry. Each film is placed in its historical context, and wherever possible, the readings include the original documents on which films were based. Emphasis is placed on the strategies the filmmakers used to address the problem of representing genocide without succumbing to mere melodrama.

HIS 76 - Introduction to the Holocaust (5)

Investigates the genocide of the Jews from 1933 to 1945 within its broader historical context, including anti-Semitism, the Great Depression, Nazi-Soviet relations, and World War II. Examines how the Holocaust unfolded in Europe as well as

its impact on Jews in North Africa and the Middle East. (Formerly The Holocaust: A Global Perspective.)

HIS 78 - Modern Authoritarianism in Europe and Beyond (5)

Examines modern authoritarianism and mass dictatorship as distinct political forms that promote and draw their strength from popular support and mobilization. Students study how non-democratic leaders are able to attain, exercise, perpetuate, and misuse their power.

HIS 80C - Global China (5)

Introductory and collaborative history course that examines the social dimensions of globalization through a focus on China since 1500. Asking how China shaped and was shaped by interactions with major world regions—Europe, the Americas, and Asia—course discusses how networks of trade, imperialism, revolutions, migration, popular culture, and capitalism created significant global conjunctures and interdependencies with lasting impact. In addition, course offers instruction on how to collaborate with others effectively to achieve common goals. Students apply knowledge and techniques learned to a series of group projects.

HIS 80D - Visualizing Modern East Asia (5)

Introduction to modern East Asian history, with a specific focus on the nations of China, Japan, and Korea. Students investigate major historical questions about modernity, imperialism, colonialism, nationalism, gender, and labor from the late 19th century to the late 20th century. This course is also designed to explore contemporary media, looking at how visual reproductions become instruments to remember the past. Through the exercise of visualizing East Asian history, the course aims to help students make critical assessments of mass media information on East Asia available to the American public.

HIS 80X - History of the Modern Civil Rights Movement (5)

The civil rights movement of the 1950s and 1960s, also referred to as the Second Reconstruction, was one of the most consequential periods in United States history. This course examines the many facets of the movement, focusing on the strategies, grassroots campaigns, and the many rank-and-file women and men who fought for freedom, liberation, and justice. (Formerly Civil Rights Movement: Grassroots Change and American Society.)

HIS 80Y - World War II Memories in the U.S. and Japan (5)

Examines how the meaning of such issues as war origins, war responsibility, the atomic bomb, reparations, and racism have been subjects of contention in postwar U.S. and Japan. Students explore the relations between history, memory, and contemporary politics.

HIS 81 - Science in the Colonial World (5)

Introduces students to the history of science in colonized lands. Covers topics such as natural history collecting, medicine, bodily experimentation, botanical gardens, healing plants, and agriculture. Students learn about local colonial scientific production and anti-colonial resistance by focusing on case studies from Southeast Asia, with supplemental readings on colonial Caribbean, Latin American, and North African sites, as well as present-day North American indigenous territories. Students also investigate the possibilities for decolonizing science itself.

HIS 82 - California Gold Rush in Global History (5)

Course seeks to reframe a paradigmatic event in the history of California and the United States as an event in global history. Rather than assume the spatial and temporal boundaries of the Gold Rush, students explore different possible answers to the questions of where and when the Gold Rush happened, why it matters, and for whom. Students retrace connections and make comparisons between events in California and other places that often fall beyond the purview of "California History" as conventionally understood. (Formerly Global History of the California Gold Rush.)

HIS 90A - Nuclear Pacific (5)

Examines the history of nuclear weapons development, nuclear weapons use, nuclear testing, and nuclear power in the Pacific region from 1942 to the present. Students do research on nuclear science, medicine, energy, and weapons testing and their social, political, demographic, and environmental impacts.

Prerequisite: Enrollment is limited to first-year students.

HIS 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

HIS 100 - Historical Skills and Methods (5)

Designed to introduce history majors to historical methods and provide preparation for exit seminars. Students develop critical reading, historical analysis, research, and disciplinary writing skills.

Prerequisite: Enrollment is restricted to proposed and declared history majors, or by permission of the instructor.

HIS 101C - Oceans in World History (5)

Oceans, human communities, and the variety of relations between societies have been linked closely in world history. This course focuses on the three most well-researched and, historically, most important oceanic worlds--those that developed to link the regions bordering the Mediterranean Sea, Indian Ocean, and Atlantic Ocean.

HIS 139M - Murderers, Witches, and Rebels: Depicting

Difference in Colonial Latin America (5)

Familiarizes students with depictions and descriptions of identity during the colonial period in the Spanish Americas across four major regions: Central Mexico, the Yucatán Peninsula, Peru, and New Mexico. Themes such as the casta system, Indigenous survivance and resistance, the changing role of women in public and private spheres, the role of Black confraternities and slave rebellions. The ways society became increasingly diverse in terms of class, gender, and race are highlighted, as well as the impact of invasion, subsequent military violence, and how colonial legal system impacted communities. Students examine how different identities emerged and how they experienced conflict and transformation as a result of political, social, cultural, economic, and religious change.

HIS 186A - Public History Workshop (5)

From podcasts to museum exhibitions, public history takes many forms. This course gives students hands-on experience creating a public-history project designed to meet the needs of a community organization. Each iteration of the course focuses on a different project and community partner.

HIS 101D - World History of Science (5)

Human curiosity and inquiry changed and varied widely across Eurasia. This course surveys how the curiosity and inquiry were framed in three major civilizations (China, Islam and Judeo-Christian) from the Mongol conquest of Eurasia in the 13th century to the beginning of industrial capitalism in the 19th century.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HIS 101E - Global 1930s (5)

Explores the turbulent 1930s from a global perspective. Students consider the great events of the decade--the Great Depression, the consolidation of communism, and the rise of fascism--within the context of global connections and forces, including those fostered by imperialism and various forms of internationalism. (Formerly course 196A.)

HIS 101F - Global Environmental History (5)

Provides overview of global environmental history from prehistoric times to the present. Explores how Homo Sapiens became the dominant species on the planet, how some of them managed to grow food and domesticate animals, and how these agrarian or nomadic societies developed states or even empires. Explores what many have called the Anthropocene Epoch in the evolution of Earth.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

HIS 101H - The Horse in World History (5)

Before the 20th century, the horse was, for humans, the most important animal: quickening the pace of travel; facilitating hunting and herding; providing traction for agriculture and industry; enabling the formation of cavalries that projected military power. The horse and rider became the subject of powerful myths, from the Arthurian legends of the Middle Ages through the American Western of our own time. Only with the advent of modern engines and motors did role of the horse begin to recede in human history. Course examines the human/equine partnership over a period of 6,000 years, from the beginning of domestication to the middle of the 20th century.

HIS 103C - New Religious Movements (5)

Course offers a deep exploration of New Religious Movements, both ancient and modern. How are New Religious Movements born? What determines whether they grow, thrive, or die? How do they interpret the past to create new theologies? Students read sources from a variety of movements, from the UFO-based Raelian movement to the Gnostic Church, alongside appropriate secondary literature. In teams, students also select a NRM to study in depth throughout the quarter and present their research at the end of the course.

HIS 104C - Celluloid Natives: American Indian History on Film (5)

Examines how American Indian history and culture has been portrayed in Hollywood films, with an emphasis on films that represent Native Americans over the broad spectrum of Native American/white relations.

HIS 104D - Museums and the Representation of Native American History, Memory, and Culture (5)

Provides an historical overview of the relationship between American Indians and museums. Current issues and practices in museums are explored, primarily those associated with ethics, collecting practices, exhibitions, education/interpretation, and administration/governance.

HIS 105 - Nations and Nationalism (5)

Provides an historical, comparative, and theoretical exploration of the development of nations and nationalism. Emphases include the historical formation of nation-states, modernization, colonialism, decolonization, nations and globalization, and the intersections between ethnicity, race, religions, and nationalism.

HIS 106A - Vietnam War Memories (5)

Compares memories and interpretations of war in Southeast Asia by diverse groups in France, America, and Vietnam. Topics include war origins, military strategies, propaganda, combat, civilians, media, activism, MIAs, refugees, mixed race children, memorials, textbooks, films, music, literature, and art.

HIS 106B - Asian and Asian American History, 1941-Present (5)

Analyzes immigration, race relations, war, gender ideology, family life, acculturation, political activism, interracial marriage, multiracial identity, and cultural representations between 1941 and the present. Emphasis on discussion, writing, research, and group presentations.

HIS 109A - Race, Gender, and Power in the Antebellum South (5)

Examines how ideologies of race and gender shaped the development of slavery and empire in the American South from European colonization to the eve of the American Civil War.

HIS 110A - Colonial America, 1500-1750 (5)

Explores the social, economic, cultural, and political development of British North America from the first European/Amerindian contacts in the late 16th century through the establishment of a provincial British colonial society. Course 110A is not a prerequisite to course 110B.

HIS 110B - Revolutionary America, 1740-1815 (5)

Explores the political, social, economic, and cultural development of British North America from the first stirrings of resistance to the establishment of the U.S. Course 110A is not a prerequisite to course 110B.

HIS 110D - The Civil War Era (5)

Social, political, and economic history of the American Civil War and Reconstruction, focusing on the war's changing nature and significance, emancipation, and the postwar struggle over the future of the South and the nation.

HIS 110E - Rise of the Machines: Technology, Inequality, and the United States, 1877 to 1914 (5)

History of the U.S. during what was perhaps its most socially turbulent era, the period following Reconstruction through the First World War. What did it mean to be a nation in the post-Reconstruction era? How did a country that had only recently unified itself under one system of labor now resolve the question of national identity? Was America truly a nation by 1914?

HIS 110F - World War USA: The United States from 1914 through 1945 (5)

Between the First and Second World Wars, American society accepted the need for a regulatory state to save capitalism from itself. Takes an in-depth look at many aspects of U.S. politics and culture during these years.

HIS 110G - Strange Days: The USA and its National Security State, 1945-1991 (5)

From the Good War to the Cold War, the Sixties to the rise of the New Right, the post-1945 American experience has been one of extremes. This survey course looks for evidence of commonality during those times. (Formerly Age of Extremes: The United States During the Cold War, 1945 to 1991)

HIS 110H - Greater Reconstruction: Race, Empire, and Citizenship in the Post-Civil War United States (5)

Examines how the consolidation of United States sovereignty in North America and the establishment of an overseas empire during the period between the conclusion of the Civil War and the Phillippine-American War reshaped conceptions of race and citizenship.

HIS 112 - American Feminist Thought, 1750-1950 (5)

Traces history of feminist thought in the United States from the 18th century Enlightenment to the mid-20th century. Focusing on questions of social identity, gender difference, and legal/political status, examines writings of philosophers, activists, novelists, and ordinary women that challenged religious, political, and scientific beliefs underlying gender inequality.

HIS 113C - Women and American Religious Culture (5)

Historical introduction to religious culture of U.S. as experienced and created by women. Explores religious ideas about women, the treatment of women by mainstream institutions and religio-social communities, and female religious leaders and followers. Takes an explicitly feminist analytical approach and uses a variety of texts, including historical and literary scholarship, sacred texts, fiction, autobiography, material artifacts, visual art, and music.

HIS 114 - Market Revolution in Antebellum U.S. (5)

Examines the cultural, political, and environmental upheaval associated with antebellum market revolution. Topics include: markets and U.S. territorial expansion; reform movements that coalesced around disputes over what should, and should not be sold (e.g., antislavery activism; anti-prostitution reform movements).

HIS 116 - Slavery Across the Americas (5)

Examines the exploitation of African people as slaves throughout European colonies in the Americas. How did slavery affect slaves, enslavers, and their societies? Emphasizes the diversity of slave regimes and their importance for shaping American life for all.

HIS 116A - Unchained Memory: Slavery and the Politics of the Past (5)

Investigates the representation of slavery with scholarly and vernacual histories, focusing on the United States. Students examine representations of slavery in scholarly works, public-history venues like museums and historic sites, popular culture, and artistic productions. Students develop their own scholarly research into the history of slavery grounded in primary and secondary sources.

HIS 117 - Wired Nation: Broadcasting & Telecommunications in the US from the Telegraph to the Internet (5)

Explores the history of telecommunications systems in the US starting with the telegraph, the telephone, wireless telegraph, radio, television and the Internet. Students learn about the development of these systems and the cultures that they foster.

HIS 117A - From the Player Piano to Pandora (5)

Explores the history, culture, and politics of the distribution of recorded and live sound from the 1870s through the present.

HIS 118 - The Global Cold War, 1945-1991 (5)

Explores the history of the Cold War from a global, multinational perspective. Begins with the opening salvos between the United States and the Soviet Union in 1945, and concludes with the collapse of the latter empire in 1991.

HIS 118A - Conspiracy Planet: How Conspiracies, Conspiracy Theories, and Conspiracy Scandals Shape History (5)

Explores the history of a principal obsession of our age: the conspiracy. Focuses on the people who love them most: conspiracy theorists. Millions of people around the world believe in conspiracy theories. Why?

HIS 119 - Indigenous Feminisms (5)

Explores issues central to Indigenous women's life experiences and Native feminist thought. Students consider the concerns and methodologies of Native feminisms—theories and actions that highlight how settler colonialism is a fundamentally gendered process. Engages in foundational discussions of Native feminisms, settler colonial theory, and feminist methodologies. Course content focuses on communities in settler states currently known as the U.S. and Canada. Covers topics such as reproductive justice, gendered violence, cultural reclamation, and rematriation. (Formerly FMST 119.)

HIS 120 - W.E.B. Du Bois (5)

Examines the thought and activities of W.E.B. Du Bois across changing historical circumstances. Considers the ways Du Bois's work has been used in the present to address issues such as racism and imperialism.

HIS 121A - African American History to 1877 (5)

Surveys the history and freedom struggle of African Americans from early beginnings in indigenous Africa to the end of Reconstruction. Topics include the North American colonization project, the transatlantic and domestic slave trade, seasoning, slavery and abolitionism, women’s resistance, the Civil War, and post-emancipation.

HIS 121B - African American History, 1877 to the Present (5)

Surveys the history of African Americans from the post-Reconstruction and Jim Crow era to the present. Topics include northern and westward migration, women’s suffrage and activism, the world wars, black nationalism, the Harlem Renaissance, the Great Depression, the Civil Rights and Black Power Movements, and black activism in contemporary America. (Formerly African American History: 1877 to the Present.)

HIS 122A - Jazz and United States Cultural History, 1900-1945 (5)

Explores the meaning of jazz in United States society and as a U.S.-based art form in other societies. Examines the social and cultural forces that have produced different jazz styles and the various ways that social conflicts and ideals have been displaced onto the music.

HIS 122B - Jazz and United States Cultural History, 1945 to the Present (5)

Explores the meaning of jazz in United States society and as a U.S.-based art form in other societies since 1945. Examines the social and cultural forces producing jazz movements and the social transformations, conflicts, and ideals read into the music.

HIS 123 - Immigrants and Immigration in U.S. History (5)

Introduces U.S. immigration history from the colonial era to the present, with emphasis on the recent past. Particular attention given to changing immigration patterns; the character of the immigrant experience; and the range of responses to immigration, including nativism.

HIS 124A - Panama Canal and U.S. Empire (5)

Explores the technological, environmental, social, political, and diplomatic history of a critical link in global transportation networks: the Panama Canal. The Canal has long been celebrated as one of the great triumphs in the history of technology and engineering. But this triumphalism obscures a more complicated history of struggle over issues including land, water, health, race, citizenship, and sovereignty. Course explores the Panama Canal’s fraught history from the construction years of 1904-1914 through the restoration of full control to Panama in 1999.

HIS 128 - Chicana/Chicano History (5)

A survey course on the social history of the Mexican (Chicana/o) community and people in the U.S. through the 20th century. Themes include resistance, migration, labor, urbanization, culture and politics.

HIS 130 - History of Modern Cuba (5)

Covers from the Cuban sugar revolution (late 18th century) to the socialist revolution and its aftermath (1959–present). It is intended to be not only a modern history of Cuba but also a broader history of Latin America through the case of Cuba.

HIS 131 - Women in Colonial Latin America (5)

Introduction to the social history of Latin America through a focus on the inflections of class and ethnicity on gender in this region. First six weeks focuses on the colonial period. The last three weeks covers the 19th and 20th centuries.

HIS 134A - Colonial Mexico (5)

Covers the social, cultural, economic, and political history of colonial Mexico (New Spain). Special attention paid to colonial identity formation, religion, and labor systems. Begins by examining indigenous societies prior to the arrival of Europeans and concludes with Mexico's independence movement in the early 19th century.

HIS 134B - History of Mexico, 1850 to Present (5)

Social, cultural, economic, and political history from the triumph of Liberalism to the present day, focusing on four key periods: the dictatorship of Porfirio Diaz (1900–1910), the armed phase of the Revolution (1910–1920), the

consolidation of revolutionary programs and a single-party democracy (1920–1940), and the developmentalist counter-revolution since 1940. Provides background for understanding the Mexican diaspora to the U.S.

HIS 137E - Literary Culture in Africa (5)

Introduces students to textual culture in Islamic Africa, its libraries and current archives, discusses strategies employed by African authors to make their writings more effective in producing social and political outcomes, and analyzes texts beyond their informational surface, delving into their social and cultural contexts.

HIS 139C - Queer Pasts: A Radical Telling of LGBTQ History in the United States (5)

Critically explores how to preserve, represent, and study the history of queer and gender non-conforming people. Focuses on non-traditional and digital archives, oral history, and original research.

HIS 139G - Herbs, Potions, and Viruses: History of Medicine and Public Health in Modern China (5)

Introduction to the history of medicine and public health in China (primarily the 20th century) to help students gain a sense of modern Chinese history and make sense of the ongoing COVID-19 pandemic. Reviews how the pandemic has fundamentally changed life, including discussions of state governance and the public health system and the allocation of medical resources and the role of Traditional Medicine (TCM). Surveys the historical development of medicine in 20th-century China, focusing on the dissemination of Western medicine, the evolvement of TCM, and the development of the public health system. Reviews the 1911 Manchurian plague, the cholera pandemic in the 1960s, the 2002 SARS outbreak, and the present-day COVID-19 pandemic.

HIS 139J - Britain Made Digital: A History of the Nation and its Empire (5)

Examines modern British history from the consolidation of the British Isles into one United Kingdom to the divisions highlighted by the Brexit vote. Course weaves between domestic Britain and its empire, demonstrating their interrelatedness and dependence and touches on a wide area of the globe and the experiences of many peoples aside from the British. Course also aims to give students a full introduction to digital public history projects. Students asked at several stages of the course to critically examine how the presentation of historical material is affected by digital content, different media types, and engagement with various audiences.

HIS 139L - A More Perfect Union (5)

Presents an introduction to the history of the federal government and its handling of racism and civil rights during the 20th century. Course content is delivered through bi-weekly lectures along with an occasional seminar discussion of assigned readings. The goal of this class is to provide students with an understanding of how the United States evolved over the course of the 20th century and how government expansion was both influenced by and transformed institutional racism. Likewise, this class emphasizes the role of class, gender, and racial politics in steering the course of federal policies.

HIS 139M - Murderers, Witches, and Rebels: Depicting Difference in Colonial Latin America (5)

Familiarizes students with depictions and descriptions of identity during the colonial period in the Spanish Americas across four major regions: Central Mexico, the Yucatán Peninsula, Peru, and New Mexico. Themes such as the casta system, Indigenous survivance and resistance, the changing role of women in public and private spheres, the role of Black confraternities and slave rebellions. The ways society became increasingly diverse in terms of class, gender, and race are highlighted, as well as the impact of invasion, subsequent military violence, and how colonial legal system impacted communities. Students examine how different identities emerged and how they experienced conflict and transformation as a result of political, social, cultural, economic, and religious change.

HIS 140B - History of Qing China, 1644-1911 (5)

Introduces students to how Qing China arose, expanded, and struggled to enter the modern world. Focuses on what the Qing empire had in common with other agrarian empires across Eurasia, commercialization and communication networks, elite mobility and peasant revolts, political legitimacy of the alien rule, maintaining social order (such as merchants' control and gender segregation), massive population growth and internal migration, as well as its conflicts with the industrial West.

HIS 140C - Revolutionary China 1895-1960 (5)

Explores history of China from the late 19th century to the early years of the People's Republic, focusing on the end of imperial rule, the sources and development of revolution, and early attempts at at socialist transformation.

HIS 140D - Recent Chinese History (5)

Explores history of China from establishment of the People's Republic of China to the present, focusing on competing strategies of socialist transformation, urban/rural relations, and the effects of the post-Mao economic reforms.

HIS 140E - Women in China's Long 20th Century (5)

Introduces changes in Chinese women's lives--and changes in shared social ideas about what women should do and be--from the mid-19th century to the present. When we foreground gender as a category of analysis, how does history look different?

HIS 142 - History of Hong Kong and Taiwan: Two Peripheries of China (5)

Studies the history of two peripheries of China, Hong Kong and Taiwan, from the earliest written records to the present. These two places were at various times part of China, and, to some, are still parts of China. However, these two have historical trajectories distinct from China and have developed

their unique positions in the world. This course invites students to think about Taiwan and Hong Kong, not only their local histories and development, but also their role as two peripheries of China in Chinese nationalism and in U.S-China relations.

HIS 143B - History of the Philippines, 1815 to the Present (5)

Examines Philippine history from the early 19th century through the present. Though the course timeline begins in the Spanish colonial period, the class interrogates understandings of the pre-colonial past and how these have informed Philippine nationalism, intellectual history, social sciences, and more. Students learn about debates in the field and become familiar with scholarship from the Philippines. Students also reflect on the political urgency of the contemporary moment and how transnational flows of migrants, activism, and cultural production have changed dominant approaches to historical studies on the archipelago.

HIS 146A - Colonial South Asia 1750-1947 (5)

Introduces key transformations--political, economic, social, and cultural--in colonial Indian history. The focus is on the processes, institutions, and ideas that shaped colonial power and resisted it.

HIS 147A - History of Premodern India (5)

A study of religions (Vaisnavism, Tantrism, Islam, Sikhism), art, literature, and social movements in their historical contexts from 1000 A.D. to 1800.

HIS 147B - Political and Social History of Modern South Asia (5)

Social, political, and religious movements in the colonial and postcolonial contexts of the 19th and 20th centuries in modern and contemporary South Asia.

HIS 147C - South Asia in the 20th Century (5)

Introduces historical change in 20th-century South Asia. Topics include: modernity, gender, state formation, nationalism, democracy, and development. Course material includes interdisciplinary secondary works, primary reading by important political actors, and films. Prior knowledge of South Asia is useful, but not necessary.

HIS 147D - Intellectual History of South Asia (5)

Highlights the power of ideas in making South Asia modern. Focuses on the 19th and 20th Centuries. Ideas assessed include liberalism, Marxism, Hindu revivalism, Islamic jihad,democracy, nationalism, secularism, and development.

HIS 147E - Imperial Sport: Cricket in South Asia, 1800s to the Present (5)

Examines cricket's history as an imperial sport for princes and merchants of South Asia and its use to socialize with and eventually compete with British colonial officials. Also studies its emergence among middle and lower classes and how religion, ethnicity, and cultural identities played an important role in the composition of cricket teams, and how these identities contributed to and were shaped by political movements, including the partitioning of South Asia. Also studies how cricketers and administrators were embroiled in the underground economy of betting and match fixing.

HIS 149 - Plants, People, and the Making of Modern Southeast Asia (5)

Analyzes the entangled history of plants and people in Southeast Asia. Provides a broad sweep of the early modern period (pre-1500), imperial contact, anti-colonialism, nationalism, and decolonization up to present-day social and political conditions. The class examines plants of agricultural and medicinal value, political importance and ritual meaning. Students also consider how plants can be historical agents that shape and influence interaction in the region.
Students likewise learn about the emergence of Southeast Asia as a field of study in the United States and debate the intellectual legitimacy of area studies, particularly through the optic of plant life.

HIS 150A - Emperors and Outcasts: Ancient Japan (5)

Surveys the history of the peoples of the Japanese islands from prehistorical migrations through the 15th century. Emphases include examination of social structures, political formations, cultural production, and religion. (Formerly Ancient Japan.)

HIS 150B - Tokugawa Japan (5)

Surveys the history of the peoples of the Japanese islands from the middle of the 15th century to the middle of the 19th century. Focus is on the era of civil war, the formation of the early modern federated state, social structure, and cultural production.

HIS 150C - Inventing Modern Japan: The State and the People (5)

Surveys the history of the peoples of the modern Japanese nation from the Meiji Restoration to the present. Focuses on the formation of the modern state, empire, social movements, and cultural production. (Formerly Modern Japan.)

HIS 150D - The Japanese Empire, 1868-1945 (5)

Examines the history of the Japanese colonial empire from 1868 to 1945, including the colonies of Taiwan, Korea, Micronesia, and Manchuria. Considers how the colonies were ruled and what the legacies of the empire have been.

HIS 150E - History and Memory in the Okinawan Islands (5)

Known historically as the Ryukyu Islands, Okinawa has long been an important transmitter of people, ideas, and goods in East Asia. Course explores this history by focusing not only on the royalty of these islands, but also on the lives of everyday people.

HIS 150F - Engendering Empires: Women in Modern Japan and Korea (5)

Explores how women's experiences in Japan and Korea were intertwined and differentiated before and during World War II

under Japanese empire, and from the postwar to the present under American hegemony.

HIS 150G - History of Disabilities in East Asia (5)

Many disabilities scholars and activists argue that categories and experiences of disability are socially constructed in important ways. Course examines changes over time in how disabilities have been perceived and lived in premodern and modern East Asia. Drawing on textual, visual, and oral sources, differences are explored between China, Japan, and Korea but also regional connections. Course also analyzes how disability has been intertwined with material and social factors constructing gender, class, and race or ethnicity.

HIS 151 - Keywords in the History of Science and Medicine (5)

This five-week intensive course explores how scientific and medical terminology has evolved over three millennia, examining how ordinary-seeming words like "technology," "drug," and "robot" emerged from complex social and intellectual histories. Students investigate how terms traveled across languages and cultures, from ancient Greek techne to medieval Arabic alchemy to modern genetics, revealing the global nature of scientific knowledge. Through hands-on activities, primary source analysis, and engagement with current scientific discourse, students develop skills in tracing how the language we use shapes what we know—and what we think we know—about science and medicine. The course is particularly relevant for students interested in history, science and technology studies, and global and community health. (Formerly History of Science, Medicine, and Technology from Antiquity to the Enlightenment.)

HIS 151A - Medicine and the Body in the Colonial World (5)

Explores the histories of bodies and medicine in the colonial world. Charts the relationships among ideas about the body, medical practice, race, and labor in the colonial world between the 16th and the mid-20th centuries

HIS 151B - Drugs in World History (5)

What were drugs in the early modern world? Who grew and consumed them? How were they used, and why? Students study how humanity's ancient fascination with altered states shaped globalization, the Scientific Revolution, the Atlantic slave trade, colonialism, and modernity itself.

HIS 154 - Post-Colonial North Africa (5)

Introduces the history of modern North Africa from WWI to the so-called Arab Spring. Topics include the dynamics of colonial rule and reform, anti-colonial nationalism, decolonization, the rise of Islamism, and popular protest.

HIS 155 - History of Modern Israel (5)

The conflict between Israelis and Palestinians is one of the most intractable disputes in our troubled world. Course begins with a glimpse of Palestine in the late 19th and early 20th centuries, surveys the rise and fall of utopian Zionism, pays especially close attention to the events of 1948 and 1967, and concludes by analyzing the collapse of hopes for peace after Oslo and Camp David meetings.

HIS 156 - Interrogating Politics in the Post-Colonial Middle East (5)

Explores the political trajectory of the post-colonial Middle East. Topics include: the Cold War and rise of Third Worldism; women's movements; political Islam; Arab-Israeli conflict; Lebanese Civil War; impact of oil production; Iranian Revolution; rise of the Arabian Gulf.

HIS 156A - Art, Culture, and Mass Media in the Arab Middle East (5)

Chronicles the cultural history of the Arabic-speaking regions of the Middle East through art, literature, cinema, and mass media during the 20th and 21st Centuries.

HIS 156B - Modern Arab Thought (5)

Studies the intellectual history of the Arab world from the nineteenth century to the Arab Spring. Beginning with Arab responses to colonialism, it covers the evolution of various schools of thought including liberalism, Islamism, Marxism, nationalism, and feminism.

HIS 156C - Living Egyptian History in the City of Cairo (5)

Traces the history of the Egyptian capital of Cairo beginning with the establishment of the city following its conquest by Arab armies in the seventh century and ending in our contemporary moment. Through a deep engagement with space and place, course considers how Cairo evolved throughout different political regimes, what the influence of politics has been on life and space in the city, and how the meaning and experience of urban space has changed over centuries.

HIS 157 - The Ottoman Empire (5)

Explores the history of the Ottoman Empire with emphasis on its Arabic-speaking provinces. In addition to critically considering the political trajectory of the empire, we interrogate a wide range of topics relating to community organization, economic networks, international affairs, and the significance of religion within the Ottoman realm.

HIS 158A - The Escapes of David George: Biographical Research on Slavery and Early America (5)

Invites student collaboration on a biography of David George, born enslaved in colonial Virginia. His attempts to escape slavery led to a remarkable odyssey throughout the Atlantic World, revealing the constraints of slavery and limits of American freedom. (Formerly COWL 161C.)

Prerequisite: Enrollment is restricted to College Scholars.

HIS 158C - Slavery in the Atlantic World: Historical and Archaeological Perspectives (5)

Explores the African diaspora resulting from the transatlantic slave trade, drawing on methodologies from two academic disciplines--history and archaeology. Examines key questions about the slave system, using an array of source materials, both written documents and artifacts.

Prerequisite: Enrollment is restricted to proposed and declared history, anthropology, and critical race and ethnic studies majors and minors, and Black studies minors, during first-pass enrollment. Open to all students at the start of second-pass enrollment.

HIS 158D - The Atlantic Slave Trade, 1520-1866 (5)

Examines the largest forced migration in human history. From the 16th to 19th centuries, slave traders forced more than 12 million African people aboard ships departing Africa to supply enslaved labor to locations throughout the Americas. Course uses quantitative and qualitative methods to investigate this inhuman human migration with an emphasis on the experiences of the captives, the motives and profits of the empires and traders, the importance of slavery to colonial projects, and the resistance of enslaved people and free abolitionists.

HIS 159A - Cleopatra to Constantine: Greek and Roman Egypt (5)

Examines the political, social, religious, and material culture of ancient Egypt during these periods of intense interaction with the ancient Near East and Mediterranean, from the period of Alexander (332 BCE) through the beginning of Coptic Christianity (3rd century CE).

HIS 159B - Women and Gender in Ancient Egypt (5)

Explores sex and gender in ancient Egypt with a specific focus on women. Artistic representations, texts, objects of daily life, and burials are used to examine the practices that encoded gender in this ancient culture.

HIS 159C - Temple and City: The Egyptian New Kingdom and the City of Thebes (5)

Introduces the political and religious history of the Egyptian New Kingdom (1546-1086 BCE), using the city of Thebes as a focal point The political, religious, and architectural history of the city is covered.

HIS 159D - When Cities Were New: the Rise of Urbanism in the Ancient Near East and Mediterranean (5)

Investigates the rise and development of urbanism in the ancient Near East and Mediterranean world, including Mesopotamia, Syria, Egypt, Greece, and the Roman Empire. Close studies of individual ancient cities, as well as broader issues in ancient urbanism are covered.

HIS 160A - Athenian Democracy (5)

Athenian democracy from foundation to the fourth century B.C., with emphasis on its practices and ideologies. Readings from ancient sources and modern theory. Topics to include foundations and development; Athenian concepts of freedom, equality, law, citizenship. Lectures and discussion.

HIS 160C - Topics in Greek History (5)

Detailed consideration of some specific topic or period in Greek history, varying from year to year. Examples include Greek religion, Alexander, the Hellenistic world, the ancient Greek economy, and Greece and India; Thucydides and the Peloponnesian War; Greek art and archaeology.

HIS 161B - Topics in Roman History (5)

Detailed consideration of some specific topic or period in Roman history, varying from year to year. Examples include Roman religion, Augustus and the Roman Empire, Julio-Claudian emperors and the principate, Roman slavery, and Christianity and Rome.

HIS 163B - Genesis: A History (5)

Introduction to historical, textual, source, and redaction criticism of the book of Genesis and to exegesis as science and ideology. Texts, history, and iconography of neighboring traditions (Mesopotamian, Ugaritic, Egyptian, Greek) are also studied when appropriate.

HIS 163C - Jesus in History and Film (5)

In Roman Judea, a Jewish religious leader named Jesus was born during the reign of Herod the Great and executed under Pontius Pilate. Course focuses on the historical figure Jesus of Nazareth and the stories people have told about him, past and present. Also examines the ever-changing interpretations of Jesus, exploring the interpretive relationship between the ancient sources and the multiple efforts to narrate his life in film.

HIS 165A - Medieval History and Architecture (5)

Covers the history and architecture of Europe and the Mediterranean from Late Antiquity through the fall of Constantinople in 1453. Beginning with Constantine and the rise of Christianity, this course follows the development and spread of new cultures and architectural forms, stretching from Islamic material in the east to the British Isles in the west. Course stresses the evolution of architecture during the medieval period as well as the cross-cultural influences that affected their form and what this can tell us about the cultures that created them.

HIS 166 - Northern Ireland: Communities in Conflict (5)

Introduction to the so-called troubles in Northern Ireland, from the 1960s to the present. Examination of the historical background to the conflict, the patterns of conflict in the 1970s and 1980s, and the emergence of a peace process in the 1990s.

HIS 167A - The First World War (5)

An intensive analysis of the First World War from multiple perspectives: military, diplomatic, political, economic, technological, global, and cultural. The emphasis is on the transformative impact of the war on European societies, international relations, and modern culture.

HIS 167B - The Second World War in Europe (5)

Making use of multiple perspectives, this course explores the origins of the Second World War, its course and outcome, and its transformative effects on European society, culture,

polities, and demographics. Closely examines the war's impact on diverse civilian populations.

HIS 169 - Dutch and Belgian History, 1500 to Present (5)

The political, social, economic, and cultural history of the modern Netherlands and Belgium from 1500 to the present day.

HIS 170A - French History: Old Regime and Revolution (5)

French history from the Middle Ages through the Revolution. Focus on the rise and fall of absolute monarchy, the nature of Old Regime society, the causes and significance of the French Revolution. Attention to those who endured as well as to those who made events.

HIS 170B - French History: The 19th Century (5)

Social, political, and cultural history of France from the Revolution to WWI. Focus on the Revolutionary tradition, the Napoleonic myth, the transformation of Paris, and the integration of the peasantry into the national community. Readings may include novels by Stendhal and Balzac.

HIS 170C - Mediterranean France: The History and Politics of Immigration (5)

Studies the history of France from 1914 to 1975, with a particular emphasis on how broader themes such as immigration, postwar reconstruction, European integration, and decolonization can be studied through the urban fabric of Marseille. (Formerly offered as From the Trenches to the Casbah: France and its Empire in the 20th Century.)

HIS 172A - German History (5)

The development of German civilization, including philosophy and literature as well as politics and diplomacy in the 19th and 20th centuries.

HIS 172B - German Film, 1919-1945 (5)

Introduction to German films from 1919 to 1945. Through combination of movies and documentaries, gain insight into political, economic, social, and cultural conditions of Weimar and Nazi Germany.

HIS 172C - History of German Film, 1945 to Present (5)

Uses films and documentaries to provide insight into the political, social, economic, and cultural conditions of postwar East and West Germany, with a strong focus on remembrance of the country's Nazi past.

HIS 173C - The Soviet Union and its Aftermath (5)

Covers the history of the Soviet Union from its beginning to its end, and its legacy in the present day. Explores the nature of the Soviet state, relationships between state and society, the role of the Soviet Union in the Cold War, and experiences of everyday life. (Formerly offered as History of the Soviet Union.)

HIS 174 - Spies: History and Culture of Espionage (5)

Analyzes the roles of espionage and intelligence in modern European history with emphasis on major conflicts from the Franco-Prussian War through the Cold War and beyond. Also examines images of spies in popular culture from the early 20th century to the present.

HIS 176 - Eastern Europe, 1848-2000 (5)

Examines the political and social history of modern Eastern Europe, excluding the Balkans and Baltic States, from 1848 to the present. Focuses on the development of nationalism, war, occupation, ethnic strife, communism, and democratic reform in this region.

HIS 177A - Slaves, Soldiers, and Scientists: History of the Tropics (5)

Surveys the role of the tropics and tropical peoples in history, covering the post-Columbian encounters between indigenous Americans, Europeans, and Africans, colonialism, and the origins of fields, such as anthropology and tropical medicine. (Formerly Tropics of Empire.)

HIS 178A - European Intellectual History: The Enlightenment (5)

Study of European thought and literature from Hobbes and Swift to Rousseau and Goethe. Focuses on relation of ideas to their social and cultural context. Special attention to traditions of religious conflict and criticism rising from the Protestant Reformation; to the discovery of the world beyond Europe; and to the intellectual and cultural roots of the French Revolution.

HIS 178B - European Intellectual History: The 19th Century (5)

Study of European thought and literature from Blake to Nietzsche. Focuses on relation of ideas to their social and cultural context. Special attention to the rise and fall of the Romantic movement, to changing conceptions of history, and to the development of socialist and aesthetic critiques of industrial civilization.

HIS 178C - European Intellectual History, 1870-1970 (5)

Drawing on experiments in autobiography, the arts, and social theory, this course focuses on ideas and images of modernity in European culture. It also highlights the role of the intellectual as politically engaged or disillusioned witness in a violent century.

HIS 178E - Modern Jewish Intellectual History (5)

Surveys European Jewish intellectual history from the Enlightenment to the present. Major themes include emancipation and assimilation, the flowering of Yiddish literature, the rise of Zionism, new variations on the messianic idea, and Jewish contributions to the culture of urban modernism.

HIS 181 - Modern Britain and the British Empire (5)

Examines the history of the British Isles and the British Empire from the late 17th century to the present. Traces the expansion, transformation, and dissolution of the British Empire as well as the changing meanings of Englishness and Britishness over this period.

HIS 181B - Africa and Britain in an Imperial World (5)

Covers the long history of interaction between Britain and Africa, from the Atlantic slave trade and British colonialism in Africa up to the post-colonial present, from British settlers in Africa to the African presence in the British Isles.

HIS 184B - Racism and Antiracism in Europe: From 1870 to the Present (5)

Explores the histories of racism and anti-Semitism alongside efforts to combat racism in Europe from 1870 to the present. Offers a conceptual basis for thinking about the definition of race and its historical evolution.

HIS 185C - Communism, Nationalism, and Zionism: Comparative Radical Jewish Politics (5)

Comparative in approach, course examines Jewish radical politics across Europe, North Africa, the Middle East, and the Americas in the late 19th and 20th centuries. How did radical politics afford Jews greater agency in contexts that otherwise excluded them? What tensions arose with religious, nationalist, and internationalist obligations? What drew so many Jews across so many diverse contexts to focus on radical leftist politics? What, if anything, links Jews and radical politics across such diverse contexts? Through primary sources, memoirs, scholarly works, films and more, students compare Jewish engagement in radical leftist movements in several nodes, including Russia (and the former USSR), Poland, France, Egypt, Iraq, Morocco, Israel, Argentina, Mexico, and the USA among others.

HIS 185I - Latin American Jewish History in the Modern Period (5)

Explores Jewish immigration settlement and identity negotiation in Latin America from the mid-19th Century to the present.

HIS 185J - The Modern Jewish Experience (5)

Historical comparative overview of the political, socio-cultural, and intellectual transformation of Jewish societies in Europe and the Middle East from the late 18th Century to the present.

HIS 185K - Jewish Life in Eastern Mediterranean Port Cities (5)

Overview of the Jewish experience in important cities in the age of empire. Istanbul, Beirut, Alexandria, and Salonica were home to thriving, culturally diverse Jewish populations. Course explores these urban Jewish cultures, the institutions, and intellectual production.

HIS 185L - Where Civilizations Met--Jews, Judaism, and the Iberian Peninsula (5)

Surveys Jewish life in the Iberian Peninsula from Roman times to the present, and explores offshoot Hispanic Jewish societies in the aftermath of the 1492 expulsion.

HIS 185M - Zionism: An Intellectual History (5)

Zionism is one of the most complex--and contested--political and ideological movements of the modern period. This course explores the intellectual history of Zionism and its critics, from the late 19th century to the establishment of the State of Israel.

HIS 185O - The Holocaust and the Arab World (5)

Examines World War II in North Africa and the Middle East. Through primary and secondary sources, films, and novels, students consider WWII and the Holocaust as they intersect with colonial and Jewish histories in the Arab world.

HIS 188A - Introduction to the Practice of Oral History (5)

Introduces students to the method of oral history. Familiarizes students with the history of the method's development in the U.S. and other global contexts and with past and ongoing oral history projects at UCSC. As a practice-based course, provides hands-on tools and experiential learning opportunities in order to craft and execute an original oral history interview. Trains students in interviewing best practices as well as transcription and indexing conventions. Designed to support and contribute to campus- and community-based research initiatives.

HIS 189 - @history: Doing History in a Digital Age (5)

Investigates questions relating to how new technologies are changing the way historians do research and interact with the public. This course has both a critical classroom component and a hands-on computer laboratory component.

Prerequisite: Enrollment is restricted to junior and senior history, Jewish studies, German studies, and classical studies majors.

HIS 190A - Slavery and Race in Latin America (5)

Covers comparative history of slavery in Latin America with questions of race in the colonial and national periods and key moments and debates in the historiography of slavery and its relation to ideologies of the past and the nations.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or by permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190B - Race and the Nation in Latin America (5)

Focuses on the ways in which nation and race have been thought about in Latin America throughout the 19th and 20th centuries. These concepts were closely intertwined, albeit in differing and changing ways, since the wars of independence from Spain and Portugal (1810-1825). Compares the ways in which black, Indian, and racially mixed (mulatto or mestizo)

have been socially constructed, ideologized, and contended in different countries, including Brazil, the Spanish-speaking Caribbean, Mexico, Peru, and Argentina.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100 and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190D - Asian and Latino Immigration Since 1875 (5)

Examines Asian and Latino immigration into the United States since 1875. Students explore the relationship between U.S. foreign policies and immigration policies, transnational ties and homeland connections, and the cultural and political influences they have on American society.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190E - Topics in Chicana/o History (5)

A seminar on the history of Chicanos/Mexicans in the United States, 1848 to the present. Topics include Chicana/o labor, family, social, urban, cultural, and political history.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190F - Research Seminar in the Americas (5)

Students learn how to conduct research and write history. Primary and secondary sources are extensively read. Research sources include a rich array of government documents, newspapers, memories and diaries, visual material and film.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190G - Comparative History of Redress and Reparations (5)

Explores why after World War II and especially in the past 30 years, demands for redress and reparations for war crimes, genocide, mass violence, slavery, colonialism, and other injustices proliferated. Students compare different views on the benefits of confronting the past, identifying perpetrators, and providing justice in multiple countries. Students also analyze how race, ethnicity, religion, class, and gender shaped injustices and assessments of reparations by public officials, international investigators, survivors, and descendants of victims. Topics include tribunals, prosecutions, truth commissions, apologies, restitution, compensation, and memorialization.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or by permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190H - History of Time (5)

Writing-intensive seminar on the experience, manipulation, and representation of time in history. Students pursue advanced research using primary and secondary sources.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190J - Mexican History in the Archives (5)

Explores the history of early Mexico (the Colonial Era through the mid-19th century) through original archival research. Includes field trips to regional archives and research libraries. Reading knowledge of Spanish is recommended.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or by permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190K - Wired Planet: Readings on the Global History of Broadcasting and Telecommunications (5)

Locates common themes in the history of broadcasting and telecommunications throughout the world. Why do certain strategies for developing broadcasting and telecommunications systems succeed or fail? Why do some nations outstrip other nations of comparable development in the growth of their communications systems? Why do national or regional communication systems suddenly become more or less open, or more or less centralized?

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190N - Topics in African History (5)

Examines topics in Early Modern and Modern African history, such as: arts and material culture; African religions and their interchanges with major world religions; statebuilding, local political institutions, and African political thought; African and European empires in Africa; agriculture, environment, and economic development; and the Atlantic and Indian worlds of Africa, among others. Seminar format where students will be prepared to undertake studies on specific subjects and handle primary sources, work on oral presentation skills, and develop a research article.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of

instructor. Enrollment is restricted to junior and senior history majors.

HIS 190P - Early American Society and Culture (5)

Explores subjects and themes in the political, social, and cultural history of early U.S. history from the colonial period through 1850. Includes critical reading of current scholarship and research in primary texts. The focus of this course is the production of a 25-page research paper. Recommended for senior history majors.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190Q - The Novel and History (5)

Explores novels and novelists in relation to the writing of historical scholarship. Breaking down the simplistic genre division between fiction and nonfiction, provides opportunities for students to read novels as historical evidence, novels as editorial commentary, and novels as analytical narrative. Students produce a series of papers that culminate in a 25-page research project.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.senior history majors.

HIS 190R - Research in the History of American Religions (5)

Readings and research in the history of religions in the United States. Readings focus on topics including the rise of evangelicalism; gender and religion; class, race, and religious diversity; and modernity. Students produce papers that culminate in a 25-page research project.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190T - Latin America in the Cold War (5)

Writing-intensive seminar on Latin America during the Cold War. Particular attention given to U.S.-Latin American relations, including moments of covert or direct interventions. Students pursue advanced research using primary and secondary sources.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190U - Power, Culture, and the Federal Bureau of Investigation (5)

In this research seminar, students explore F.B.I. files obtained under the Freedom of Information Act on a prominent citizen of the United States of America.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190V - Myths of California (5)

The history of California has been shrouded in myths. The historian Richard White describes myths as "timeless stories that differ from history" and "are not so much falsehoods as explanations." This course studies the history of myths that have shaped how many people in California understand the past, including myths about the histories of Indigenous peoples, European explorers, Spanish missions, the Gold Rush, and different visions of "the California Dream." In the final assessment for the course, students use historical thinking to create a research paper to challenge a mythic representation of California history.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or by permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190W - U.S. Civil War and Reconstruction (5)

Students read historiographically significant works in the history of the U.S. Civil War and Reconstruction. Students develop research projects grounded in primary source material on a related topic of their choosing. (Formerly Topics in U.S. Civil War and Reconstruction.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190X - History of the Atlantic World, 1492-1824 (5)

Explores the transatlantic societies created by Europeans' colonization of the Americas, and their exploitation of African slaves. Questions whether the cultural, economic, and political links across the ocean integrated the adjacent lands into a fundamentally Atlantic World.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190Y - The Atlantic Slave Trade (5)

Before 1800, far more Africans than Europeans colonized the Americas, arriving unwillingly in the slave trade. Course examines the captives' experiences; the trade's organization

and significance in the Atlantic economy; and the eventual movement to abolish the traffic.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 190Z - The Long Civil Rights Movement (5)

Explores the concept of the long civil rights movement as a framework for understanding a wide range of social, economic, and political developments in the African American freedom struggle, in both North and South, from the 1930s through the 1980s.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision. (See HIS 42.) Students submit petition to sponsoring agency.

HIS 193 - Field Study (5)

To allow promising, well-qualified undergraduates to pursue directed programs of archival or archaeological study in the field under supervision of the UCSC history faculty, concentrating their work within a single given quarter. Students may take two or three courses concurrently. Students submit petition to sponsoring agency.

HIS 194C - Topics in Modern Chinese History (5)

Explores important themes in modern Chinese history ranging from empire and nation-state formation, foreign imperialism, revolutionary movements and politics, global capitalism, and social and cultural change. Teaches the writing of a major research paper using primary and secondary sources.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 194E - Women in Japanese History (5)

Examines through both primary and secondary sources such issues as work, sexuality, education, class, and ethnicity in relation to constructions of female gender in Japanese society over the past several centuries, particularly focusing on the modern era.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100 and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 194K - Topics in the History of Southeast Asia (5)

Examines the history of lands, peoples, and cultures in Southeast Asia. Covers case studies from early modern history, imperial contact, colonization, decolonization, as well as contemporary political and social conditions, including studies of displacement and im/migration. Topics include comparative studies of colonialisms in the region; historiography of Southeast Asian studies in the United States; Southeast Asian technoscience and medicine; environmental history and eco-activism. As this course also qualifies as a senior exit seminar for history majors, the course dives into the particulars of academic research and writing. Students produce an original research paper that will be scaffolded throughout the term.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, and HIS 100, and two additional upper-division history courses, or by permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 194L - Exile, Diaspora, and Displacement: Jewish Lives from North Africa to the Middle East (5)

From Medieval Spain, Ottoman Salonica, 20th-century Baghdad, present day Casablanca, and beyond, this course examines Jewish experiences of exile, diaspora, and displacement, as well as how to read memoir and biography as sources in their broader historical context.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, HIS 100 (for history majors), and two upper-division history courses. Enrollment is restricted to junior and senior history majors, critical race and ethnic studies majors, and Jewish studies majors and minors.

HIS 194M - Literati, Samurai, and Yangban: Comparative History of State and Elite in East Asia, 1600-1900 (5)

Critically examines the formation of political elites in East Asia. Compares literati in Ming and Qing, China; samurai in Tokugawa, Japan; and yangban in Joeson, Korea. Each group occupied specific roles and functions in their state and society but differed in scale and character. Students cannot receive credit for this course and HIS 294M.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100 (for history majors), two additional upper-division history courses, or permission of the instructor. Enrollment is restricted to junior and senior history majors and East Asian studies minors.

HIS 194N - Urbanites in the Global South, 18th Century to the Present (5)

Urbanization is an important aspect of the making of the Global South. This course introduces the histories of urbanization from the 18th Century to the present. Students read the works of historians, anthropologists, geographers, and sociologists.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or permission of

instructor. Enrollment is restricted to junior and senior history majors.

HIS 194O - South Asia in the Twentieth Century (5)

Introduces students to key ideas and ideologues of the Indian nation and the practices of the late-colonial and post-colonial Indian State. In the process, students become familiar with themes like modernity, gender, state formation, space, nationalism, democracy, and development.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 194P - Urban South Asia (5)

Introduces important themes in urban studies in South Asia in the pre-modern and modern periods. These include political economic change; competing imaginations of city life; urban politics; land use; urban planning; and cultural life among others. This course begins with a brief survey of urbanism in pre-modern South Asia but focuses mostly on urbanities in the early modern and modern periods.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors. majors.

HIS 194Q - Making Space in the Colonial and Post-Colonial World (5)

Explores the production and experience of new forms of space in the colonial and post-colonial world through historical, political, and anthropological case studies with an emphasis on the Middle East and Africa.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 194S - Special Topics in Ancient Egyptian History (5)

Focuses on different topics in ancient Egyptian history. In addition to assigned readings, each student does additional research that culminates in a 20-page paper on a topic of the student's choice. General topics for the course vary from year to year.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100 (for history majors), and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history and classical studies majors.

HIS 194T - Worlds of Labor in Asia (5)

Introduces students to important debates in labor studies in Asia. Studies the relationship between labor, capitalism, and imperialism. Also interrogates the relevance or irrelevance of Asia as a concept from the standpoint of labor.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and HIS 100, and two upper-division history courses; or permission of the instructor. Enrollment is restricted to junior and senior history majors.

HIS 194U - The Cold War and East Asia (5)

Considers through primary and secondary sources the events and aftermath of the Cold War in East Asia in terms of state formation, domestic and foreign policy, and protest movements in China, Taiwan, Korea, and Japan with reference to Vietnam.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 194V - Fascism and Anti-Fascism: The Global Spanish Civil War (5)

Widely considered the antechamber of WWII, the Spanish Civil War (1936-1939) was the first large-scale international clash of Fascists and anti-Fascists. It was simultaneously a national conflict and a global proxy war, colonial and anti-colonial; and yet, it is often overlooked.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, HIS 100 (for history majors), and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors and Jewish studies majors and minors.

HIS 194W - Social Movements in the Modern Middle East (5)

This writing-intensive seminar explores the social movements sweeping the contemporary Middle East. Students pursue advanced research using primary and secondary sources.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 194Y - Memories of WWII in the U.S. and Japan (5)

Research seminar comparing U.S. and Japanese memories of World War II. Topics include war origins, total war, the atomic bomb, war responsibility, reparations, memorials, museums, and monuments. Primary work devoted to research in original texts and documents.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 195A - Thesis Research (5)

Prerequisite(s): petition on file with sponsoring agency (students should have completed two upper-division courses, preferably in their area of concentration).

HIS 195B - Thesis Writing (5)

Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; petition on file with sponsoring agency (students should have completed two upper-division courses, preferably in their area of concentration).

HIS 196E - Modern Irish History (5)

Aims to illuminate major themes and turning points of modern Irish history: the causes and consequences of the famine; the development of Irish nationalism; revolution, civil war, and partition; and the recent economic boom.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and HIS 100, and two upper-division history courses; or by permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 196F - Topics in European Environmental History (5)

Examines the history of Europe and its empires within the context of human interactions with and attitudes toward a changing natural world. Topics include: European imperialism in ecological perspective; the effects of new developments in science and technology on urban and rural environments; the rise of public health, sanitation, and colonial medicine; environmental justice; and the historical context of contemporary environmental problems.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and HIS 100, and two upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 196G - Topics in Modern Germany and Europe (5)

A senior reading and research seminar that explores the selected historiographic debates in German history during the 19th and 20th centuries. (Formerly Modern Germany and Europe.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100 (for history majors), and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history and Jewish studies majors.

HIS 196H - Sex and the City--The History of Sexuality in Urban Areas Around the Globe (5)

Focuses on the history of sexuality in major urban areas globally. Topics include: sexual identities and race, class, and gender; sex work, policing, and urban spaces; gay, lesbian, and transgender communities; race, gender, and sexuality within the context of colonialism.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100, and two additional upper-division history courses, or by permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 196I - The French Revolution (5)

Students conduct original research on the French Revolution of 1789 based on mix of primary and secondary courses. Classroom discussions focuson interpreting contemporary documents and addressing historiographical issues. Seminar format with significant written requirements. Presumes familiarity with the period.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, and HIS 100, and two additional upper-division history courses, or by permission of instructor. HIS 70A and/or HIS 170A recommended as preparation. Enrollment is restricted to junior and senior history majors.

HIS 196K - Studies in European Intellectual History (5)

Topics in European intellectual history from the French Revolution to World War I. Readings exemplifying approaches from history of ideas and intellectual biography to recent studies of rhetoric and political culture. Preparation and presentation of research paper.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100 and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 196M - Shtetl: Eastern European Jewish Life (5)

For several centuries, the shtetl functioned as the center of Jewish life in Eastern Europe. Alternately mythologized and pathologized, the shtetl continues to exist as an imaginary space that defines and distorts the historical image of Eastern European Jewish life. Students cannot receive credit for this course and course 257.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100 (for history majors), and two additional upper-division history courses. Enrollment is restricted to junior and senior history and Jewish studies majors.

HIS 196N - Eastern European Jewish Social History (5)

Study of 19th- and 20th-century Eastern European and Russian Jewish social history.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements, HIS 100 (for history majors), and two additional upper-division history courses. Enrollment is restricted to junior and senior history and Jewish studies majors.

HIS 196Q - Europe and the World During the Cold War (5)

Explores European history from the end of World War II through the fall of the Soviet Union. Examines how Europe evolved from a fragmented, polarized array of colonial rivals to a more economically and culturally integrated place.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; HIS 100 and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 196S - Special Topics in Ancient History (5)

Seminar focuses on different topics in ancient history. In addition to assigned readings, the student is expected to do additional research that culminates in a 20-page paper on a topic of the student's choice. General topics for the course will vary from year to year.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100 (for history majors), and two additional two upper-division history courses; or permission of instructor. Enrollment is restricted to junior and senior history and classical studies majors.

HIS 196Z - Europe from the Margins: Outside Influences on Modern European Thought and Culture (5)

Europe's engagement with the outside world, which ranged from cultural and intellectual borrowings to relations of domination and colonialism, shaped its modern history and culture. This course examines the cultural and intellectual history of modern Europe by focusing on the ways in which European thinkers and cultural producers drew upon or were influenced by non-European sources.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, HIS 100, and two additional upper-division history courses, or permission of instructor. Enrollment is restricted to junior and senior history majors.

HIS 198 - Independent Field Study (5)

Student's supervision is conducted by a regularly appointed officer of instruction by means other than the usual supervision in person (e.g., by correspondence) or student is doing all or most of the course work off campus.

HIS 199 - Tutorial (5)

Students submit petition to sponsoring agency.

HIS 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

HIS 200 - Methods and Theories of History (5)

An overview of theories, methods, and philosophies concerning the nature and production of history. Topics vary with instructor.

Prerequisite: Enrollment is restricted to graduate history students and others by permission of instructor.

HIS 200B - Introduction to Research Methods in History (5)

This team-taught seminar introduces graduate students to the "how" of historical research. Designed to offer concrete, practical skills toward accomplishing an intensive research project, this course covers topic development, efficient reading strategies, research methods, and interpretive approaches. The seminar features professors from the Department of History, who expose students to the "hidden curriculum" of research-intensive scholarly work. Students also train in habits of note-taking, research planning, and inclusive discussion as well as facilitation techniques.

Prerequisite: Enrollment is restricted to graduate students.

HIS 201 - Directed Research Colloquium (5)

Having already prepared a bibliography and research prospectus in a graduate research seminar, students will undertake further research on their projects, write a 25–30 page research paper, and present their work to their fellow students.

Prerequisite: Prerequisite(s): history graduate research seminar. Enrollment is restricted to graduate history students.

HIS 202 - Practicing World History (5)

Because world history surfaces in curriculums at all educational levels, this seminar interrogates its value. Why do historians advocate world (and transnational) history? How do historians actually practice it? What are the pitfalls? Can global perspectives apply to localized subjects?

Prerequisite: Enrollment is restricted to graduate students.

HIS 203 - Global Decolonization (5)

Focuses on the histories and theories of decolonization in the mid-to-late 20th century, particularly, interactions among anticolonial movements, how Cold War era antagonisms inflected the process of decolonization, and efforts to forge Afro-Asian unity and/or a nonalignment movement.

Prerequisite: Enrollment is restricted to graduate students.

HIS 203A - Global History of War and Revolution, 1912-1929 (5)

Provides graduate students with an introduction to the key interpretations and controversies in the global history of the 1900-1930 period, one marked by a world war, a reconfiguration of empires and the emergence of anti-colonial nationalisms, an accelerated pace of social change in many places in the world, and several revolutions and popular uprisings with significant global impact.

Prerequisite: Enrollment is restricted to graduate students.

HIS 204A - History of Gender Research Seminar (5)

Introduction to theories and methods employed in gendered historical research. Readings are drawn from a range of chronological, national, and thematic fields and explore the intersection of gender analysis with such historical problems

as the body and sexuality, modernity, national identity, and production/consumption.

Prerequisite: Enrollment is restricted to graduate students.

HIS 204B - Approaches to Social and Cultural History (5)

Graduate reading course focusing on both classic and contemporary approaches to social and cultural history. Readings induce: Bakhtin, Benjamin, Foucault, Auerbach, and Berlin, and a variety of more recent studies in social, cultural, and intellectual history. Course not limited to graduate students in History.

Prerequisite: Enrollment is restricted to graduate students.

HIS 204C - Colonialism, Nationalism and Race Research Seminar (5)

Research seminar introducing theories and methods of the comparative histories of race, ethnicity, colonialism, and nationalism.

Prerequisite: Enrollment is restricted to graduate students.

HIS 204E - Transnationalism, Borderlands, and History (5)

Graduate seminar exploring the history of Canada-United States-Mexico borderlands. Approaches and arguments compare nation-state centered histories with narratives that construct the North American borderlands as places wrought from a multiplicity of overlapping indigenous, imperial, national, transnational, and global forces.

Prerequisite: Prerequisite(s): Enrollment is restricted to graduate students.

HIS 205 - Diaspora and World History (5)

Examines the histories and historiography concerning diaspora. This area of study includes populations from Asia, Africa, Europe, and the Americas. Students study the histories of diasporic populations, and the questions, theory, and methods that scholars use to approach the subject.

Prerequisite: Enrollment is restricted to graduate students.

HIS 206 - Empire in World History (5)

Introduces the study of empire (as opposed to nations, regions, or continents) as an approach to world history and to recent historiographical trends in the history of empires.

Prerequisite: Enrollment is restricted to graduate students,.

HIS 208 - An Introduction to Digital Humanities (5)

Critically examines how digital processes are changing scholarly practice and pedagogy in the humanities. Students experiment with how digital media can impact research and communication for textual scholars, museum professionals, archivists, librarians, public historians and educators.

Prerequisite: Enrollment is restricted to graduate students.

HIS 209A - Diaspora as Method (5)

Explores diaspora as a category of experience, imagination, and analysis. Tracks the field's interdisciplinary influences and how it has generated a new vocabulary and new tools to uncover fixed and bounded ideas of time, place, and actors in many inquiries. Course aims to rearrange geographies, chronologies, and agencies by avoiding simplistic narratives about globalization and the end of the nation-state by facilitating transnational, cross-regional, long-historical, intercultural, or intersectional approaches to discover new interpretative possibilities.

Prerequisite: Enrollment is restricted to graduate students.

HIS 210A - Readings in U.S. History (5)

Introduction to major themes and controversies in the interpretation of U.S. history. Readings cover both chronological eras and topical subjects, often in a comparative context: colonial and early national periods.

Prerequisite: Enrollment is restricted to graduate students.

HIS 210B - Readings in U.S. History (5)

Introduction to major themes and controversies in the interpretation of U.S. history. Readings cover both chronological eras and topical subjects, often in a comparative context: 19th century.

Prerequisite: Enrollment is restricted to graduate students.

HIS 211A - Research Seminar in Early American History (5)

First quarter of a two-quarter introduction to research in early American history (1550-1820). Readings include both historiographically definitive texts as well as recent scholarship reflecting the field's developments. Students complete analyses of historical sources, brief critical essays, and a significant research project. HIS 211A is not a prerequisite to HIS 211B.

Prerequisite: Enrollment is restricted to graduate students.

HIS 211B - Research Seminar in Early American History (5)

Second quarter of a two-quarter introduction to research in early American history (1550-1820). Readings include both historiographically definitive texts as well as recent scholarship reflecting the field's developments. Students complete analyses of historical sources, brief critical essays, and a significant research project. HIS 211A is not a prerequisite to HIS 211B.

Prerequisite: Enrollment is restricted to graduate students.

HIS 212A - Citizenship in U.S. History (5)

A reading-intensive graduate seminar in United States history that examines citizenship and its exclusions, grounded in race, gender, sexuality, age, and disability. This seminar also explores how forms of belonging intersected with evolving understandings of nationalism and sovereignty.

Prerequisite: Enrollment is restricted to graduate students.

HIS 212B - Citizenship in United States History (5)

A reading-intensive graduate seminar in United States history examining citizenship and its exclusions, grounded in race, gender, sexuality, age, and disability. The course also explores how forms of belonging intersected with evolving understandings of nationalism and sovereignty.

Prerequisite: Enrollment is restricted to history graduate students.

HIS 214 - California History (5)

Concerns the history and historiography of California from indigenous dominion to the present. Considers the distinctive ways in which California has led the nation and globe in economic, political, and social change, while remaining a multiethnic borderland.

Prerequisite: Enrollment is restricted to graduate students.

HIS 215A - Topics in American History: U.S. Labor and Working Class History (5)

Addresses topics in history of working people, the labor movement broadly defined, and political-economic change in the U.S. Topics include race, ethnic and gender dynamics, and U.S. labor and working-class history in global context.

Prerequisite: Enrollment is restricted to graduate students.

HIS 215B - Visions of Progress (5)

Explores the emergence of the welfare/regulatory state in the United States from the 1870s to World War I, examining different schools of historical thought about this period.

Prerequisite: Enrollment is restricted to graduate students.

HIS 215C - U.S. Immigration and Ethnic History (5)

Introduces key issues and debates in United States immigration and ethnic history. Topics include causes of immigration; constructions of race, gender and ethnicity; assimilation; transnationalism; and forces shaping immigration policy.

Prerequisite: Enrollment is restricted to graduate students.

HIS 216 - Readings in the History of American Religions (5)

Research in the history of religions in the United States. Addresses topics, such as the rise of evangelicalism; class, race, and religious diversity; gender and power; modernity; and civil religion through analyses of visual and literary texts, iconography, ritual, theology, and praxis.

Prerequisite: Enrollment is restricted to graduate students.

HIS 217 - Critical Conversations in Native American History (5)

Overview of key historical texts focusing on the Native American experience, with particular focus on scholarship that seeks to decolonize Western methodologies and research practices. Readings explore such topics as decolonization, indigenous identity, sovereignty, repatriation efforts, gender and sexuality, and historical memory. The format consists of discussions of readings. Students give oral presentations on the readings, and write book reviews and a final historiographical paper.

Prerequisite: Enrollment is restricted to graduate students.

HIS 220 - The Atlantic World, 1500-1800 (5)

Explores the economic, social, and cultural history of early America in terms of its Atlantic connections and intersection with the cultures of early modern Europe, Africa, and Latin America. Builds upon previous work in early America and early modern Europe, challenging students both to work comparatively and to break out of traditional geographic models.

Prerequisite: Enrollment is restricted to graduate students.

HIS 221 - Empires and New Nations in the Americas (5)

Compares the history of the colonial and 19th-century Americans through a world-history perspective. Focuses on the interrelated themes of indigenous histories, slavery and other forms of servitude, commodity production, and the meaning of equality and freedom in new nations.

Prerequisite: Enrollment is restricted to graduate students.

HIS 222 - Global Sexualities--A Seminar in the Queering of Historiographies (5)

Explores the history of sexuality covering diverse time periods, peoples, and regions. Examines methods and theories used in the study of sexuality. Readings draw from the Americas, Middle East, Africa, Europe, and Austro-Asia, as well as topics in queer and LGBTQ2 studies.

Prerequisite: Enrollment is restricted to graduate students.

HIS 225 - Spanish Colonialism (5)

Reading-intensive graduate seminar with emphasis on theoretical and historiographical questions regarding the field of Spanish colonialism in the Americas. Students encouraged to engage in discussions of comparative colonialisms.

Prerequisite: Enrollment is restricted to graduate students.

HIS 227 - Gender and Colonialism (5)

Explores the relationship between colonialism and gender. Examines the construction of gender categories (in conjunction with race) in the context of colonial conquest and rule; contested definitions of motherhood, domesticity, and citizenship; and regulation of sexuality.

Prerequisite: Enrollment is restricted to graduate students.

HIS 229 - Worlds of Labor in Asia (5)

Introduces students to important debates in labor studies in Asia. Studies the relationship between labor, capitalism, and imperialism. Also interrogates the relevance or irrelevance of Asia as a concept from the standpoint of labor.

Prerequisite: Enrollment is restricted to graduate students.

HIS 229A - Pacific Worlds (5)

This seminar examines the Pacific as a deep source of culture, knowledge, exploitation, and conflict. Such a perspective not only centers the spaces and peoples of Oceania, Asia, and the Americas, but also highlights a diverse sea-based geography of interactions and processes, such as seafaring, fishing, trade, labor, colonialism, capitalism, knowledge production, militarization, and decolonization. Readings include long-historical, transregional, interdisciplinary, and intercultural perspectives.

HIS 230A - Readings in Late Imperial China (5)

Survey of the major works on and historiographical controversies about Qing Dynasty (1644–1911) China.

Prerequisite: Enrollment is restricted to graduate students.

HIS 230B - Engendering China (5)

Reading seminar on the history of Chinese gender, focusing on the Qing dynasty (1644 to 1911) to the present. Topics include marriage and family, sexuality, work, the gendered language of politics, and major reform movements.

Prerequisite: Enrollment is restricted to graduate students.

HIS 230C - Readings in 20th-Century China (5)

A survey of major Western-language works and historiographical controversies in Chinese history from 1900 to the present. Weekly readings emphasize particular social and political movements as well as long-term changes in urban and rural society.

Prerequisite: Enrollment is restricted to graduate students.

HIS 231 - Historicizing the People's Republic of China (5)

An overview of the scholarly literature on the People's Republic of China. Readings include works by historians as well as by social scientists. Students consider what kinds of questions historians have and can ask.

Prerequisite: Enrollment is restricted to graduate students.

HIS 238A - Research Methods: China (5)

An introduction for graduate students to the use of major research tools and sources in Chinese history since 1600, with a focus on 20th-century materials. Students complete a series of bibliographical exercises and prepare a research prospectus.

Prerequisite: Enrollment is restricted to graduate students.

HIS 238B - Research Methods: China (5)

Building on the research and bibliographic skills developed in course 228A, students develop a research topic and write a paper of 20-30 pages using primary sources as appropriate in English, Chinese, and/or Japanese.

Prerequisite: Enrollment is restricted to graduate students.

HIS 242 - Readings in Modern Japan (5)

A graduate course intended to give students a fundamental understanding of the major themes in the study of modern Japanese history. Central themes include modernity and modernization, colonialism, postwar recovery, gender, race, and nationalism.

Prerequisite: Enrollment is restricted to graduate students.

HIS 243 - Transnational Japan (5)

Examines how Japanese history has been forged across, outside, and beyond the boundaries of the modern nation-state of Japan. Considers how Japan has transformed the world. Students debate how the world made Japan and how Japan re-made the world.

Prerequisite: Enrollment is restricted to graduate students.

HIS 244 - Gender and Japanese History (5)

Examines—through primary and secondary sources—constructions of gender (masculine, feminine, and transgender) in Japanese society over the past several centuries, focusing on the modern era.

Prerequisite: Enrollment is restricted to graduate students.

HIS 251A - Readings in Modern European History: Environment and Technology (5)

Introduces major themes and problems in recent historiographical trends in environmental history and the history of technology. Examines the role of environment and technology in the making of Europe and European societies' engagement with the world.

Prerequisite: Enrollment is restricted to graduate students.

HIS 251B - Readings in Modern European History: Empire (5)

The history of empire has emerged as one of the most influential and fastest growing areas of inquiry within the field of modern European history. This course introduces students to recent debates and trends in imperial, colonial, and postcolonial history.

Prerequisite: Enrollment is restricted to graduate students.

HIS 252 - Republicanism and Its Discontents: Universal Projects and Particular Discriminations (5)

Focuses on the histories and theories of republicanism and liberalism by investigating the tension between universal ideologies and discriminatory practices. Focuses on France and the United States, but Algeria, Syria, and Turkey will also be covered.

Prerequisite: Enrollment is restricted to graduate students.

HIS 255 - Religion and Modernity (5)

Examines the significance of religion and secularism in the modern period. How did modernity and the concept of the secular transform various religions and how, in turn, did these religions help to create modernity.

Prerequisite: Enrollment is restricted to graduate students.

HIS 257 - Shtetl: Eastern European Jewish Life (5)

For several centuries, the shtetl functioned as the center of Jewish life in Eastern Europe. Alternately mythologized and pathologized, the shtetl continues to exist as an imaginary space that defines and distorts the historical image of Eastern European Jewish life. Students cannot receive credit for this course and HIS 196M.

Prerequisite: Enrollment is restricted to graduate students.

HIS 258A - Zionism and Its Critics (5)

Zionism is one of the most complex—and heavily contested—political and ideological movements of the modern period. To its supporters, Zionism has represented the national liberation movement of the Jewish people, a haven for Jews against antisemitism, including the Holocaust, an opportunity to establish a socialist state at the vanguard of worldwide revolution, a vehicle for Jewish cultural renaissance, and/or a crucial stage in God’s messianic plan. To its critics, Zionism has represented a form of racism and settler colonialism that has led to the oppression of Palestinians including the Nakba, an internalization of antisemitism, a reactionary betrayal of socialist ideals, and/or the heretical substitution of nationalism for Judaism.

HIS 260 - History and the Spatial Turn: Making Space, Place, and Geography in History (5)

Explores the making of space, place, and geography in a body of recent historical work. Explores key theoretical work interrogating the significance of space as a critical element of social theory and historical consideration. Proceeds through three thematic units: questions of colonial economy in South Asia; spaces of empires and its end in the Eastern Mediterranean; and histories of infrastructure.

Prerequisite: Enrollment is restricted to graduate students.

HIS 261 - The Contours of the New Middle East History (5)

Explores the history and historiography of the modern Middle East through recent historical scholarship. Examines the new theoretical approaches that frame inquiries into the region's history and how contemporary historians are reinterpreting familiar questions and themes.

Prerequisite: Enrollment is restricted to graduate students.

HIS 263 - Histories of Science and Medicine in the Global South (5)

Focuses on the histories of science and medicine in the Global South. While these fields have historically been dominated by scholarship focusing on Europe and North America, in recent years, work produced by scholars of the Global South has begun to reshape these fields. This seminar critically considers the body of historical scholarship with an eye toward the following questions: Are there common themes that define this body of historiography? What do works that fall within this genre have to teach us about other bodies of cultural, political and economic historical work? How is it productive to think with the Global South as a category of analysis?

Prerequisite: Enrollment is restricted to graduate students.

HIS 265 - History of the Body (5)

A multidisciplinary history of the body from late antiquity to the present. Topics include: medical and religious constructions; the raced, gendered, and sexualized body; adornment and performance markers; power and control through the body; body parts; and the body's permeability.

Prerequisite: Enrollment is restricted to graduate students.

HIS 280A - History Graduate Proseminar: Teaching Pedagogy (2)

Devoted to professionalism and socialization of history graduate students. Includes formal and informal meetings with faculty and other graduate students. Topics include TAships, designing course syllabi, pedagogy, teaching technologies, and teaching in different venues.

Prerequisite: This course is required for first-year students; however, it is open to all other graduate students as needed. Enrollment is restricted to graduate students .

HIS 280B - History Graduate Proseminar: Research Presentations and Grant Writing (2)

Devoted to professionalism and socialization of history graduate students. Topics include discussion of researching grants; effective CV writing; successful grant applications and publication proposals; and conference paper and panel proposals. Required for first-year graduate students; however, open to all history graduate students as needed.

Prerequisite: This course is required for first-year students; however, it is open to all other graduate students as needed. Enrollment is restricted to graduate students .

HIS 280C - History Graduate Proseminar: Job Market (2)

Devoted to professionalism and socialization of history graduate students. Includes formal and informal meetings with faculty and other graduate students. Topics include researching position; preparing a CV and the job-application letter; preparing for an interview; practice interview; preparing a job talk and/or teaching presentation; and practice job talk.

Prerequisite: This course is required for first-year students; however, it is open to all other graduate students as needed. Enrollment is restricted to graduate students .

HIS 283 - Foreign Language Preparation (2)

Independent study course in which history graduate student reads selected texts to fulfill foreign language requirement. Student meets with instructor to discuss readings, deepening his knowledge of the foreign language. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

HIS 284 - Qualifying Examination Preparation (2)

Independent study course designed to help students prepare for qualifying exams. Students meet on regular basis with one or more members of qualifying examination committee to monitor preparation for exam. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

HIS 285 - Readings in Research Field (2)

Independent study focusing on selected texts or authors in history or historical theory. Students meet on regular basis with instructor to discuss readings and deepen their knowledge of a particular author or historical theory. Students submit petition to sponsoring agency.

Prerequisite: Enrollment restricted to graduate students.

HIS 285B - Readings in Research Field (5)

Independent study focusing on selected texts or authors in history or historical theory. Students meet on regular basis with instructor to discuss readings. Students submit petition to sponsoring agency.

HIS 286 - Research Colloquium on Colonialism, Nationalism, and Race (2)

Acquaints students with the department's thematic research clusters in their field to coordinate training in historical research. Students meet on a regular basis with a faculty member of a particular cluster to discuss most important readings in the field. Enrollment restricted to graduate students.

Prerequisite: Enrollment is restricted to graduate students.

HIS 287 - Research Colloquium on Gender (2)

Acquaints students with the department's thematic research clusters in their field to coordinate training in historical research. Students meet on a regular basis with a faculty member of this cluster to discuss most important readings in their field. Enrollment restricted to graduate students.

Prerequisite: Enrollment is restricted to graduate students.

HIS 288 - Teaching Assistant Preparation (2)

Independent study designed to help history graduate students prepare to teach in an area of history outside their specialization. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

HIS 289 - History Colloquium (2)

Independent study designed to foster departmental and cross-disciplinary participation in campus talks, colloquia, conferences, and events. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

HIS 294M - Literati, Samurai, and Yangban: A Comparative History of State (5)

Critically examines the formation of political elites in East Asia. Compares literati in Ming and Qing China; samurai in Tokugawa, Japan; and yangban in Joeson, Korea. Each group occupied specific roles and functions in their state and society but differed in scale and character. Students cannot receive credit for this course and HIS 194M.

Prerequisite: Enrollment is restricted to graduate students.

HIS 297A - Independent Study (5)

Students submit petition to sponsoring agency.

HIS 297B - Independent Study (10)

Students submit petition to sponsoring agency.

HIS 297C - Independent Study (15)

Students submit petition to sponsoring agency.

HIS 298A - Constructing a Field (5)

Required course for all first-year graduate students in the History Department. Course helps students situate themselves within the field of history by developing a research agenda in relation to the historiography on their geographical and thematic areas of interest, prepares students to embark on research during the summer after the first year, and equips them with a tentative reading list to guide their preparation for the Qualifying Exam. Course content varies according to the interests and needs of students. Students complete the course with a primary or secondary adviser.

Prerequisite: Enrollment is restricted to history graduate students.

HIS 299A - Thesis Research (5)

Students submit petition to sponsoring agency.

HIS 299B - Thesis Research (10)

Students submit petition to sponsoring agency.

HIS 299C - Thesis Research (15)

Students submit petition to sponsoring agency.

HCI-HUMAN COMPUTER INTERACTION

To view planned offerings for the current academic year, please visit this page.

Graduate

HCI 200 - Introduction to HCI (5)

Introduction to the core premises of human-computer interaction (HCI), including major phases in the evolution of HCI. Issues covered include the origins of HCI and its transformation alongside the spread of computing technologies into the fabric of everyday life.

Prerequisite: Enrollment is restricted to human computer interaction graduate students.

HCI 201 - Introduction to HCI Methods (5)

Introduction to human computer interaction (HCI) methods, including the theory and practice of established and cutting-edge user research and design methods. Students also gain experience justifying and communicating about HCI methods. (Formerly Introduction to Design Methods in HCI.)

Prerequisite: Enrollment is restricted to human computer interaction graduate students.

HCI 202A - Introduction to Build: Bootcamp (5)

Introductory course on build methods in HCI for students with minimal prototyping experience. Course covers a combination of HCI theory and practice to design, build, deploy, iterate, document, and demo novel prototypes of varying purpose to multiple stakeholders. Topics may include paper prototyping, HTML prototyping, mobile app prototyping, introductions to physical prototyping, and accessible designs. (Formerly offered as Introduction to HCI Build: Bootcamp.)

Prerequisite: Enrollment is restricted to graduate students in human computer interaction, or by permission of the instructor.

HCI 202B - Introduction to Build (Advanced): Physical Computing (5)

Advanced course on build methods in HCI, applicable to any computing domain including gaming. Course covers a combination of HCI theory and practice to design, build, deploy, iterate, document, and demo novel prototypes of varying purpose to multiple stakeholders. Advanced topics may include physical computing, input devices (e.g., alternative controllers), wearable computing, IoT, AR, VR, 3D fabrication, programmatic wireframing, and accessible designs. May be taught in conjunction with GAME 202. Students cannot receive credit for this course and GAME 202. (Formerly offered as Introduction to Build: Advanced.)

Prerequisite: Enrollment is restricted to graduate students in human computer interaction, or by permission of the instructor.

HCI 203 - Introduction to Research (5)

Introduction to research and analysis methods in human-computer interaction (HCI). Introduces theoretical perspectives on HCI arising from cognitive science, sociology, and distributed cognition. Explores the key methods to apply and test these theories including: designing and conducting studies, statistics, analysis, heuristic evaluation, ethnography, interviews, surveys, field studies, and other established methods used by HCI practitioners.

Prerequisite: Enrollment is restricted to human computer interaction graduate students.

HCI 220 - Ethics and Activism in Tech and Design (5)

Examines tech ethics/activism through the lens of design. Students discuss biases within tech and reflect on the role of UX/HCI practitioners through coursework and activities. Students learn the possibilities of political action as UX/HCI practitioners.

Prerequisite: Prerequisite(s): HCI 200 and HCI 201; or by permission of instructor. Enrollment is restricted to human computer interaction graduate students.

HCI 250 - Participatory Design (5)

Introduces theoretical and practical knowledge on participatory design of digital technologies and related services. Applies participatory design methods and techniques in designing digital solutions and applications. Enables students to learn how to plan and manage a participatory design process, understanding their stakeholders and designing tools to engage them in the design process. Allows students to conduct various studies with their participants and engage in qualitative analysis of the results.

Prerequisite: Enrollment is restricted to graduate students in games and playable media, serious games, human computer interaction, and computational media programs, or by permission of the instructor.

HCI 271 - HCI Capstone 1 (5)

Teaches students how to form project teams, brainstorm, and iterate ideas for the capstone projects, culminating in approved briefs and project teams, including an approved committee of advisers for each project. Advisers may be local industry people (including industry partners who have proposed projects), or may also be UCSC faculty from the main campus.

Prerequisite: Prerequisite(s): HCI 200, HCI 201, and either HCI 202A or HCI 202B. Enrollment is restricted to human computer interaction graduate students.

HCI 272 - HCI Capstone 2 (10)

The goal of this course is for students in the Professional Master's Degree in Human-Computer Interaction to produce successful capstone projects. The course is organized around iterative feedback from peers and project advisers (both academic and professional), and includes extensive workshopping, critique, and testing. The course culminates in an end-of-quarter showcase of student work, with all project advisers and project sponsors invited. Also includes professional development. (Formerly Capstone 2.)

Prerequisite: Prerequisite(s): HCI 271. Enrollment is restricted to human computer interaction graduate students.

HCI 290 - HCI Seminar (2)

Weekly speakers on human-computer interaction topics. Course can be taken for Satisfactory/Unsatisfactory credit only.

Prerequisite: Enrollment is restricted to graduate students.

HUMN-HUMANITIES

To view planned offerings for the current academic year, please visit this page.

Lower-Division

HUMN 15 - Ethics and Technology (5)

Addresses the role of values in technology: Who is technology for? What could it be? How does it relate to its social and historical contexts? Students think systematically and imaginatively about how the design of different technologies assists and constrains everyday life. Course asks whether there is a "right" way to do technology, and if there is, how we might go about pursuing it. To explore this question, the course draws on cross-disciplinary materials taken from literature, history, sociology, anthropology, politics, and philosophy, and introduces students to the principles of design justice and inclusive design.

HUMN 25 - Humans and Machines: A History (5)

Students learn how humans and machines have interacted, become intertwined, and opposed one another throughout history, from the paleolithic era to the present. By examining a variety of texts (theory, philosophy, theater, visual art, instruction manuals, films, advertisements, podcasts), students explore how machines can enable, inhibit, and control their users in a variety of contexts. Students also apply historically grounded knowledge to propose technological solutions to contemporary problems.

HUMN 35 - Language Technology: Themes Across Cultures and Histories (5)

Focuses on the technologies people build to record and transmit language, including both contemporary technologies like social media and machine translation and important earlier technical developments, like the printing press and writing. The course examines how different societies and cultures have reacted to the issues these technologies have introduced; topics covered may include access, economic costs, information spread, and privacy. Throughout, the focus is on the ways that culture, language, and technology interact.

HUMN 45 - Race and Technology (5)

Considers how racial and gendered systems interact with technological innovations (such as facial recognition, codes and algorithms, data networks, surveillance technologies, and drones) and how inequalities find their way into the code driving techno-intelligence. Foregrounds the question of who benefits and who loses through these "innovations." Assesses the holistic picture of technological development: the historical context of several technologies, how they affect the environment, who works to build the components, and who becomes the experts of how we address social problems. Students debate these issues and consider how we might propose alternative solutions or interact differently with technologies and the worlds they offer.

HUMN 55 - Technologies of Representation (5)

Explores the technologies that variously delight, extend, and command our imagination. Students explore the social and political problems they can create or amplify and collaborate on creative responses. In this iteration, the focus is on technologies for visual representation. Examines cameras, drones, apps, algorithms and other technologies that allow people to make and share images, and asks how these technologies shape how and what we see, as well as what they keep hidden and obscure. Also investigates how power operates in the making, circulation, and consumption of pre- and post-internet visual culture.

Upper-Division

ITAL - ITALIAN

Lower-Division

ITAL 1 - First-Year Italian (5)

During the first quarter of this first-year sequence, students learn to introduce themselves, to talk about their daily activities and hobbies, to describe themselves and their friends/families, and to recount past events. The first-year sequence (1-2-3) begins in fall quarter.

ITAL 1A - Accelerated Italian (5)

The first quarter of accelerated instruction in elementary Italian language. The accelerated pace allows a rapid mastery of grammar and vocabulary, giving students a basic knowledge of Italian in only two quarters. Completion of the sequence is equivalent to the completion of the 1-2-3 sequence. This sequence starts once a year in the winter quarter.

ITAL 1B - Accelerated Italian (5)

The second quarter of accelerated instruction in elementary Italian language. The accelerated pace allows a rapid mastery of grammar and vocabulary, giving students a basic knowledge of Italian in only two quarters. Completion of the sequence is equivalent to the completion of the 1-2-3 sequence.

Prerequisite: Prerequisite(s): ITAL 1A or ITAL 2 or placement by examination. For students completing ITAL 2, ITAL 3 is preferable.

ITAL 2 - First-Year Italian (5)

During the second quarter of this first-year sequence, students learn to tell a story in the past, to make plans about their future, and to express commands and requests. The sequence starts once a year in the fall quarter.

Prerequisite: Prerequisite(s): ITAL 1 or placement by examination.

ITAL 3 - First-Year Italian (5)

During the third quarter of this first-year sequence, students learn to talk about historical events, to formulate hypothetical scenarios, to express wishes, desires, doubts, and opinions, and to discuss more abstract topics (e.g., immigration, work, politics).

Prerequisite: Prerequisite(s): ITAL 2 or placement by examination.

ITAL 4 - Second-Year Italian (5)

Short stories, articles, films, and newsclips are used as the basis for studying intermediate-level conversation and composition. Laboratory assignments involve use of the World Wide Web, conversations with native speakers, films and video clips. Students interested in this course who have not taken the prerequisite at UCSC should meet with the instructor, preferably prior to the first class meeting, and take the placement examination.

Prerequisite: Prerequisite(s): ITAL 1B or ITAL 3 or placement by examination.

ITAL 5 - Second-Year Italian (5)

Reading of Italian short stories and a play are used as basis for further study and refinement of oral and written skills at the intermediate level. Particular emphasis is placed on oral/written discussion of abstract ideas and topics, and on the study of different language registers/contexts. Laboratory work is regularly assigned. Students interested in this course who have not taken the prerequisite at UCSC should meet with the instructor, preferably prior to the first class meeting and take the placement examination.

Prerequisite: Prerequisite(s): ITAL 4 or placement by examination.

ITAL 6 - Second-Year Italian (5)

Reading of first novel in the language and weekly viewing of Italian films serve as basis for oral reports and discussions on various aspects of Italian culture and civilization. Weekly assignments, three essays, and a paper on topics derived from or related to the text. Students interested in this course who have not taken the prerequisite at UCSC should meet with the instructor, preferably prior to the first class meeting, and take the placement examination.

Prerequisite: Prerequisite(s): ITAL 5 or placement by examination.

ITAL 50 - Basic Italian Conversation (5)

Gives students an opportunity to practice speaking and listening skills to build their fluency in Italian. Develops conversational strategies, introduces some grammar, and includes vocabulary drills and key expressions through role plays, games and small-group activities.

ITAL 80 - Italian Culture Through Cinema (5)

Film is used as a medium through which images of Italians and their culture are disseminated, perpetuated, and crystallized. Whether these representations offer historical perspectives or stereotypes, they are important documents for the study of Italian culture, society, history, and politics. Students cannot receive credit for this course and Italian 106.

ITAL 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

ITAL 99 - Tutorial (5)

Students submit petition to sponsoring agency.

ITAL 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

ITAL 100 - Advanced Italian Composition and Conversation (5)

Provides intensive practice in oral and written Italian. Focuses on vocabulary building and increased oral and written expression. Active student participation is essential and constitutes a significant portion of the course including class discussions, oral presentations, written reports, responses and essays, using different genres of writing, including, but not limited to diaries, epistles (formal and informal), blogs, text messaging, dialogues, short stories, memoirs, interviews, podcasts, and media language.

Prerequisite: Prerequisite(s): ITAL 6 or by permission of the instructor.

ITAL 101 - Italian Culture through Food (5)

Explores how the evolution of the Italian culinary tradition and the variety of eating habits reflect the historical and economical changes that took place in Italian society over the most recent centuries. Course is taught in English.

ITAL 106 - Italian Culture Through Film (5)

Film is used as a medium through which images of Italians and their culture are disseminated, perpetuated, and crystallized. Students focus on pivotal issues in Italian culture, society, history, and politics, and develop an informed opinion on relevant issues in Italian studies. The course is taught in English with a mandatory enhancement section in Italian. The enhancement section meets once a week and is designed to give students who are already familiar with the language the opportunity to discuss the films in Italian and to read/view additional material in the language. Students cannot receive credit for this course and ITAL 80.

Prerequisite: Prerequisite(s): ITAL 6.

ITAL 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

ITAL 199 - Tutorial (5)

Students submit petition to sponsoring agency.

ITAL 199F - Tutorial (2)

Students submit petition to sponsoring agency.

JAPN - JAPANESE

Lower-Division

JAPN 1 - First-Year Japanese (5)

Students carry out beginning-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write Japanese scripts (hiragana, katakana, and about 14 kanji).

JAPN 2 - First-Year Japanese (5)

Students carry out beginning-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write 71 additional kanji.

Prerequisite: Prerequisite(s): JAPN 1 or by consent of instructor.

JAPN 3 - First-Year Japanese (5)

Students carry out beginning-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write 53 additional kanji.

Prerequisite: Prerequisite(s): JAPN 2 or by consent of instructor.

JAPN 4 - Second-Year Japanese (5)

Students carry out intermediate-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write 57 additional kanji.

Prerequisite: Prerequisite(s): JAPN 3 or by consent of instructor.

JAPN 5 - Second-Year Japanese (5)

Students develop intermediate-level competence in listening, speaking, reading, and writing in diverse social contexts; acquire a deeper and broader understanding of Japanese society and culture; and learn how to read and write 74 additional kanji characters.

Prerequisite: Prerequisite(s): JAPN 4 or by consent of instructor.

JAPN 6 - Second-Year Japanese (5)

Students carry out intermediate-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write 57 additional kanji. Emphasis is placed on developing the student's cultural knowledge relevant to inter-cultural communication.

Prerequisite: Prerequisite(s): JAPN 5 or by consent of instructor.

JAPN 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

JAPN 99 - Tutorial (5)

Students submit petition to sponsoring agency.

JAPN 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

JAPN 103 - Advanced Japanese (5)

Students carry out advanced-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write 100 additional kanji. Emphasis placed on developing the student's cultural knowledge about Japan as well as knowledge relevant to inter-cultural communication.

Prerequisite: Prerequisite(s): JAPN 6 or by consent of instructor.

JAPN 104 - Advanced Japanese (5)

Students carry out advanced-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write 100 additional kanji. Emphasis placed on developing the student's cultural knowledge about Japan as well as knowledge relevant to inter-cultural communication.

Prerequisite: Prerequisite(s): JAPN 103 or by consent of instructor.

JAPN 105 - Advanced Japanese (5)

Students carry out advanced-level tasks that involve listening, speaking, reading, and/or writing, and learn how to read and write 100 additional kanji. Further development of cultural knowledge and understanding through critical examination of authentic Japanese materials in a variety of genres, including literary work, expository writing, and films. May be repeated for credit with consent of instructor.

Prerequisite: Prerequisite(s): JAPN 104 or by consent of instructor.

JAPN 106 - Advanced Japanese (5)

Students carry out advance-level tasks that involve listening, speaking, reading, and writing. Emphasis is placed on increasing the student's in-depth cultural knowledge about Japan and knowledge relevant to intercultural communication as well as developing the student's ability to critically read a variety of texts.

Prerequisite: Prerequisite(s): JAPN 104 or by permission of instructor.

JAPN 109 - Japanese Language, Culture, and Society (5)

Critical reading of Japanese texts, such as essays, film scripts, and novels in regard to linguistic diversity related to cultural and social diversity. Topics include standard Japanese and regional variation, politeness and honorifics, age-related stylistic variation, and gendered language.

Prerequisite: Prerequisite(s): JAPN 104 or by consent of instructor.

JAPN 111 - Japanese Arts and Beyond (5)

Students develop critical literacies through critiquing visual and performing arts by Japanese, Zainichi Korean, and Indigenous Ainu artists. Course enhances students' linguistic skills and critical literacy in understanding and contextualizing content and promotes interactive and experiential learning by engaging with a different range of sources (texts and art forms) in and outside the classroom. Students learn about artists and their artwork through reading texts and visual materials including artists' own writings, articles, and audio-visual media in Japanese and English. Students also learn to develop criticality in discussing and analyzing aesthetic, cultural, sociopolitical aspects of artwork related to social engagements, self and other, (im)mortality, feminism, gender, sexuality, colonialism, and indigeneity in their target language.

Prerequisite: Prerequisite(s): JAPN 104 or equivalent.

JAPN 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

JAPN 199 - Tutorial (5)

Students submit petition to sponsoring agency.

JAPN 199F - Tutorial (2)

Students submit petition to sponsoring agency.

JRLC-JOHN R LEWIS COLLEGE

Lower-Division

JRLC 1 - Academic Literacy and Ethos: Social Justice and Community (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Reflects our college theme of Social Justice and Community, addressing topics such as identity formation, inequality, and environmental injustice.

Prerequisite: Enrollment is restricted to college members.

JRLC 1A - Introduction to University Life and Learning (1)

Orientation to and exploration of the nature of the liberal arts, and of learning at research universities. Topics include: academic planning for upper-division coursework; enrollment processes; and understanding pathways to degree completion; UCSC resources that support health and well-being strategies for academic success; the cultivation of just communities; the prevention of sexual harassment and violence; campus conduct policies; awareness of risks associated with drug and/or alcohol use; and an introduction to traditions of community-engaged learning, ground-breaking research, and interdisciplinary thinking that define a UC Santa Cruz degree. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year College Ten students.

JRLC 20 - Understanding Popular Music (5)

Introduces students to the academic study of popular music. Covers the blues, rock 'n' roll, soul, funk, disco, punk, and hip-hop. People often understand music genres exclusively in terms of their sonic characteristics. But this course takes a different tack, looking as much at a genre's social context as to the sounds themselves. Indeed, the path toward knowledge leads in both directions. What can history tell us about music? How can popular music tell us about our history?

JRLC 60 - Understanding Sustainability: Researching Environmental Justice at UCSC (5)

Through readings, discussions, and primary research on campus, course explores the following questions: What is sustainability at UCSC and what assumptions about the relationships between humans and nature are privileged in these definitions? (Formerly, I Couldn't Imagine Myself Anywhere Else: Understanding UCSC Undergraduate Narratives.)

Prerequisite: Enrollment is restricted to College Scholars students.

JRLC 66 - Extinction and Justice (5)

Examines histories of extinction, with particular attention to how human activity has contributed to species loss. Using the concept of "multispecies justice" as a guide, students consider a variety of historical extinction events, explore how certain endangered species were brought back from the brink, discuss responsibilities to nonhuman beings, and debate the ethics of ongoing de-extinction projects.

JRLC 85 - Social Justice Issues Workshop (2)

Series of presentations, films, and workshops that address personal and cultural identity and examine social, cultural, political, environmental, and other justice concerns.

Prerequisite: Enrollment is restricted to John R. Lewis College members during priority enrollment only.

JRLC 86 - College Leadership Development (2)

Students newly appointed into leadership positions at John R. Lewis College explore the concept of leadership relating to the college's theme of Social Justice and Community. Prerequisite(s): current John R. Lewis College student leader; permission of instructor.

JRLC 92 - Social Justice Issues Colloquium (1)

Weekly colloquium on social justice issues with a different topical focus each quarter. Presentations by UCSC faculty and invited speakers. Students must attend class, read an assigned article or book chapter(s) on the week's topic, and write a one-page synopsis.

JRLC 95 - Social Justice and Nonviolent Communication

(Rumi's Field) (2)

Nonviolent Communication provides tools for the work needed to bring our reality closer to the ideal of a world with dignity and equity for all its members. Explores righteous anger, grief, empathy, diplomacy, and making requests others want to say "yes" to. The course nickname is "Rumi's Field," which comes from a Rumi poem: "out beyond ideas of wrongdoing and rightdoing/there is a field/I'll meet you there." Formerly Social Justice and Nonviolent Communication (Rumi's Field Living-Learning Community).

JRLC 98 - Alternative Spring Break (2)

Provides students with the opportunity to conduct service-learning work in a local Santa Cruz community over spring break. There are four preliminary class meetings in the winter quarter. Winter meeting attendance is required. Enrollment is by interview only. Enrollment is restricted to College Nine and John R. Lewis College members.

Upper-Division

JRLC 105 - The Making and Influencing of Environmental Policy (5)

Explores how environmental policy is made and influenced. Students learn about key contemporary environmental issues and the forces at play in determining environmental policy outcomes. Focuses on skills that enable citizens to impact environmental policy.

Prerequisite: Enrollment is restricted to sophomore, junior, and seniors.

JRLC 106 - Expressive Arts for Social Justice (2)

Students explore their own creative output in order to inspire community dialogue around social justice issues. Open to those who identify as artists as well as those who do not. Interested students must attend an information session and commit to expectations. Preference is given to College Nine and John R. Lewis College members.

JRLC 111 - Joy In Social Movements (5)

Focuses on radical joy, the feelings, and practices of freedom in social justice movements. Examines social and psychological effects of joy on social movement participants in terms of growth of movements, well-being and creativity of participants, and evolution of ideas. The articulation of radical joy is traced in movements against white supremacy, patriarchy, ableism, queer/trans-phobia, and other intersections of liberation movements. The course has a primary focus on art, music, and artivism, and will develop students' art praxis.

JRLC 115 - Research Methods for Social Justice (2)

Fosters a deeper intellectual engagement with the theme of John R. Lewis College through the design and implementation of community-based research projects developed in close consultation with community partners. Students gain methodological, teamwork, and critical-thinking skills while furthering social justice. Prerequisite(s): CLNI 85, or JRLC 85, or equivalent. Enrollment is restricted to College Nine and John R. Lewis College members and by permission of instructor.

JRLC 120 - Practical Activism Conference Planning and Development (2)

Offers an applied experience of collaborative planning, production, and leadership. Students plan workshops and other event components; conduct outreach and publicity; and address all aspects of educational event planning. Enrollment is restricted to members of the spring volunteer Practical Activism planning group. Enrollment is by permission of the instructor.

JRLC 125A - Transcommunal Peace Making (2)

Explores the theoretical tenets and applications of Transcommunality, an outgrowth of the principles of Kingian non-violence, which works toward peace, tolerance, and mutual respect across difference and diversity. UCSC students connect with the Cemanahuac Cultural group, a multi-ethnic and multi-racial gathering of incarcerated men who are warriors for peace within and outside the prison community. Three meetings will be held at the Correctional Training Facility (CTF) in Soledad, California. Enrollment is restricted to junior and senior John R. Lewis College members and by interview.

JRLC 125B - Transcommunal Peace Making (2)

Explores the principles of community, guided by established texts, for inmates at the Correctional Training Facility (CTF) in Soledad, California. Covers the theoretical tenets and applications of Transcommunality, an outgrowth of the principles of Kingian non-violence. Three joint meetings will be held with UCSC students enrolled in the parallel JRLC 125A. Enrollment by permission of instructor.

JRLC 135 - Apprenticeship in Community Engaged Research (5)

Course takes a holistic approach in familiarizing students about how to effectively and ethically conduct community engaged research, from contextualized understandings of power and knowledge to hands-on training in various methodologies through a class project. The topical focus of the course varies (e.g., sustainability, water justice, educational equity etc.).

JRLC 136 - Methodologies of Critical Praxis (5)

Considers an ethic of engaging with communities that honors existing knowledges and integrates them into community-engaged action plans and research strategies. Explores a list of questions critical scholars must consider when building socially just community partnerships. Interrogates notions of help and volunteerism and explores theories and practices of popular education as a praxis engagement. Includes practice interviews, oral histories, field notes, and other research methods. Interacts with community partners through forums, blogs, and other multimedia.

Prerequisite: Prerequisite(s): JRLC 135 or an equivalent course.

JRLC 140 - Secrecy, Knowledge, and Politics (5)

Overview of definitions, history, theory, law, and policy underlying secrecy. Through scholarly and popular readings, podcasts, video/film, guest speakers, and primary materials, course explores how secrecy—as the intentional and unintentional concealment of information and knowledge—permeates the social fabric, impacting social relationships as well as hampering public knowledge of historical and contemporary government policies and actions.

JRLC 191 - Teaching Social Justice (5)

Undergraduates at upper-division level participate in teaching discussion groups for JRLC 85 (W). Prerequisite(s): permission of instructor: essay describing interest in becoming course assistant, copies of evaluations, and letter of recommendation from faculty member and/or college staff member. Enrollment is restricted to John R. Lewis College juniors and seniors.

JRLC 194 - Group Tutorial (5)

Independent study through which a group of students explores a particular topic in consultation with an instructor. Prerequisite(s): JRLC 91 or JRLC 105 recommended. Students submit petition to sponsoring agency.

JRLC 194F - Group Tutorial (2)

Independent study through which a group of students explores a particular topic in consultation with an instructor. Prerequisite(s): JRLC 91 or JRLC 105 recommended. Students submit petition to sponsoring agency.

JRLC 199 - Tutorial (5)

Individual directed study for upper-division college members with college-affiliated faculty. Students must submit petition with one of the college academic advisers with accompanying letter from faculty adviser. Approval of provost required. Enrollment is restricted to upper-division John R. Lewis College members.

JRLC 199F - Tutorial (2)

Individual directed study for upper-division college members with college-affiliated faculty. Students must submit petition with one of the college academic advisers with accompanying letter from faculty adviser. Approval of provost required. Enrollment is restricted to upper-division John R. Lewis College members.

JWST - JEWISH STUDIES

Lower-Division

JWST 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

JWST 195A - Thesis Research (5)

Devoted to independent research under the guidance of a primary thesis adviser. Students are expected to meet with their thesis adviser every two weeks to report on research progress and receive advice and criticism. Enrollment restricted to junior and senior Jewish studies majors. Students submit petition to sponsoring agency.

JWST 195B - Thesis Writing (5)

Devoted to independent writing under the guidance of the primary and secondary thesis faculty advisers. Completed theses must be a minimum of 40 pages in length. Student are required to meet regular with their faculty advisers and to submit at least two drafts for detailed criticism. Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirement. Enrollment restricted to junior and senior Jewish studies majors.

JWST 199 - Tutorial (5)

Students submit petition to sponsoring agency.

JWST 199F - Tutorial (2)

Students submit petition to sponsoring agency.

KRSG - KRESGE COLLEGE

Lower-Division

KRSG 1 - Academic Literacy and Ethos: Learning in Community (5)

Teaches foundational practices for intellectual and personal development in an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Framed by three overarching questions: How do I learn? Why do I learn? and From whom do I learn? Students read in different genres and formats and engage in peer-to-peer learning and collaborative discussion. Assignments include reflections on reading and discussion, an oral history project, and a creative project. (Formerly Academic Literacy and Ethos: Power and Representation.)

Prerequisite: Enrollment is restricted to college members.

KRSG 1A - Introduction to University Life and Learning (1)

KRSG 1A explores opportunities, expectations, and responsibilities in university life. Topics include: academic planning; general education requirements; majors and minors; campus policy; and preparation for Kresge's core course: Power Representation. Students gain familiarity with resources for health, well-being, time management, academic success, cultivating just communities, sexual harassment and violence prevention, reflection on UCSC's principles of community, and an introduction to the living and learning tradition of KRSG College. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Kresge College students.

KRSG 1T - Introduction to Transfer Life and Learning (1)

Transfer student orientation to the opportunities, resources, learning experiences, and principles of community at UCSC. The course explores the purpose and structure of a research university. Transfer students gain an understanding of graduation requirements and how to customize their pathway to degree completion. This course can be taken for Pass/No Pass grading only. (Formerly Introduction to Research Universities and the Liberal Arts.)

Prerequisite: Enrollment is restricted to transfer students.

KRSG 2 - The Power of Filmmaking (3)

Introduction to media representations through film and their consequences for individuals and communities. Addresses how today's films represent struggles for justice and agency—especially relative to race, gender, citizenship/documentation, and communities of diaspora—in terms of filmmaking frameworks and the dialogues they foment. Each week class screens and discusses a collection of films, television, news programming, and video games to analyze and critique the ways in which power operates. Students also use such analyses and criticism to inform us as we create our own filmmaking projects. (Formerly offered as Power and Representation in Media.)

KRSG 3 - Campus Natural History Practicum (2)

Develop practical skills and knowledge in naturalist observation. Acquire an overview of the field of natural history, particularly applied to the UCSC campus. Document an evolving and multidimensional personal experience of natural spaces, including, but not limited to, wilderness. (Formerly KRSG 18.)

KRSG 10 - Reading Marx (2)

Karl Marx’s writings have had a far-reaching impact on political and intellectual history, producing many different and often conflicting readings. This small, in-person seminar provides an introduction to Marx’s writing through careful reading and discussion of a range of published and unpublished texts. Each week focuses on a specific concept and tasks seminar participants with collaboratively forging interpretive insights through careful analysis and discussion. Emphasis is placed on developing skills and practices of collective reading. To promote reading deeply and mindfully, all texts are read in hard copy (provided at no cost to students).

KRSG 12 - Reading Science Fiction: Octavia Butler and Ursula LeGuin (2)

Discussion-based seminar where students read classic works by two foundational figures in science fiction: Octavia Butler and Ursula K. LeGuin. Discusses the impact of these authors in science fiction and literature more broadly; reflects on the unique power and possibilities of the science fiction genre itself; and thinks about what it might mean to cultivate a lasting reading practice, one based on pleasure and joy, not obligation. Emphasis is placed on developing skills and practices of collaborative reading. To promote reading deeply and mindfully, all texts are read in hard copy, provided at no cost to students. (Disability Resource Center digital accommodations will be provided as needed.)

KRSG 25 - Transfer Excellence at the Research University (2)

Guides transfer students toward deeper engagement with the research university. Students work in small-scale learning communities and the course is designed as a catalyst for opportunities in undergraduate research, internships, creative projects, and experiential learning. Topics include: excelling in the quarter system and upper-division classes; centering strengths and overcoming imposter syndrome; developing research goals; financing educational goals; and planning for life after graduation, including careers and graduate school. (Formerly Successful Transfer to the Research University.)

Prerequisite: Enrollment is restricted to transfer students.

KRSG 30 - Theater for Public Speaking (2)

A public speaking course that uses community-building theater games and embodied practice to teach students to be more comfortable with themselves, collaborate with peers, and communicate with an audience. Students learn techniques and build confidence to present in class and professional contexts.

KRSG 51 - City on a Hill Press Practicum in Production (2)

Students work collaboratively on City on a Hill Press, the student-run, campus newspaper of record, gaining practice in news production. Students engage in analysis and critical reflection regarding both the form and content of news, and its critical relationship to a healthy democracy. Course outcomes include the development of media literacy, and experience addressing issues such as intent, fairness, accuracy, and impact. Areas of focus include, but are not limited to, graphic design, illustration, photojournalism, visual composition, copy editing, fact-checking, and media literacy. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is by permission of the instructor in consultation with City on a Hill Press co-editors-in-chief.

KRSG 52 - City on a Hill Press Practicum in Reporting and Editing (5)

Students work collaboratively on City on a Hill Press, the student-run, campus newspaper of record, gaining practice in investigative journalism and news editing. Students engage in analysis and critical reflection regarding both the form and content of news, and its critical relationship to a healthy democracy. Course outcomes include the development of media literacy, and experience addressing issues such as intent, fairness, accuracy, and impact. Areas of focus include, but are not limited to, story production, story assignment and management, and staff editorial composition. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is by permission of the instructor, in consultation with City on a Hill Press co-editors-in-chief.

KRSG 60C - Narratives of Incarceration and Abolition (3)

Analyzes systems of incarceration in the U.S. and explores movements to abolish those systems and to envision alternative modes of justice. Themes include, but are not limited to, the role that mass incarceration plays in contemporary society, histories of resistance, political prisoners, racial justice, and the intellectual, creative, and political interventions of incarcerated people. Students engage in collaborative projects throughout the class, and learn effective strategies for group work and interpersonal communication. (Formerly offered as Prison Narratives.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

KRSG 60F - Writer's Read (2)

Students attend weekly creative writing readings by fiction writers and poets, read excerpts from the writers' works, participate in question and answer sessions, and write short, creative and/or analytical responses to the readings and writings.

Prerequisite: Enrollment is restricted to Kresge and Porter college members.

KRSG 63 - Kresge Garden Cooperative (2)

Hands-on practice with basic ecological horticulture skills through work at the Kresge Garden, including soil cultivation. Enrollment by instructor approval through application (available in the Kresge College office). Enrollment limited to college members.

KRSG 65W - Kresge Lab: Creative Writing (3)

A course of guidance and exercises to assist in developing independent writing projects, and a group setting for critique and feedback. Students do in-class and out-of-class writing assignments; read and discuss texts; and work to develop a final project.

KRSG 67 - Transformative Justice Seminar (3)

Examines the principles and processes of restorative justice juxtaposed to current practices in the judicial and educational systems of contemporary society. Students study leading restorative justice practices and their implication for individual and community transformation. Students learn to facilitate the restorative justice process restorative circles, and have the opportunity to practice them in real time. Enrollment is by instructor consent and is restricted to frosh, sophomores, and juniors.

KRSG 70 - Media for Climate Justice (3)

Students learn about and address the climate crisis through creative interventions (video, photography, writing). Students discuss and reflect upon their impact on climate change, learn how they might tackle the climate crisis, and create their own climate change portfolio for future creative-activist work.

KRSG 76 - Social Documentary Photography (5)

History of social documentary photography with its practice. Includes analysis of historical and contemporary images from social documentary work; camera, darkroom, and digital skill development; an individual student documentary project; and collective project discussion.

Prerequisite: Enrollment is restricted to Kresge College members.

KRSG 85S - The Politics of Climate Crisis (5)

The climate crisis challenges and frustrates common assumptions about individual and collective agency, nature and the process of history, the organization of human and non-human activity, and of politics itself. This seminar examines current debates and representations in various media, working collaboratively to understand the political dimensions of what we designate in simple terms as “climate change”, but which really encompasses a broad range of interrelated natural and social phenomena. Students develop critical interdisciplinary research projects within thematic groups that explore more specific topics—e.g., strategic failures of cosmopolitanism, eco-fascism and climate migration, biodiversity and land enclosure, the Green New Deal vs. degrowth, or the ethics of sabotage. (Formerly Critical Writing Practicum: The Politics of Climate Crisis.)

Prerequisite: Enrollment restricted to students in the College Scholars Program.

KRSG 99 - Tutorial (5)

A program of directed study arranged between a student and a Kresge faculty member. Student must submit petition to sponsoring agency. Student must confirm Graded or P/NP with instructor in petition before enrolling.

KRSG 99F - Independent Study (2)

A program of directed study arranged between a student and a Kresge faculty member. Student must submit petition to sponsoring agency. Student must confirm Graded or P/NP with instructor in petition before enrolling.

KRSG 99G - Independent Study (3)

A program of directed study arranged between a student and a Kresge faculty member. Student must submit petition to sponsoring agency. Student must confirm Graded or P/NP with instructor in petition before enrolling.

Upper-Division

KRSG 100 - University Learning with Intention and Purpose (2)

Students learn practical ways of maximizing the resources of a public education and research institution. Students collaborate across disciplines, broaden impacts of higher learning, and develop strategies for effective interaction with faculty and the broader professional communities to which they aspire.

Prerequisite: Prerequisite(s): Enrollment is restricted to sophomore, juniors.

KRSG 102 - STARRS Internship (Services for Transfer, Reentry, and Resilient Scholars) (2)

Student-interns develop professional skills while giving back to transfer, re-entry, and resilient scholar communities. Students dialogue about university policy; identify structural barriers faced by minoritized and other disadvantaged communities when pursuing higher education; collaboratively design projects to address them; and implement and lead civic-engagement activities. Enrollment is by instructor permission. Application required to match student-interns' skills and interests with specific internship projects being offered. Email jrceja@ucsc.edu for application.(Formerly STARS Internship: Services for Transfer And Reentry Students.) May be repeated for credit.

KRSG 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under Kresge faculty supervision. (See KRSG 42.) Prerequisite(s): upper-division standing in Kresge, a proposal supported by a Kresge faculty member willing to supervise, and college approval.

KRSG 193 - Field Study (5)

Supervised off-campus study conducted under the immediate and direct guidance of a Kresge faculty supervisor. To be used primarily by upper-division students doing part-time, off-campus study. Prerequisite(s): approval of student's adviser and the college.

KRSG 194 - Group Tutorial (5)

A program of independent study arranged between a group of students and a Kresge faculty member. Students submit petition to sponsoring agency.

KRSG 195 - Senior Thesis (5)

Senior thesis or project for student doing individual major program. May be repeated twice for credit. Prerequisite(s): permission of sponsoring committee and college approval.

KRSG 198 - Independent Field Study (5)

Provides for college-sponsored individual study programs off campus, for which Kresge faculty supervision is not in person (e.g., supervision is by correspondence.) Prerequisite(s): approval of the student's faculty sponsor and college approval.

KRSG 199 - Tutorial (5)

A program of individual study arranged between an upper-division student and a Kresge faculty member. Students submit petition to sponsoring agency.

KRSG 199F - Tutorial (2)

Tutorial

LAAD - LANGUAGES

Lower-Division

LAAD 99 - Tutorial (5)

Students submit petition to sponsoring agency.

LAAD 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

LAAD 199 - Tutorial (5)

Students submit petition to sponsoring agency.

LAAD 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

LALS - LATIN AMERICAN AND LATINO STUDIES

To view planned offerings for the current academic year, please visit https://lals.ucsc.edu/courses/index.html.

Lower-Division

LALS 1 - Introduction to Latin American and Latino Studies (5)

Interdisciplinary introduction presenting the elements for studying Latin American politics and economics, culture, and society as well as the dynamics of Latino communities in the U.S. Special attention paid to issues of colonialism, human rights, U.S. foreign policy toward Latin America, racism, capitalist globalization, migration, to emerging political and economic shifts in the Americas, and to new local and transnational efforts for social change on the part of Latin America's peoples and Latinos in the U.S.

LALS 5 - Introduction to Human Rights and Social Justice (5)

Introduces human rights as a way to study social justice. Students gain an understanding of interdisciplinary approaches to human rights as a theory, legally, and as a basis for global social movements.

LALS 10 - Introduction to Chicanx & Latinx Studies (5)

Introduces students to the interdisciplinary fields of Chicanx and Latinx studies through the frameworks of social justice and anti-racism. Examines the histories, current issues, and unique lived experiences in order to understand the intersectional complexities. Delves into questions of race, ethnicity, class, gender, sexuality, indigeneity, citizenship, and belonging and illuminates the historical development by contextualizing major concepts, debates, and approaches while underscoring how these fields transform historical narratives of inequality, contextualize current realities, and

can inform political change. Students engage in lively discussions to develop critical thinking skills, and to hone reading and writing skills.

LALS 15 - Truth, Justice, and Statistics (5)

Provides statistical methodological training and skills through the examination of social and cultural manifestations of truth as a tool to serve social justice efforts for Latinx and other minoritized students in the education setting.

LALS 20 - Latino Politics (5)

Offers a domestic (U.S.) and transnational approach to Latino politics, focusing on the five largest Latino groups: Mexicans, Puerto Ricans, Cubans, Salvadorans, and Guatemalans. Issues addressed include Latino electoral participation, Latino public opinion, migrant political incorporation, and transnationalism among others.

LALS 30 - Social Movements in Latin America (5)

Examines contemporary social movements in Latin America, especially those that arose from popular response to different forms of social exclusion and to authoritarian political systems. Explores a variety of popular movements, their successes and setbacks, including rural and urban uprisings, native nations and their descendants, women, labor, human rights, and transnational movements.

LALS 31 - Latinx Feminisms (5)

Examines gender and feminist theories emerging from Latinx communities in the U.S. and Latin America. Provides a transnational and transborder overview of how Latinx feminisms have contributed to movements at large such as: national liberation, reproductive justice, migrant justice, indigenous movements, and the anti-violence movement. Course emphasizes a connection and relationality to how feminist movements in Latin America are informed by U.S.-Latin American politics and how feminist resistance and mobilization transcends and circulates across borders.

LALS 32 - Citizens, Denizens, Aliens (5)

Explores theories and practices of citizenship with a focus on how institutions, such as the immigration apparatus, school, and prison, produce and shape inclusion, marginalization, exclusion, and mobility and how social actors envision and enact home and belonging.

LALS 33 - Central American Migration (5)

Introduces students to the topic of Central American migration through a critical and interdisciplinary lens. Explores the forces that contextualized migration to, through, and from this region during different historical moments. Students learn about key aspects of Central American history that have and continue to drive migration from the isthmus, with special attention to U.S.-bound migration from the 1970s onward. Students also learn about some of the challenges Central American migrants continue to face in their places of birth, while in transit, and once they arrive at their destinations.

LALS 39 - Queer Indigenous Histories in the Americas (5)

Introduces critical themes on queer Indigenous issues, guided by queer Indigenous history and cultural manifestations of queerness in Indigenous communities in the Americas. Drawing from colonial accounts, course focuses on exploring historical themes related to queer Indigenous relationship with their bodies and sexualities, queer Indigenous people navigating violence within colonial institutions, and the mechanisms to assimilate Indigenous gender and sexualities into the gender binary and heteronormativity. Second half of the course analyzes mechanisms of resistance to colonial violence, and the ways Indigenous communities and other communities of color understand queerness in the contemporary era in the Americas. Students develop critical thinking skills to analyze colonization and the imposition of heteronormativity on Indigenous genders and sexualities.

LALS 40 - Latinos and Labor (5)

Explores the historical, social, economic, and political dynamics of inequality, stratification, and segmentation that shape the occupational pathways and workplace conditions of Latinos in the United States. Students learn about the structures, policies, and ideologies that influence Latinos' working lives as well as how individuals experience their work in a variety of sectors.

LALS 45 - Intersections of Race, Class, and Gender (5)

Introduces theories of race, class, and gender which shape understandings about racial/ethnic issues in the United States. With particular attention to the experiences of U.S. racial/ethnic groups, including Latinas/os, African Americans, Asian Americans, and Native Americans, this course draws from interdisciplinary research to address how race, class, and gender are also crosscutting dynamics.

LALS 49 - Chicana Political Organizing Histories (5)

Introduces students to the organizing of Chicanas and Latinas, spanning from the 1960s Chicano Movement to the contemporary impacts. Delves into the emergence of the “Chicana Identity,” including its limitations, the movement from a feminist perspective, and the movement’s goals. This course encourages students to understand how a movement can impact culture, identity, and history by mapping the longevity of organizing histories. Draws on texts, podcasts, and videos to examine histories and understand how systems of power impact political narratives.

LALS 50 - Transnational Feminist Organizing in the Americas (5)

Explores key aspects of transnational feminist organizing in the Americas, including transnational feminist theories and feminist activism in Latin America and the Caribbean. Discusses how women from throughout the Americas region organize politically and socially across gender, race, ethnicity, sexuality, and nationality.

LALS 54 - Racism, Science, and Health: Colonial and Carceral

Legacies (5)

Examines histories and contemporary manifestations of systemic racism, colonialism, and carcerality in the development and practice of science and medicine in the Western world, with an emphasis on how this has impacted Latinx and Latin American communities. Course draws on texts from a wide range of disciplines in the social sciences and humanities, including history of science and medicine, medical anthropology, ethnic studies, and science and technology studies. Students explore the impact of racialized bias and a lack of diversity in science and ways in which to address these deficiencies. Students also learn about efforts to integrate social justice, anti-racist, anti-colonial, and abolitionist principles and practices into the fields of science and medicine.

LALS 55 - AIDS Across the Americas (5)

Compares the response to AIDS in the United States and Latin America, with special attention to migration, human rights, activism, stigma, gender, and sexuality. Students develop a conceptual foundation to conduct a people-centered approach and cultural analysis of AIDS.

LALS 56 - The Right to Health (5)

Over the 20th century, Latin American countries experimented with the challenge of ensuring the right to health. Many of their approaches were inspired by Latin American Social Medicine, a social scientific field whose contributions remain, to this day, under-recognized in traditional public health. This course introduces the field of Latin American Social Medicine and its struggles to affirm health as a fundamental human right. Through a range of case studies, students examine how unequal social contexts and power relations shape collective health, the politics of care, and everyday experiences of illness and well-being.

LALS 56L - Laboratory in Social Medicine (2)

Offers students the opportunity to conduct experimental inquiry in the field of social medicine and to supplement the knowledge acquired in LALS 56, The Right to Health. The optional laboratory guides students through contemporary issues and debates in Latin American Social Medicine. Through a scaffolded approach, students research a current health issue in Latin America and design a collaborative original proposal to address it informed by perspectives in social medicine.

Prerequisite: Prerequisite(s): concurrent enrollment in LALS 56.

LALS 57 - Drugs, Addiction, and Recovery in the Americas (5)

Course moved beyond behaviorist and neurobiological examinations of drug use, addiction, and recovery to explore the social, cultural, political, and embodied contours and contexts of these phenomena among Latinx and Latin American communities. The history and consequences of punitive approaches to drug use, drug markets, addiction, and recovery in both the U.S. and Latin America and their impacts on Latinx communities are explored. Alternative approaches to punitive drug policies such as harm reduction also discussed.

LALS 60 - Latin American Childhoods (5)

Introduces research on childhood in contemporary Latin America. Explores discourses about Latin American children, the regional institutions shaping children's lives, and how children experience and negotiate these larger social forces.

LALS 62 - Chicanx Education: Race, Segregation, and Advocacy (5)

This interdisciplinary course focuses on the resilience of Chicanx students by emphasizing barriers like segregation and the resistance put forward by students, families, and communities in the courts and the streets. Students are introduced to the tactics and past actions of Chicanx to confront racism and discrimination in California public schools. Also focuses on the contemporary discourse around segregation and its impact on Latinx and Chicanx educational outcomes.

LALS 65 - Religion and Revolution in Latin America (5)

Examines the religious beliefs and practices surrounding the revolutionary movements for social change in Latin America with a particular focus on liberation theology.

LALS 75 - Art and Social Change in Latin America: Diego Rivera (5)

Explores the works of Diego Rivera, other Mexican muralists, and the Latin American cultural movements that developed to address relevant social and political issues.

LALS 75L - Art and Social Change in Practice (2)

This hands-on course explores the dynamic relationship between art and social movements in Latin America, focusing on practice-based learning. Students engage with key themes such as resistance, identity, and activism through creating visual art, music, performance, and digital media inspired by Latin American traditions and social struggles.

LALS 78 - Dancing in the Americas (5)

Exploration of the medium of dance through key themes in Latin American and Latino studies. Focusing on dancing bodies as bearers of socio-cultural knowledge, this class engages with and challenges notions of what dance is. Course content is divided into weekly modules that move thematically through topics including cultural encounter, colonial systems of oppression, and anti-colonial theorization of dance. Presenting critical perspectives on the role dance has played throughout the colonial period to the present, this course encourages different ways of considering the Americas as a sociological concept not bound by geography, but mobilized through dancing bodies. (Formerly offered as Anti-Colonial Dancing of the Americas.)

LALS 79 - Hip Hop History/Historia Hip Hop (5)

Exploration of key themes in Latin American history through the medium of hip hop. Students analyze prevalent historical

patterns that speak to shared experiences across the Americas. Course content is divided into weekly modules that move thematically through topics including struggles for social and political citizenship, structural mechanisms of exclusion, and anti-imperialist activisms. Also includes reading primary historical documents and engaging in textual analysis of both archival and contemporary texts. Readings equip students to critically interpret elements of hip-hop culture from contemporary Latin America and the Caribbean including MCing, graffiti, and hip hop as the production of knowledge.

LALS 79S - Hip Hop Historia (5)

Taught in Spanish. Exploration of key themes in Latin American history through the medium of hip hop. Students analyze prevalent historical patterns that speak to shared experiences across the Americas. Course content is divided into weekly modules that move thematically through topics including struggles for social and political citizenship, structural mechanisms of exclusion, and anti-imperialist activisms. Also includes reading primary historical documents and engaging in textual analysis of both archival and contemporary texts. Readings equip students to critically interpret elements of hip-hop culture from contemporary Latin America and the Caribbean including MCing, graffiti, and hip hop as the production of knowledge.

LALS 80D - Political Change in Mexico (5)

Reviews broad trends in contemporary Mexican politics against the backdrop of long-term historical, social, and economic change throughout the 20th century, analyzing how power is both wielded from above and created from below. The course covers national politics, grassroots movements for social change and democratization, environmental challenges, indigenous movements, the media, and the politics of immigration and North American integration.

LALS 80F - Latinos in the U.S.: A Comparative Perspective (5)

Analyzes the Latino experience in the U.S. with a special focus on strategies for economic and social empowerment. Stresses the multiplicity of the U.S. Latino community, drawing comparative lessons from Cuban-American, Puerto Rican, Chicano/Mexicano, and Central American patterns of economic participation and political mobilization.

LALS 80H - Comparative Latina/o Histories (5)

Designed to survey recent works in the field of Latina and Latino histories, with particular emphasis on historiographical approaches and topics in the field. Readings are chosen to expose a selection of the varied histories and cultures of Latina/os in the U.S., and focus primarily on Mexicans, Puerto Ricans, and Cubans.

LALS 80J - Race, Nation, and War (5)

Evaluates the relationship between processes of racial formation, war, and nationalism in Latin America. Case studies range from the wars of independence to more recent forms of transnational violence. Students engage historical and anthropological perspectives and critiques of modernity.

LALS 80P - Environment and Society in Latin America (5)

Examines the implications of environmental degradation and resource extraction for economic growth and social inequality in Latin America. Course focuses on the connections between race, ethnicity, power, poverty, and environmental problems.

LALS 80S - Sexualities and Genders in Latin American and Latina/o Studies (5)

Introduction to issues and themes surrounding sexualities and genders within Latin American and Latina/o studies. Provides background in the basic theoretical and historical frameworks of gender and its relationship to sexuality. In addition to cross-border perspectives, course also examines how gender and sexuality are structured and experienced through other social categories.

LALS 80X - Central American Peoples and Cultures (5)

Examines contemporary societies and peoples of Central America considering how, in recent decades, media, history, war, cultural production, and migration have shaped Guatemala, Honduras, El Salvador, Nicaragua, and Costa Rica both as individual nations and as a region.

LALS 90 - Contemporary Brazil (5)

Introduces issues affecting contemporary Brazilian society and culture, such as the legacy of slavery and persisting social, racial, and gender inequities. Analyses of how different representations of Brazil sustain distinctive national projects, which, in turn, attribute specific meanings to blackness, whiteness, masculinity, femininity, and upper- and lower-class identities.

LALS 90F - Social Justice at Work (2)

Course supports students in their professional development, focusing on strategies for engaging their own lived experiences as marketable skills for their professional pathways. Students engage in critical discussion on professionalism and how to maintain individual values and identities in different professional environments. Draws on campus and community resources, articles from professional development spaces, and guest lectures from individuals on different career pathways.

LALS 94X - Mother Earth, Capitalism, and Crises (5)

With a focus on the Americas, this course introduces students into the debates about the causes and solutions to the twinned crisis of global climate change and rising inequality.

LALS 95 - Undergraduate Research Seminar (2)

Seminar for undergraduates participating in the Cultivamos Excelencia program supporting the development of students as researchers and active participants in academic communities; including lectures on disciplinary methods by participating faculty, work-in-progress sessions for mentors and student researchers, and workshops on formulating research questions, developing a research plan, writing a research paper, and professional development. Enrollment is by instructor permission.

LALS 99 - Tutorial (5)

Students submit petition to sponsoring agency.

LALS 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

LALS 100 - Concepts and Theories in Latin American and Latina/o Studies (5)

Lays the conceptual, theoretical, and analytical groundwork for subsequent LALS upper-division courses. Examines key concepts and major theoretical frameworks within the interdisciplinary fields of Latin American studies and Latina/o/e/x studies, with particular emphasis on the power and value of bridging them. First third of the course explores theories, concepts, and practices in Latin American studies. Second third considers theories, concepts, and practices in Latina/o/e/x studies. Final third examines the rich new understandings and perspectives allowed when we bridge the interdisciplinary fields of Latin American and Latina/o/e/x studies. Taken together, these three sections of the course form the foundation of LALS. Prior or concurrent enrollment in an introductory LALS course is highly recommended.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

LALS 100A - Research in LALS (5)

Introduces research design and methods in the interdisciplinary field of LALS. Combines the analysis of existing LALS research with hands-on experience in a range of research strategies: reading archives, administering surveys, interviewing, conducting participant observations, analyzing quantitative data, and interpreting texts. Students also learn the overall process of designing a research project, from formulating research questions to writing a critical literature review to the effective presentation of research findings. This course emphasizes research oriented toward the pursuit of social change and social justice. (Formerly Social Science Analytics.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Concurrent enrollment in LALS 100L is required. Enrollment is restricted to sophomore, junior, and senior Latin American and Latino studies majors, minors, and combined majors or by permission.

LALS 100L - Research in LALS Lab (1)

Course provides hands-on training in the design of a research project and in the principal methods used in LALS. (Formerly Social Science Analytics Lab.)

Prerequisite: Prerequisite(s): Concurrent enrollment in LALS 100A is required.

LALS 112 - Immigration and Assimilation (5)

Examines immigration to U.S. from colonial era to present with special emphasis on issues of citizenship, social identities, and social membership.

LALS 113 - Criminality, Migration, and Abolition (5)

Traces abolitionist genealogies from the Black Radical Tradition and anti-slavery rebellions to the anti-carceral movement against the prison industrial complex. Focuses on the origins of U.S. criminality and carcerality in conjunction with the inception of U.S. detention practices and immigration policy. Explores emergent interventions such as abolition feminism, abolish ICE, and abolition discourse from the margins to the mainstream.

LALS 122 - Media and Nationalism (5)

Evaluates the links between media and the production of national identities in Latin America. Focuses on theories of nationalism, media, and globalization to examine the production of national histories and representations.

Prerequisite: Enrollment is restricted to juniors and seniors.

LALS 126 - Digit@l Americ@s/Digit@l Latin@s (5)

Examines how social media reconfigures daily lives, cultures, and economies and explores how recent leaps in communication technologies breed digital divides and new forms of activism.

LALS 127 - Genero, Nacion Y Modernidad En El Cine (5)

Taught in Spanish. Examines the relationship between cinema, gender, the nation, and modernity. Focusing on films by key women filmmakers in Latino and Latin America, the seminar examines their engagement with identity, cultural imaginaries, coloniality, sexuality, and gender.

Prerequisite: Enrollment is restricted to Latin American and Latino studies majors, minors and combined majors.

LALS 128 - Latino Media in the U.S (5)

Explores the history and practice of Latino media in the U.S. with an emphasis on work created by, for, with, and about Latino constituencies. Course highlights the role that media plays in struggles for social change, political enfranchisement, creative self-expression, and cultural development. Course content varies with instructor.

LALS 129 - America Latina: Cine, Dictadura y Memoria (5)

Taught in Spanish. Analyzes and compares the rise of authoritarian regimes throughout Latin America in the 20th century through selected films and documentaries. Themes include U.S. foreign policy toward the region, ethnic cleansing, neoliberalism, and memory/resistance/reconciliation through artistic representations.

LALS 129S - Memoria en Las Americas (5)

Taught in Spanish. Examines the ways memories have been created, protected, organized, and suppressed in Latin America, focusing specifically on the cultural technologies involved. Addresses the following questions: What do we remember and why? Who gets to remember? Who decides what is remembered? What does memory mean for our understanding of ourselves and the places we live? The purpose of this course is to provide students with intellectual tools to read against the grain of what becomes legitimized as official and hegemonic knowledge.

LALS 131 - Latino Literatures: Assimilation and Assimilability (5)

Explores assimilation and assimilability in the United States, especially as related to the education and languages of Latinos, via literary forms, such as the memoir, novel, essay, short fiction, film, and/or poetry. (Meets the methods requirement in Latin America and Latino studies.)

LALS 133 - Latina/o Art and Representation (5)

Focus on art forms and visual representations of Latina/os in the United States. Emphasis on visual art created by artists associated with the Chicano/o movement and the Central American diaspora. Topics include cultural identity, murals, public art, and fine art.

LALS 135 - El Salvador: Expresiones Culturales (5)

Course taught in Spanish. Focuses on El Salvador, with attention to cultural expressions and representations, literature, historical perspectives, and contemporary societies.

LALS 136 - Tourism, Culture, and Identity (5)

Interdisciplinary study of tourism in Latin America and its interconnections with culture, power, and identity. Examines contemporary trends of tourism (ethnic tourism, diaspora tourism, sex tourism, and favela tours) and explores how regional, national, and transnational identities shape and are shaped by tourism.

Prerequisite: Enrollment is restricted to juniors and seniors.

LALS 137 - Speculative Fiction and Chicanafuturism (5)

Explores the intersection of race, gender, science, technology, the environment, and the future in speculative fiction by and about Latinxs, migrants, and people of color.

LALS 138 - Dancing the Americas (5)

Introduces the role dance has played and continues to play in the formation of the Americas. Students engage with a diverse range of perspectives on dance practices and analyses of ways dance has contributed to the constitution of identities and as resistance against colonial domination throughout histories of the Americas. Broadening notions of what dance is and what those who participate in dancing experience in different social, cultural and political contexts, this class is inspired by dancing bodies as bearers of socio-cultural knowledge. Class provides tools for deeper appreciation of dance as a primary human activity, as generative of socio-political identities, as negotiation with and resistance against bio-political institutions, and as a category of methods for imagining desirable futures. (Formerly Dancing in the Americas.)

LALS 139 - Queer Indigenous Histories in the Americas (5)

Explores hegemonic heteronormativity, gendercide, queer Indigenous knowledge, and historical queer responses against the colonization of gender and sexuality. Students have the opportunity to engage with different research methodologies via journalism, oral history, and queer archives. Core elements include the creation of queer archives and creative writing. Students explore their potential as writers via the creation of poetry, zines, critical essays, and queer archives, which they elaborate based on the class's materials and their personal/community experiences.

LALS 141 - The Underside of Green Energy Transitions in the Americas (5)

Explores the discursive, socio-ecological, economic, logistics, political, and cultural dimensions of specific "renewable energy industries" and "critical minerals," attentive to the resulting "sacrifice zones." Case studies of specific solar, wind, lithium, hydrogen, desalinization, and "sustainable copper" projects allow students to deepen their understanding of the multiple challenges faced in building just and sustainable futures.

LALS 143 - Race and Ethnicity (5)

Race and ethnicity have been--and continue to be--powerful forces shaping the U.S. experience. This course examines a range of conceptual approaches and monographic studies grounded in the history of the U.S. The readings provide various criteria for studying and understanding these phenomena. The course problematizes race by asking what the readings tell us about race-making and the reproduction of racial ideologies in specific historical contexts. Similarly, ethnicity is treated as a historically specific social construct. (Meets the methods requirement in Latin America and Latino studies.)

LALS 143J - Global Political Economy (5)

Analyzes the global, social, economic, and political forces that shape transnational, national, and regional societal formations and consequently the entire environment for social change. Examines the evolution of revolutionary struggle and its origins within and impact upon the evolving capitalist system.

LALS 144 - Mexicana/Chicana Histories (5)

Explores current historical and theoretical writings on the lived experiences of Chicanas and Mexicana women in U.S. history. Themes include domination/resistance politics, (re)presentations, contestation, social reproduction, identity and difference. Meets the methods requirement in Latin America and Latino studies.

LALS 145 - Grassroots Social Change in Latin America (5)

Focuses on the analysis of collective action by underrepresented groups in Latin America. Concepts and issues include political participation and impact, gender, ethnicity and race, class, the environment, religion, non-governmental organizations, and social capital.

Prerequisite: Prerequisite(s): any two Latin American and Latino studies courses or permission of instructor; open to graduate students.

LALS 147 - Violencia Cotidiana en las Americas (5)

Taught in Spanish. Engages a critical study of violence, social relations, and everyday life in contemporary Latin America. Focuses on the relationship between narratives and acts of violence, and the constitution and social effects of these representations. Requires proficiency in Spanish (written and spoken), and advanced reading knowledge of Spanish. (Formerly LALS 194R .)

Prerequisite: Enrollment is restricted to junior and senior Latin American and Latino studies majors, minors, and combined majors.

LALS 149 - Whiteness in Latin America (5)

Challenges the racial hierarchy of knowledge production by making whiteness into a central object of study and scrutinizing the power that stems from its alleged invisibility. Studies whiteness in three specific Latin American countries and vis-a-vis their respective dominant national discourses: Mexico and its narratives of mestizaje, Brazil and the myth of racial democracy, and Argentina and its discourses of Europeanness. Also examines how whiteness and its "Others" (I.e. blackness, indigeneity, and Asianness) have been imagined, embodied, avoided, and embraced in these three Latin American countries.

LALS 150 - Afro-Latinos/as: Social, Cultural, and Political Dimensions (5)

Explores the lives of African descendants in the Americas, including the Caribbean. Students learn about the settlement patterns of Afro-Latinos/as and Afro-Latin Americans in the region and the ways in which African descendants negotiate their multiple identities and broaden racial frameworks in the United States and Latin America.

LALS 151 - Race & Mobility (5)

Focuses on the intersection between mobility and race, examining both how mobility is racially informed and how differential mobilities inform the construction of racial identities, the production of racial processes, and the representation of racialized spaces. Examining different facets of mobility—movement, meaning, and practice—course topics include: the mutual constitution between mobility and racial identities (blackness, whiteness, Latinidad, and indigeneity); white control over the mobility of "others;" bodily movements (dancing, walking) as sites of resistance and policing; prototypical whiteness and the surveillance of non-white mobile bodies border crossing; and the intersections between racial mobility politics and gender and class dynamics.

LALS 152 - Consumer Cultures Between the Americas (5)

Examines the circuits of media, commodities, and migration connecting the Americas in an age of globalization. Issues of states, transnational markets, social relations, and cultural representations addressed. Relationship between consumption, nationalism, and globalization is considered critically.

LALS 154 - Juventud in Latin America (5)

Introduces students to the study of youth in Latin America through discussions about theoretical approaches to youth in Latin America. Students examine the challenges, obstacles, and experiences of exclusion faced by young people in the region and learn about Latin American youth through a variety of topics, including poverty, education, culture, social movements, and COVID-19.

LALS 155 - Latin American and Latino Youth Movements (5)

Examines the histories, structures, and practices of Latin American and Latino youth movements. Analyzes the patterns, themes, and differences of social movements using primary documents. Addresses the dynamics of age, generation, race, ethnicity, and nation. Uses youth activism to explore questions relevant to the study of contemporary social movements in the Americas.

LALS 156 - Human Rights and Transitional Justice in the Americas (5)

Provides students with an introduction to the emerging scholarly field of transitional justice. Examines transitional justice in a broad sense and through elected case studies.

Prerequisite: Prerequisite(s): LALS 1. Enrollment is restricted to junior and senior Latin American and Latino studies majors, minors, and combined majors.

LALS 157 - Revoluciones Sociales (5)

Taught in Spanish. Examines major social upheavals in Latin America since 1900, exploring revolution as a distinctive form of social conflict and change. Analyzes political, economic, social, and cultural conditions that gave rise to, and linked, revolutions across the Americas.

LALS 158 - Latin American Political Economy (5)

Explores and applies basic tools of Latin American political economy to map the evolution of the region's main patterns of economic growth and accompanying social structures across past centuries. Reviews the effects of neoliberal capitalist globalization on contemporary Latin America, resistance to destructive consequences, and the nature of emerging alternatives.

LALS 159 - Critical Approaches to International Development (5)

Introduces critical approaches to topics in international development, based on an understanding of development as a

fundamentally power-ridden field. The first half of the course examines how the idea of the underdeveloped Third World has been produced, exploring topics such as global governance for poverty reduction, transnational actors, foreign aid, neoliberalism, and shifting policy focus on international development. The second half is devoted to case studies on gender mainstreaming, extractivism, diversity, and the financialization of the social.

LALS 163 - The Amazon: Cultures and Perspectives (5)

Examines the peoples and cultures of lowland South America, particularly the historical, economic, and environmental processes that have shaped the Amazonian region. Students acquire tools to critically approach traditional representations of Amazonian cultures and understand their relevance to global issues.

LALS 164 - Afro-Diasporic and Indigenous Spirituality (5)

Through comparative methods, this course explores the many ways Afro and Indigenous populations cultivated spiritual connections to and with death and nature. More specifically, we address the ways displacement, forced migration, and enslavement have affected Black and Indigenous peoples' exchange with the land, the water, and the cosmos from the early colonial period through the present. This course focuses specifically on Afro-descended and Indigenous populations in Brazil, Mexico, and Peru.

LALS 165 - Contemporary Peru (5)

Explores contemporary issues facing Peru by addressing the formation of the state and the country's troubled history with political and state violence. Students learn about Peru's multicultural/racial population and about ongoing conflicts and hopes for the country today.

LALS 166 - Shamanism and Healing (5)

Shamanism is a dynamic cultural institution that approaches non-ordinary or alternate states of consciousness as meaningful sites of knowledge. Course focuses on shamanism as practiced in indigenous and mestizo cultures across western Amazonia, where shamanic healing is most frequently accompanied with the ritual use of hallucinogenic brews. Topics covered include the diagnostic, curative, trance, and medical aspects of shamanism; shamanism as an anticolonial expression of political power and agency; and shamanism in Latin American expressive and visual cultures.

LALS 167 - Global Latinidades (5)

Analyzes issues of globalization, culture, and representation in order to understand the meanings and emergence of Global Latinidades. Evaluates and discusses the formation of global and Latin/o/a/e/x subjects within and beyond the United States, Latin America, Europe, and other regions through texts about transnationalism, visual culture, celebrity culture, spaces of consumption, and related topics. Although course focuses on specific case studies, a broad and critical perspective on these issues will be developed as well.

LALS 168 - Inter-American Solidarities (5)

Examines the history of various forms of connection between people, governments, cultures, and social movements across the Americas. From military intervention to transnational anti-imperialist agendas to contemporary artistic collaboration, many forms of foreign relations have shaped the American hemisphere. (Formerly Inter-American Relations.)

LALS 169 - South America: History, Society, and Culture (5)

Examines the southernmost region of South America, commonly referred to as the Southern Cone, exploring the historical trajectories of Argentina, Chile, Paraguay, Uruguay, and southern Brazil, from independence through the end of the 20th century.

LALS 170 - Indigenous Struggles in the Americas (5)

Focuses on the way Natives of First Peoples have interacted voluntarily and involuntarily with nonindigenous cultures. Examines their perspectives, thoughts, frustrations, and successes. Touches on land issues and examines the way current indigenous cultures of Latin America face and adapt to social change. Focuses mainly on the Andes, lowland Amazon, Mesoamerica, and other areas.

LALS 171 - Brazil in Black and White (5)

Taught in Portuguese. Examines blackness and whiteness in Brazil through the lens of the intersectionality of race, gender, and class identities. Topics include: national narratives of racial democracy, racism, black activism, and the emerging studies of whiteness in Brazil.

LALS 172 - Visualizing Human Rights (5)

Explores how visual artists take up the subject of human rights in response to urgent challenges facing Latina/o and Latin American communities across the Americas. Examines the imprint of film and media arts reshaping human-rights discourse. Considers persistent themes in Latina/o representation, including colonialism and state terrorism; self-representation and the rights of collectives (racial, ethnic, and sexual groups); social and economic rights. (Meets the methods requirement in Latin America and Latino studies.)

LALS 174 - Latinx Health and Environmental Justice (5)

Explores how Latinx communities experience and shape their natural and modified environments, and how this intersects with their health conditions, cultural practices, and political activism. Students learn about the health and social impacts of environmental degradation, extractivist policies, and the role that climate change is playing in exacerbating health inequalities among Latinx communities across the United States and Latin America. Students examine the importance of grassroots activism and community engagement in pursuing environmental justice and sustainability.

LALS 175 - Migration, Gender, and Health (5)

Through an interdisciplinary, cross-border approach, examines complex nature of Latino health in relation to migration and how women and men experience health

problems differently. Examines how health problems are created by economic and social conditions, how migrants experience access to care, and how agencies can design culturally sensitive programs.

LALS 176 - Reproductive Justice and the Border (5)

Examines the role of reproductive injustice and violence (such as medical apartheid, eugenics, and sexual violence) as a cornerstone in U.S. nation-state formation and its territorial boundaries. Historicizes reproductive violence as a strategy of border control and immigration enforcement informing contemporary immigration debates such as family separation, family detention, and the coerced hysterectomies of migrant women. Explores the foundational theories of the reproductive justice movement and women of color organizing.

LALS 177 - Migrant Health and Social Justice (5)

Conceptualizes the socio-economic, political, racial, cultural, and environmental factors that influence health conditions among migrant Latinx communities. Explores health-related issues among Latinx migrant communities already established in the United States as well as those in transit. Examines the negative health consequences of various U.S. policies, including migrant policing, deportation, asylum, and the global drug war. Students read and discuss texts from public health, medical anthropology to explore the concepts of structural violence, structural vulnerability, ecosocial theory, and social determinants of health as these relate to the migrant Latinx community. Students also discuss the relevance of solidarity and activist research methods used to challenge health inequities impacting migrant Latinxs.

LALS 178 - Gender, Transnationalism, and Globalization (5)

Focuses on the impact of globalization and transnationalism on gender relations in the Americas. Examines gender and power in the context of neoliberalism, modernity, the nation, social movements, and activism. Explores local and transnational constructions of gender, and the intersection of gender with race, ethnicity, class, and sexuality.

LALS 179 - Environmental Racism in Latin America (5)

Environmental racism is a structural obstacle to achieving environmental and social justice globally. With a focus on Latin America, this course explores how environmental discourses have shaped everyday life, how the power of race and racism have advanced a colonial relationship in the region. Students learn about the role of race in shaping Latin American societies, and how this is deeply connected to racialized territories, and reflect on their understanding of the inter-relationship between environmental racism and environmental justice across the Americas region.

LALS 180 - Borders: Real and Imagined (5)

Situates The Border historically and within the context of U.S. imperialism. Examines the formalization of political borders, methods of enforcement, and intra-group conflicts. Examines the varied experiences of colonialism and immigration between Mexicans, Puerto Ricans, Native Americans, and Cubans. Explores how the tools of The Border and Borderlands are being used to untangle the roles of race prejudice and sexual and gender discrimination. (Meets the methods requirement in Latin America and Latino studies.)

LALS 181 - Forced Migrations (5)

Examines forced migrations to and within the Americas prior to the invention of national borders. Focuses on African and Indigenous slave trades, penal deportations, and their connections to colonialism and racial thought. Trains students in the analysis of historical research, the interpretation of historical documents, and the use of digital mapping software.

LALS 183 - Ecologías Hemisféricas (5)

Students complete readings and guided research on key topics in tropical ecology (using a Spanish language Ecología Tropical textbook), and are trained to use various tools (traditional analog as well as digital) related to natural history field observations and species identification. Students couple these topical and skill-building foci with more traditionally LALS-framed humanities and social science readings. The goal is to link guiding frameworks and conceptual pillars of LALS to the way we see and interpret beyond-human worlds/ecologies of this hemisphere.

LALS 184S - Global Seminar: Latin American Spain (6)

Long a nation of emigrants, Spain has become a migrant-receiving country in the 21st century. The majority of migrants hail from Latin America. Who are they, why have they migrated to Spain, how are they received there, and what might they have in common with Latinxs in the United States? This course addresses these questions by examining Spain’s legacy as an imperial power in the Americas and the ways Latin Americans are transforming Spanish society and culture.

LALS 186 - Field Research Methods (5)

Introduction to field research methods that consider theory, methodological challenges, and epistemology in conducting research. Explains the research process, including designing research questions, interview instruments, concepts maps, and methods of data collection, and data analysis. (Meets the methods requirement in Latin America and Latino studies.)

Prerequisite: Prerequisite(s): LALS 100; and LALS 100A or LALS 100W. Enrollment is restricted to junior and senior Latin American and Latino studies majors, minors, and combined majors and Sociology majors.

LALS 187F - Human Rights Investigations Lab (2)

Weekly seminar with an applied lab where students are trained in the fundamentals of social media literacy skills and analysis, gain an understanding of the context for socio-political conflicts in the Americas region, and consider the ethics of engaging in human rights media research using open source. Students learn how to locate, verify, and analyze digital media for human rights cases using open source investigation tools. Various assignments focus on the region of the Americas. Students prepare and produce human

rights social media reports. Enrollment is by permission of the instructor.

LALS 187L - Human Rights Investigations Lab (5)

Weekly seminar with an applied lab where students are trained in the fundamentals of social media literacy skills and analysis, gain an understanding of the context for socio-political conflicts in the Americas region, and the consider the ethics of engaging in human rights media research using open source. Students will learn how to locate, verify, and analyze digital media for human rights cases using open source investigation tools. Various assignments focus on the region of the Americas. Students prepare and produce human rights social media reports. Enrollment is by permission of the instructor.

LALS 190 - Internship (5)

Internships with campus or community organizations sponsored and evaluated by a Latin American and Latino studies faculty member. Students write an analytical paper or produce another major work agreed upon by student, faculty supervisor, and internship sponsor; sponsor must also provide review of experience. Students submit petition to sponsoring agency.

LALS 190F - Internship (2)

Internships with campus or community organizations sponsored and evaluated by a faculty member from Latin American and Latino studies. Students write a short (8-page) descriptive paper or produce another work agreed upon by student and faculty supervisor. Students submit petition to sponsoring agency.

LALS 190G - LALS Global Internship (10)

Student internships organized through Global Learning partners sponsored by a Latin American and Latino studies (LALS) instructor. While completing their internship, students write an analytical paper or produce another project agreed upon by the student and the instructor by the third week of the internship.

LALS 194A - Immigrant Storytelling (5)

Examines first-person narratives by migrants, paying close attention to storytelling as a strategy for fomenting cultural, social, and political change. In addition to reading literary and visual texts, student complete a final project based on original research.

Prerequisite: Prerequisite(s): LALS 100, and LALS 100A, and LALS 100L. Concurrent enrollment in LALS 194L required. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors.

LALS 194B - Global Migration and Displacement (5)

Examines the global history of migrating people, things, and ideas. Focuses primarily on case studies of mass migration and displacement in 19th and 20th centuries. Students analyze processes of migration in the Americas within a broader global context.

Prerequisite: Prerequisite(s): LALS 100, LALS 100A, and LALS 100L. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors. Concurrent enrollment in LALS 194L required.

LALS 194E - Unfree Migrations (5)

Examines forced migrations to and within the Americas prior to the 20th century, with a focus on African and indigenous slave trades, indentured servitude, convict labor, and contract labor. Students address the implications and memories of those migrations today.

Prerequisite: Prerequisite(s): LALS 100, LALS 100A, and LALS 100L. Concurrent enrollment in LALS 194L required. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors.

LALS 194F - Digital Investigations and Human Rights Witnessing (5)

Explores the emerging field of digital investigations and the concept of human rights witnessing. Within the context of the impact of social media and digital technologies, course explores how ethics, power, and social inequalities affect everyday life in the digital realm, including its use to share stories of injustice and the ways access to social media and other technology is a reflection of societal inequalities. In what ways has the digital divide become more evident due to the COVID-19 pandemic? And finally, in what ways does repeatedly viewing traumatic posts online affect our well-being?

Prerequisite: Prerequisite(s): LALS 100, and LALS 100A, and previous or concurrent enrollment in LALS 100B. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors.

LALS 194G - Chile: Social and Political Change (5)

Analysis of Chilean politics and society from the election of Salvador Allende in 1970 to the present. Particular emphasis is given to understanding the different forces, internal as well as external, that broke the Chilean tradition of democratic rule in 1973, and to the current configuration.

Prerequisite: Prerequisite(s): LALS 100, LALS 100A, and LALS 100L. Concurrent enrollment in LALS 194L required. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors.

LALS 194H - Central America and the United States (5)

This senior seminar focuses on the connections between Central America and the United States. Covers Central American history, the political and economic relations between the isthmus and the United States, and Central American media and literature. (Formerly Central American Political Relations with the U.S.)

Prerequisite: Prerequisite(s): LALS 100, and LALS 100A, and LALS 100L. Concurrent enrollment in LALS 194L required. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors.

LALS 194L - Senior Seminar Research Development Lab (2)

Provides hands-on guidance in the research and communication skills related to the LALS 194 Senior Seminar.

Prerequisite: Prerequisite(s): Concurrent enrollment in one of the LALS 194 series. Enrollment is restricted to senior Latin American and Latino studies majors and combined majors.

LALS 194R - Latinx Science Fiction (5)

This course uses science fiction to explore themes, concerns, and questions in Latinx studies, particularly as related to race, coloniality, gender, sexuality, class, labor, and migration. By training students how to read attentively, to think critically and analytically, and to produce and evaluate interpretations, this five-unit course fulfills UC Santa Cruz's Textual Analysis and Interpretation (TA) requirement. Enrollment is limited to Latin American and Latino Studies majors, with priority going to graduating seniors.

Prerequisite: Enrollment is restricted to Latin American and Latino Studies majors.

LALS 194S - Nature/Cultures of Latin America (5)

Students explore and apply "ecocentric" perspectives, and theories such as "natureculture" (introduced by feminist scholar Donna Haraway) as a means of building our own transdisciplinary approach to worlds beyond strictly human social configurations. Course incorporates a broad range of assigned reading and audiovisual resources. Seminar participants engage in class discussions, activities, and guided opportunities for natural history field observations. Course is divided into three topical modules, each of which has the dual purpose of introducing students to scholarship and methods relating to multi-species academic inquiry, and guiding the class through the conception, development, and writing of a relevant research project. Course is taught in tandem with LALS 194L, where students have further support in the multi-stage execution of their research projects.

Prerequisite: Prerequisite(s): LALS 100, LALS 100A, and LALS 100L. Concurrent enrollment in LALS 194L required. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors.

LALS 194T - Youth and Citizenship (5)

Explores multiple and contested meanings of youth and citizenship; how youth, civic, and political identities are imagined, produced and negotiated in social and cultural locations; and how different versions of Latina/o youth citizenship are promoted and articulated by social and political institutions.

Prerequisite: Enrollment is restricted to junior and senior Latin American and Latino studies majors, minors, and combined majors.

LALS 194V - Comparative Migration Histories in the Americas (5)

Traces major historical patterns of migration and related processes in the Americas over the past two centuries. Covers the social, cultural, political, and economic factors that drive and shape the movements of people and considers the ways migration has impacted the sending, transit, and receiving societies. Over the quarter, students come to understand major historical forces of migration that inform our contemporary world, including citizenship, urbanization, identity formations, globalization, and neoliberalism.

Prerequisite: Enrollment is restricted to seniors.

LALS 194X - Extractivism and Socio-Environmental Conflicts in the Americas (5)

Explores, in-depth, how local communities, transnational capital, and state participate in conflicts anchored in extractive sectors, for example, mining, agro-exports, and so on. Through digital-based, case-study research, students identify and explore the logics of action, strategic interests, and the rhetoric of the principal protagonists in socio-ecological conflicts.

Prerequisite: Prerequisite(s): LALS 100, LALS 100A, and LALS 100L. Concurrent enrollment in LALS 194L required. Enrollment is restricted to junior and senior Latin American and Latino studies majors and combined majors.

LALS 195B - Senior Project (5)

Senior thesis writing under direction of major adviser. Students submit petition to sponsoring agency.

LALS 195C - Senior Project (5)

Senior thesis writing under direction of major adviser. Students submit petition to sponsoring agency.

LALS 198 - Field Study (5)

Students submit petition to sponsoring agency.

LALS 198F - Independent Field Study (2)

Students submit petition to sponsoring agency.

LALS 199 - Tutorial (5)

Students submit petition to sponsoring agency.

LALS 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

LALS 200 - Bridging Latin American and Latina/o Studies (5)

Provides historical and analytical foundations for the inter/transdisciplinary and transnational project of bridging the fields of Latin American and Latino studies (area and ethnic studies). Explores social, cultural, economic, and political changes connecting Latin America and U.S. Latina/o communities. Traces the intellectual genealogy of these efforts and how they contribute to each other. Introduces

students to LALS' four substantive themes: (1) Transnationalisms, Migrations, and Displacement; (2) Intersectionality, Identities, and Inequalities; (3) Collective Action, Social Movements, and Social Change; and (4) Culture, Power, and Knowledge. Core requirement for students pursuing the Designated Emphasis in Latin American and Latino studies.

Prerequisite: Enrollment is restricted to graduate students.

LALS 200A - Power and Structure in the Américas (5)

Examines historical processes and contemporary social, cultural, and political structures in the Américas. Explores power as a mesh that interweaves relations of exploitation/domination/conflict aimed at controlling different dimensions of social existence. Places particular emphasis on the nature of capitalist development in the Américas, colonialism, imperialism/anti-imperialism, nationalism/ transnationalism/ plurinationalism, and neoliberalism. Builds a contextual foundation for conceptual inquiry in the department’s four substantive themes. (Formerly Power and Society.)

Prerequisite: Enrollment is restricted to graduate students.

LALS 200B - Cultures and Subjectivities in the Américas (5)

Introduces theoretical frameworks that explore the relationships between culture, power, and subjectivities. Emphasizes developing interdisciplinary, interpretive, and analytic skills and engages foundational critical approaches including queer theory, border theory, subaltern studies, intersectionality, feminisms, and critical race theory. (Formerly Theories of Culture in the Americas.)

Prerequisite: Enrollment is restricted to graduate students.

LALS 201 - Research in Practice (5)

Problematizes the construction of research approaches in the interdisciplinary field of Latin American and Latino studies, and showcases particular approaches in the social sciences and humanities so students may engage in innovative, transnational research. (Formerly Research in Praxis: Epistemology, Ontology, and Ethics.)

Prerequisite: Enrollment is restricted to graduate students.

LALS 202 - Latin/o American Spaces and Modernity (5)

Students engage and discuss texts that examine the relationship between space, narratives, and ideas of the modern nation, along with critical studies that highlight the social effects of imaginaries and representations.

Prerequisite: Enrollment is restricted to graduate students.

LALS 203 - Latin American Social Movements (5)

Grounds students in the social science literature on Latin American social movements, integrating anthropological, sociological, and political science approaches to the field.

Prerequisite: Enrollment is restricted to graduate students.

LALS 204 - Migration, Borders, and Borderlands (5)

Explores concepts and approaches related to migration; the multiple types of borders that migrants transcend--geopolitical, social, cultural, or interpersonal; and borderland formations constructed in relation to bodies in motion.

Prerequisite: Enrollment is restricted to graduate students.

LALS 205 - Comparison as Method (5)

Brings together comparative studies of physical and social mobility with a focus on race, migration, and citizenship. Both an articulation and study of comparison, course is organized around three components: comparative borders; comparative migration; and comparative ethnic studies. The questions animating it include: What happens when different histories, places, and peoples are compared? How and why do scholars in the humanities and humanistic social sciences compare? What are the strengths and challenges of a comparative approach? (Formerly offered as Comparative Mobilities.)

Prerequisite: Enrollment is restricted to graduate students.

LALS 206 - Queer Cuba (5)

Seminar that engages social, political, and cultural histories of homosexuality in Cuba, focusing on LGBT ostracism and activism after 1959, with particular attention to the social and economic impact of the developments of the USSR on Cuba's LGBT population.

Prerequisite: Enrollment is restricted to graduate students.

LALS 207 - Youth Cultures, Global Capitalism, and Social Change (5)

Introduces intellectual histories of youth studies scholarship in the context of Latin American and Latino studies; explores young people's lived experiences of racialized capitalism and globalization; and addresses various forms of youth resistance and the relationship between youth cultures, politics, and social change.

Prerequisite: Enrollment is restricted graduate students.

LALS 208 - Politics of Childhood and Youth (5)

Explores how narratives about children, teens, youth, and students are imbued with political significance, and the ways young people are actively engaged in political practices. Considers how representations and lived experiences of youth can serve to reproduce and/or challenge inequalities.

Prerequisite: Enrollment is restricted to graduate students.

LALS 210 - Latina Feminisms: Theory and Practice (5)

Through an interdisciplinary approach, explores Latina feminist social theory and scholarly practice—especially in representation and interpretation of Latina experiences. Examining key texts at different historical junctures, charts how Latinas of varied ethnic, class, sexual, or racialized social locations have constructed oppositional and/or relational theories and alternative epistemologies or political scholarly

interventions and, in the process, have problematized borders, identities, cultural expressions, and coalitions.

Prerequisite: Enrollment is restricted to graduate students.

LALS 211 - Paradigms of Race/Color, Sexuality, and Culture in Latin America (5)

Explores foundational texts by Latin American intellectuals that have served to construct and sustain continental, regional, national, and transnational cartographies of identities and the search for lo americano. Examines race/color, sexuality, and culture by tracing their narrative and conceptual (trans)formations in the region and its diaspora. Most texts are read in the original language of publication.

Prerequisite: Enrollment is restricted to graduate students.

LALS 212 - Latina/o Ethnographic Practice (5)

Explores the social construction of Latino cultures in their varied regional, national-ethic, and gendered contexts. Examines how culture, as a dynamic process constructed with a historical context of hierarchical relations of group power, is interrelated to the structural subordination of Latinos. Focuses on how power relations create a context for the creation of specific Latino cultural expressions and processes.

Prerequisite: Enrollment is restricted to graduate students.

LALS 213 - Historical Methods in LALS (5)

Seminar introducing graduate students to the “how” of historical research methods, specifically, their application to interdisciplinary investigations in Latin American and Latino Studies. Focuses on different key methods within the broader umbrella of historical research and writing including: the implementation of critical archival approaches, conducting oral histories, digital tools in historical research and dissemination, and public history and interpretation. Also discusses topics of interdisciplinarity in historically grounded and historiographic research/writing, practical organizational strategies for data collection and storage, and the bureaucracy of preparing a research plan that involves work at archives or other institutional contexts.

Prerequisite: Enrollment is restricted to graduate students.

LALS 215 - Latina Cultural Studies: Culture, Power, and Coloniality (5)

Examines the theories and practices informing the field of Latina cultural studies in the Americas. For students pursuing the Designated Emphasis in Latin American and Latino studies and students with interest in theories of coloniality of power, decolonialism, intercultural and transnational feminist methodologies.

Prerequisite: Enrollment is restricted to graduate students.

LALS 219 - Central America: Intellectuals, Histories, and Futures (5)

Provides students in LALS and related fields with an opportunity to engage theoretical frameworks and examine a range of intellectual currents that have shaped economic, social, and cultural processes in Central America from the late 1800s to the present. Readings include a range of scholarship and critical studies in order to analyze the roles of intellectuals and how their ideas circulated in the isthmus and beyond. Evaluates the roles of institutions, political ideologies, media, and modernity in the constitution and propagation of intellectual networks, how these shape popular attitudes in everyday life, and the futures of the Central American isthmus.

Prerequisite: Enrollment is restricted to graduate students.

LALS 220 - Transnational Civil Society: Limits and Possibilities (5)

Analyzes social, civic, and political actors that come together across borders to constitute transnational civil society, drawing from political sociology, political economy, comparative politics, and anthropology to address collective identity formation, collective action, institutional impacts, and political cultures.

Prerequisite: Enrollment is restricted to graduate students.

LALS 225 - Race in the Americas (5)

Considers historical moments in the development of race in the Americas to understand how race is given meaning and actualized through practices, beliefs, and behaviors. Interrogates theories and racial dynamics in the 19th through 21st centuries to reveal interconnections with constructions of gender and nation.

Prerequisite: Enrollment is restricted to graduate students.

LALS 235 - Sexuality and Migration (5)

Approaches the nexus of sexuality and migration to examine contemporary theories of citizenship, security, violence, and power. Drawing on case studies that center experiences at, around, and across diverse borders throughout the Americas, the course takes an intersectional approach to understand: how migration is embedded in sexual identities and practices; and how sexuality, alongside race, class, and gender, influence who migrates and under what circumstances. Examining how researchers have approached sensitive questions of sexuality, students emerge better prepared to develop future research in the broader thematic fields of transnationalism, migration, and displacement.

Prerequisite: Enrollment is restricted to graduate students.

LALS 240 - Culture and Politics of Human Rights (5)

Examines cultural, philosophical, and political foundations for human rights and provides students with critical grounding in the major theoretical debates over conceptualizations of human rights in the Americas. Addresses the role of feminist activism and jurisprudence in the expansion of human rights since the Universal Declaration of Human Rights. Addresses challenges of accommodating gender rights, collective rights, and social and economic rights within international human rights framework.

Prerequisite: Enrollment is restricted to graduate students.

LALS 242 - Globalization, Transnationalism, and Gender in the Americas (5)

Explores how globalization, transnationalism, and the social construction of gender are interrelated, contingent, and subject to human agency and resistance. Examines particular configurations of globalization, transnationalism, and gender through the Américas and their implications for race, space, work, social movements, migration, and construction of collective memory.

Prerequisite: Enrollment is restricted to graduate students.

LALS 244 - Digital Mapping and Human Geographies (5)

Explores the utility of geographical information systems (GIS) for social science research. This course has three components: critical discussions of spatial analysis in published research, training in GIS software, and the application of digital mapping to students' research projects.

Prerequisite: Enrollment is restricted to graduate students.

LALS 245 - Epistemologies of the South (5)

Examines efforts by intellectuals from the Global South, mainly Latin America, to cast off the political, cultural, and epistemological notions imposed by European colonialism and preserved today through the practices of Western/Eurocentric knowledge, to forge their own epistemologies of the South.

Prerequisite: Enrollment is restricted to graduate students.

LALS 249 - Whiteness in Latin America (5)

Examines whiteness in Latin America as a racial identity, a social condition, a set of cultural practices, a dominant standpoint, and a hyper-valued ideal. Analyzes the meanings and applicability of such concepts as ordinary whiteness, aspirational whiteness, the narcissistic pact of whiteness, the racialization of class, among others. Scrutinizes the intersections of whiteness with class, gender, nation, and language. Readings cover a wide range of Latin American countries and fields including anthropology, sociology, communication, and media and cultural studies.

Prerequisite: Enrollment is restricted to graduate students.

LALS 258 - Critical Cultural Political Economy (5)

Explores how the divide between cultural studies and political economy can be resolved through a post-disciplinary approach which is attentive to how semiotic and material practices co-constitute contemporary capitalism and an ever-changing set of strategies attempting to manage its multiple contradictions.

Prerequisite: Enrollment is restricted to graduate students, or by permission of the instructor.

LALS 265 - Nature, Societies, and Archives in the Americas (5)

Graduate students in LALS and related fields discuss interdisciplinary texts on the interconnection between Latin American species and geographies. Takes a historically grounded approach to address a range of topics related to the study of non-human subjects in this hemisphere, such as animals, plants, fungi, and the ecologies that they co-constitute. Topics include: centering non-humans in Latin American history; critical natural histories of the hemisphere; and inhabiting, and producing knowledge about, nature in contemporary América. In addition, students choose their own related topic(s) of interest and complete a series of reflective and iterative writing assignments, culminating in a draft for (optional) future publication.

Prerequisite: Enrollment is restricted to graduate students.

LALS 292 - LALS Graduate Colloquim (2)

Required for all LALS graduate students in residence, colloquium includes a mix of activities aimed at supporting the development of graduate students as teachers, researchers, and active participants in academic communities. Includes lectures by distinguished speakers, work-in-progress sessions for both faculty and graduate student research, pedagogical theory and practice seminars, and professional development workshops.

Prerequisite: Enollment is restricted to graduate students.

LALS 294P - Pedagogical Approaches in Latin American and Latino Studies (2)

Provides training for graduate students in university-level pedagogy in general and in the pedagogy of Latin American and Latino studies specifically. Coordinated by a graduate student who has had substantial experience as a teaching assistant, under the supervision of a faculty member.

Prerequisite: Enrollment is restricted to graduate students.

LALS 297A - Independent Study (5)

Students submit a reading course proposal to a department faculty member who supervises independent study in the field. Faculty and student jointly agree upon reading list. Students expected to meet regularly with faculty to discuss readings. This independent study must focus on a subject not covered by current UCSC graduate curriculum. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LALS 297B - Independent Study (10)

Students submit a reading course proposal to a department faculty member who supervises independent study in the field. Faculty and student jointly agree upon reading list. Students expected to meet regularly with faculty to discuss readings. This independent study must focus on a subject not covered by current UCSC graduate curriculum. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LALS 297C - Independent Study (15)

Students submit a reading course proposal to a department faculty member who supervises independent study in the field. Faculty and student jointly agree upon reading list.

Students expected to meet regularly with faculty to discuss readings. This independent study must focus on a subject not covered by current UCSC graduate curriculum. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LALS 299A - Thesis Research (5)

Enrollment restricted to graduate students and permission of instructor. Students submit petition to sponsoring agency.

LALS 299B - Thesis Resaerch (10)

Enrollment restricted to graduate students and permission of instructor. Students submit petition to sponsoring agency.

LALS 299C - Thesis Research (15)

Enrollment restricted to graduate students and permission of instructor. Students submit petition to sponsoring agency.

LATN - LATIN

Lower-Division

LATN 1 - Elementary Latin (5)

Instruction in Latin grammar, using a modern Latin method, designed to prepare for the study of classical literature. The sequence begins in the fall quarter only.

LATN 2 - Elementary Latin (5)

Instruction in Latin grammar, using a modern Latin method, designed to prepare for the study of classical literature.

Prerequisite: Prerequisite(s): LATN 1.

LATN 99 - Tutorial (5)

Students submit petition to sponsoring agency.

LATN 99F - Tutorial (2)

Students submit petition to sponsoring agency.

LGST - LEGAL STUDIES

To view planned offerings for the current academic year, please visit this page.

Lower-Division

LGST 10 - Introduction to Legal Process (5)

Introduction to U.S. and comparative legal institutions and practices. Examines diverse areas of law from torts to civil rights to international human rights. Why is America portrayed as having an activist legal culture; why is law used to decide so many questions from presidential elections to auto accidents; can law resolve disputes that, historically, have led to war and violence; is the legal system fair and/or effective, and, if so, for whom and under what conditions?

Upper-Division

LGST 106 - Topics in Legal Studies (5)

Examines advanced topics in the field of legal studies. The theme of this course is law, colonialism, and authoritarianism.

LGST 107 - Toleration, Speech, and Hate (5)

Analyzes arguments concerning speech and toleration in the Western philosophical tradition. Is the freedom to think and speak freely a good thing? Why or why not? To what extent is this true? When does expression constitute harm, to either the community or individuals? What does it mean to tolerate those beliefs or practices you find bigoted? Evil? Dangerous to society? What kinds of disagreements can exist without destroying the political community, and what kinds can we simply not abide? Students will know and understand the very best arguments for free speech, for restricting certain kinds of speech and become empowered to engage with the speech disputes in our own political moment.

LGST 108 - Gender, Sexuality, and Law (5)

Analysis of legal issues related to gender, sexuality, and sexual orientation. Introduction to the key areas of gender and sexuality regulated by law and critical analysis of how law and policy should and do treat these issues.

LGST 109 - Legal Theory (5)

Offers systematic exploration of alternative conceptions of the nature of law, including positivism, natural law, formalism, realism, pragmatism, and theories of justice. Additional focus on the nature of law; relation of law and morality, rights and other legal concepts; and philosophical debates such as critical legal studies and critical race theory.

LGST 111B - Civil Liberties (5)

Explores the status of American civil liberties as provided by the Bill of Rights. Particular attention will be given to issues of concern relating to the aftermath of 9/11, including issues relating to detainees, freedom of information requests, wiretapping authority, watch lists, profiling, and creation of a domestic intelligence agency.

LGST 111C - The First Amendment (5)

Surveys First Amendment jurisprudence using history, case law, and philosophical writings. Class discusses emerging issues in free expression, including defamation, incitement to violence, hate speech, and freedom of the press. (Formerly Issues in Constitutional Law.)

LGST 113 - Gay Rights and the Law (5)

Examines relevant court cases as well as local, state, and federal laws that define boundaries for legal recognition of sexual orientation and personal sexuality. Explores legal assumptions behind current and historical cases defining personal sexuality and sexual orientation and considers the social and political impetus in each era that drove the courts and legislatures to make such decisions.

LGST 114 - Jews, Anti-Semitism, and the American Legal System (5)

Explores how Jews have influenced and been impacted by the American legal system. Students explore significant cases, debates, and trends in the law as it relates to Jewish identity, religious freedom, and conceptions of justice.

LGST 115 - Law and the Holocaust (5)

Examines the Nazi philosophy of law, and how it was used to pervert Germany's legal system in order to discriminate against, ostracize, dehumanize, and ultimately eliminate certain classes of human beings, and the role of international law in rectifying the damage.

LGST 116 - Comparative Law (5)

Explores how countries organize their societies through legal rules. Particular attention is given to constitutional design, differences between common and civil law systems, changes brought about by the European Union, and the convergence of legal norms globally.

LGST 117 - Sports, Law, and Politics (5)

Investigates the relationship between sports, law, and politics, focusing on racism, colonialism, post-colonialism, and globalization.

LGST 118 - Law and Literature (5)

Law and literature have been understood as separate fields of social, expressive endeavors. This class thinks about how these two modes of writing represent and reshape each other, and the social worlds in which they circulate. Students read literary texts that narrate and refigure the problems of law, justice, and legal modernity. The class mixes law and literature “classics”—Merchant of Venice, Antigone, Billy Budd—and more contemporary literature. Course also pairs readings of primary literary texts with secondary law and literature criticism.

LGST 124 - Government Secrecy (5)

Studies the history of America's regime of government secrecy from a human rights perspective. Focus is the dispiriting history of judicial deference to executive authority that enabled the massive secrecy regime to establish and perpetuate itself. Tracing the origin of the secrecy state to the nuclear program during World War II, students consider how the "state secrets doctrine" was codified in early Cold War jurisprudence as an all-purpose alibi for government interventions abroad and surveillance at home. The second half of the course turns to the 21st century War on Terror, highlighting the kidnappings, torture, and assassinations perpetrated by the secrecy state, with an eye on the role of the court system as a vehicle for exposure and redress.

LGST 125 - History of the U.S. Penal Culture (5)

Explores the history and theory of U.S. state punishment from its 17th-century beginnings to the present and notes evolving models of criminal deviance, focusing on how punishment systems legitimate particular models of criminal deviance, crime, and its correction.

LGST 130 - Inequality and Law (5)

Explores the complex relationship between race and the law in American society. Included subjects are critical race theory, civil rights and voting rights law, issues of the criminal justice system, intersections with issues of class and gender, and the social construction of race through law and legal decisions. (Formerly Race and the Law.)

LGST 131 - Wildlife, Wilderness, and the Law (5)

Introduction to wildlife, wilderness, and natural resources law, policy, and management. Examines rules governing resource allocation and use including discussion of fundamental legal concepts. Explores laws and management policies affecting wildlife and wilderness, including their origins and impacts. Examines how conflicts over natural resources are being negotiated today.

LGST 133 - Law of Democracy (5)

Explores the role of law in both enabling and constraining the actions of elected politicians in the U.S. Among issues examined are voting rights, redistricting, and campaign finance. Course asks how the law shapes and limits our ability to choose our elected leaders, and in turn, how the law is shaped by political forces.

LGST 137 - International Environmental Law and Policy (5)

International environmental law (IEL) endeavors to control pollution and depletion of natural resources within a framework of sustainable development and is formally a branch of public international law—a body of law created by nation states for nation states, to govern problems between nation states. Examines landmark developments of IEL since 1972 within a historical continuum to better understand their strengths and weaknesses.

LGST 139 - War Crimes (5)

Explores complex international human rights/humanitarian law issues surrounding genocide and other mass violence, beginning with the Nuremberg trials following World War II up to recent atrocities in Rwanda, Bosnia, and elsewhere. Covers basic legal framework of human rights law, examines specific situations on a case by case basis, and discusses what options the international community, the nations themselves, and individuals have in the wake of such catastrophes.

LGST 146 - Philosophy of Law (5)

Introduction to topics in the philosophy of law. Begins by discussing some famously difficult legal cases. These motivate students to consider more generally how to theorize about law and legality. Course ends by examining a handful of modern legal issues from a philosophical perspective. Course asks students to formulate and defend their positions on classic and contemporary legal debates and provides them tools from moral and legal philosophy with which to work.

LGST 148 - Cites, Urban Planning, and the Law (5)

Explores how local land use and planning objectives are defined and determined by federal, state, and (most importantly) local law. Focuses on California, and on California municipal law issues. Housing, transportation, water supply, regional government, environmental protection, natural resource protection, urban sprawl, and growth management issues are addressed as students learn how federal, state, and local laws relate to city urban planning problems.

LGST 150 - Children and the Law (5)

Explores the legal rights of children. Topics may include juvenile justice, gang offenses, free speech and Internet censorship, religious rights, child custody and support, adoption, foster care, abuse and sexual harassment, special needs, public benefits, and medical care.

LGST 152 - Courts and Litigation (5)

A study of the role of courts in society and the uses of litigation to address and deflect social problems. Focus is on recent developments in American litigation, but comparative materials may be considered.

LGST 153 - Immigration, Citizenship, and Law (5)

Explores U.S. laws and policies regarding immigration and citizenship from historical and contemporary perspectives. Includes studying landmark court cases, key statues and regulations governing immigration and citizenship, and scholarly treatments in order to critically examine historical developments and contemporary debates.

LGST 154 - The Legal Profession (5)

Lawyers stand between the legal system and those who are affected by it. Examines this relationship descriptively and normatively, and from the point of view of sociological theory. Concentrates on the U.S. profession, with some comparative material.

LGST 155 - Topics in American Legal History: Making of American Constitutionalism (5)

Explores some aspects of early American constitutional thought, particularly immediately preceding the American Revolution, situating early colonial constitutional thought within some of the larger themes and controversies of the 17th-century English constitutionalism, then considering some aspects of American constitutional thought in the founding period against the background of the colonial experience.

LGST 156 - Administrative Law and Challenges of Regulation (5)

The rise of the regulatory state brings with it a host of questions regarding the exercise of state power and separation of powers. Takes up some of these questions; in particular, questions about administrative agencies and their relationship to the judiciary, the legislature and private individuals and groups. (Formerly Administrative Jurisprudence.)

LGST 157 - Political Jurisprudence (5)

Explores some themes in legal and political theory, especially on the relationship of theories of justice, law, and ethics.

Prerequisite: Enrollment is restricted to legal studies majors during first and second pass enrollment.

LGST 158 - Law and Politics of Memory (5)

Examines why we choose to memorialize some aspects of our history, but not others. What impact do those choices have on our contemporary politics and society? How may memorials help create a stronger democracy?

LGST 159 - Property and the Law (5)

Begins with an examination of the concept of property, then covers how different cultures characterize property and determine ownership and the laws and policies that define property in modern society. Topics include theories of property law, common property, property and natural resources, zoning, regulatory takings, and intellectual and cultural property

LGST 161 - Intellectual Property (5)

Advanced study of the concepts, practices, and history of intellectual property. Topically, it is a study of how, when, and why you can own something like an idea, a story, a mathematical algorithm, a business process, or an arrangement of cells. Course is organized around different kinds of things one might own: artistic creation and representation (copyright), scientific discovery and invention (patents), and business processes and secrets (trademark and trade secrets). Studies different intellectual property regimes and the philosophical and moral issues underlying claims to intellectual property.

LGST 173 - Disability, Law, & Politics (5)

Introduction to how individuals, societies, and states answer fundamental questions about disability, including what is or is not a disability, what causes disability, and what the proper responses to the existence of disabilities are.

LGST 185 - Internship/Field Seminar: Experiences in Law, Politics, and Policy (5)

A practicum seminar for students seeking field experience in politics, law- and/or policy-making settings. Designed to be combined with an internship; provides structured class meetings, readings, and work, including weekly field notes and a final paper. NOTE: Prior to enrolling, students must have secured an internship of at least 8 hours per week for the duration of the quarter. (Formerly Legal Studies Internship/Field Seminar: Experiences in Law, Policy, and Society.)

Prerequisite: Enrollment is restricted to politics and legal studies majors.

LGST 188A - Introduction to the Legal Profession and Legal

Aid Work (2)

Introduces key aspects of the legal profession and legal aid for under-served communities. Offers practical information and training on topics such as professional responsibility, ethics, confidentiality, interviewing skills, record keeping, communication, and working with diverse clients. Designed as a preparation or companion course for law-related internships and field student through courses such as OAKS 188B/LGST 188B (3 credits), OAKS 199, or LGST 185 Internship (5 credits).

LGST 193 - Field Study (5)

Field research performed off-campus, under the supervision of a member of the legal studies faculty.

LGST 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

LGST 195A - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency.

LGST 195B - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency.

LGST 195C - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency.

LGST 196 - Senior Capstone (5)

Examines related legal topics from an interdisciplinary perspective. Each focuses broadly on the relationship between law as a distinct system and law as an attempt to achieve justice, which requires that law remain open to claims of political morality generally. To what extent are legal norms internal to a separate system called law and to what extent are claims of political right in general relevant to question of what law is?

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior legal studies majors.

LGST 198 - Independent Field Study (5)

Individual studies undertaken off-campus for which faculty supervision is not in person, but by correspondence. Students submit petition to sponsoring agency.

LGST 198F - Independent Field Study (2)

Individual studies undertaken off-campus for which faculty supervision is not in person, but by correspondence. Students submit petition to sponsoring agency.

LGST 199 - Tutorial (5)

A student normally approaches a faculty member and proposes a LGST 199 course on a subject he or she has chosen. Students submit petition to sponsoring agency.

LGST 199F - Tutorial (2)

A student normally approaches a faculty member and proposes a LGST 199 course on a subject he or she has chosen. Students submit petition to sponsoring agency.

LING - LINGUISTICS

To view planned offerings for the current academic year, please visit this page.

Lower-Division

LING 50 - Introduction to Linguistics (5)

An introduction to the major areas, problems, and techniques of modern linguistics.

LING 53 - Semantics I (5)

Introduction to the logical foundations of natural language semantics. Logical and semantic relations, simple set theory, logical representations (propositional and predicate calculi, modal and tense logics) and their interpretations. A basic literacy course in the language of logical representation.

LING 80C - Language, Society, and Culture (5)

The study of language from a sociological perspective. Multilingualism, language change and variation, pidgins and creoles, the origin and diversification of dialects.

LING 80D - Language and Mind (5)

Examines how the properties of human languages can be used to understand how the mind works and to what extent language use and experience can affect how we think. Topics covered include: human language vs. other forms of animal communication, language deficits and impairments, how language experience shapes perception, the nature of language acquisition, and the extent to which cross-linguistic variation affects other kinds of cognition. The course also provides historical context of the development of modern language science, with a critical overview of Noam Chomsky's linguistics.

LING 80H - The Human Voice (5)

Comprehensive overview of the human voice, concentrating on its paralinguistic and sociolinguistic functions. Topics include: laryngeal anatomy, voice acoustics, emotional expression, singing, and vocal pathologies. A major theme is the interaction of race, ethnicity, and gender in vocal expression, racial and ethnic profiling of voices, and how all of this relates to current issues in human-computer interaction and social media.

LING 80K - Invented Languages, from Elvish to Esperanto (5)

Considers invented languages, including Elvish and Klingon, as well as lesser-known ones that tackle ethical, social, or cognitive concerns. Students learn tools from contemporary linguistics to analyze language structures and understand how they relate to creator intentions.

LING 80L - Predicting Words with Numbers: From Code-Breaking to Spell-Check, and Large Language Models (5)

Investigates the ways quantitive methods are used, including probability and statistics, to make predictions about language and to model central aspects of language, including form, meaning, and use. Course explores the thousands of years of these approaches, covering topics including code-breaking, modeling word meaning, neural network models, and large language models (LLMs), among many others. Also explores how these approaches can be used to help model how people process language.

Prerequisite: Prerequisites: LING 50, LING 53, LING 80K, or LING 80M.

LING 80M - Language and Indigeneity in Mesoamerica (5)

Explores indigenous experiences in Mesoamerica, focusing on the role of language in the formation of indigenous identities, both historically and in contemporary society. Also considers the linguistic correlates of inequalities experienced by indigenous communities since European contact. Students learn about some of the unique features of Mesoamerican indigenous languages, but no prior experience with linguistics is presumed.

LING 80S - The Science of Language: An Introduction to Linguistics for Non-Majors (5)

A general overview of the major areas, problems, and techniques of modern linguistics. This course is not suitable for majors in the Linguistics Department.

LING 80V - Structure of the English Vocabulary (5)

A systematic study of the elements of English words: besides the practical goal of vocabulary consolidation and expansion, explores the historical origin and development of word elements, as well as their sound, meaning, and function in the contemporary language.

LING 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

LING 100 - Sounds of the World's Languages: Phonetics I (5)

Provides a comprehensive introduction to the sounds of human language. Involves a detailed examination of the human vocal tract, the mechanics of phonetic transcription within the system of the International Phonetic Alphabet (IPA), and the essentials of phonology, particularly how to do phonemic analysis of any language. (Formerly Phonetics I.)

LING 101 - Phonology I (5)

Introduction to how sounds pattern in grammars-why they vary, how they combine, etc. Emphasis is on developing theories to explain the patterns. Topics include distinctive feature theory, phonemic analysis, autosegmental phonology, and principles of syllabification and stress.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and GE Composition requirements and LING 100.

LING 102 - Phonology II (5)

Advanced phonological theory. Topics include markedness; underspecification theories; advanced topics in feature geometry, syllable theory, and stress theory; and optimality theory. Readings include published articles. Emphasis on theory construction and argumentation based on data.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 103 - Phonology III (5)

Advanced topics in phonology, with an emphasis on reading both classic and contemporary research articles and book chapters. Prerequisite(s): LING 102 and enrollment by interview.

LING 105 - Morphology (5)

Study of the principles of word formation: derivation, inflection, and compounding; cross-linguistic study of morphological processes, morphological investigation and analysis.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 108 - Poetry and Language (5)

An introduction to the linguistic aspects of poetry, e.g., rhyme, meter, and larger-scale organization of poetic form. The emphasis is on English poetry, complemented by brief sketches of other poetic traditions.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 111 - Syntactic Structures (5)

Provides a basic introduction to the methods and results of generative grammar. It simultaneously provides an overview of the major syntactic constructions of English.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LING 112 - Syntax I (5)

An introduction to syntactic investigation, developed through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LING 113 - Syntax II (5)

Further aspects of English syntax; universal and language-particular constraints on syntactic structures and rules. Further developments and extensions of generative theory.

Prerequisite: Prerequisite(s): LING 53, and LING 111 or LING 112.

LING 114A - Syntax III (5)

Advanced topics in syntax. Prerequisite(s): LING 113, satisfaction of the Entry Level Writing and Composition requirements and permission of instructor.

LING 114B - Readings in Linguistics (5)

Introduces reading the primary literature in a sub-discipline of linguistics. Topics vary by instructor interest and readings will vary as a result. Emphasis is on how to read technically difficult works, evaluate arguments, and appreciate competing views. Coursework includes readings, presentations, and short response papers. Enrollment is by permission of the instructor. Students should have completed appropriate upper-division courses in the relevant sub-disciplines; see instructor for recommendations. (Formerly offered as Readings in Syntax.)

LING 114C - Topics in Linguistics (5)

Advanced undergraduate course devoted to a topic in linguistics. Topics and linguistics sub-disciplines covered vary with instructor interest. Coursework includes problem sets, readings, presentations, and a term paper. Enrollment by permission of instructor. Students should have completed appropriate upper-division courses in the relevant sub-disciplines; see instructor for recommendations. (Formerly offered as Topics in Syntax.)

LING 116 - Semantics II (5)

Major issues in natural language semantics: nature of lexical entries, thematic relations, propositional representation or logical form; relation between semantic interpretation and syntactic representations, quantification and scope relations, reference and presupposition, coreference and anaphoric relations.

Prerequisite: Prerequisite(s): LING 53, and LING 111 or LING 112.

LING 117 - Pragmatics (5)

Covers topics central in the study of pragmatics, the interpretation of language use. Topics include conversational implicature, speech acts and discourse understanding, and social deixis.

Prerequisite: Prerequisite(s): LING 53 and LING 101; and LING 111 or LING 112.

LING 118 - Semantics III (5)

Uses the tools learned in LING 53 and LING 116 (Semantics I and Semantics II), giving students the opportunity to explore important topics with heavy emphasis placed on reading primary-source literature. Readings form the basis for weekly lectures and the discussion section. Prerequisite(s): LING 116. Enrollment is by permission of instructor.

LING 119 - Narrative Structure: The linguistics of storytelling (5)

Course about narratives, the complex stories that people build and tell each other. Examines these linguistically: What is a story from a linguistic point of view? What are its components? How can we understand traditional concepts like perspective-taking, chronology, transport, and the narrator within modern linguistic frameworks? Topics may include quotation, tense and aspect, textual cohesion, and discourse relations.

Prerequisite: Prerequisite(s): LING 53.

LING 120 - Structure of English (5)

Survey of grammatical structure of English and terminology of grammatical description. Covers phonological, morphological, and syntactic structure of English and contrasts it with other languages.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 124 - Language Typology (5)

Introduces the branch of linguistics whose goal is to describe and explain the structural diversity of the world's languages. Focuses on what is known about variation in particular domains (e.g., syllable structure, word order, evidentiality), and how it might be explained.

Prerequisite: Prerequisite(s): LING 111 or LING 112, and LING 101.

LING 125 - Foundations of Linguistic Theory (5)

Survey of some of the history and foundational assumptions of generative grammar; also looks at some of the influence of generative linguistic theorizing on disciplines outside linguistics, notably psychology and philosophy.

Prerequisite: Prerequisite(s): LING 113 or LING 116.

LING 127 - History of Linguistics (5)

Topics in the history of linguistics, with a special focus on the 20th century.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 131 - Spanglish: Language and Identities through Contact (5)

Students investigate Spanglish as a linguistic and cultural phenomenon. Students learn linguistic tools to describe, analyze, and destigmatize Spanglish, and explore the ways that it is used to establish identity. Additionally, students compare Spanglish to ways of communicating in other bilingual contexts.

LING 132 - California Englishes (5)

Examines varieties of California Englishes and the features that compose these varieties. Through this examination, course also tries to better understand how social categories such as race, gender, sexuality, age, and class relate to the linguistic variation found in California English varieties. Course also seeks to explain how linguistic features acquire social meaning, and how these features are adopted in the construction of identity.

Prerequisite: Prerequisite(s): LING 50.

LING 133 - Language OnLine (LOL): Communication in the Digital Era (5)

In the age of social media, much of communication happens online. Despite claims to the contrary, the internet has not destroyed language; rather, language is thriving in new and vibrant ways online. This course uses the tools of linguistics to explore how the internet (with acronyms, emojis, and memes) has affected language use and how properties of language continue to shape online communication technologies. Topics covered include: whether emojis are language, what makes a spicy meme, how communities form online, and how online linguistic behaviors aid in the spread of misinformation.

LING 135 - Language and Racialization (5)

Many of us are probably aware that people of different ethnic or racial backgrounds may speak differently, but most of us probably do not know that all varieties of English are equally "grammatical." And while some of us are probably aware of the fact that racial and ethnic categories are "constructed," most of us have probably not considered the ways in which language use figures in the construction of ethnic and/or racial identity. Course introduces a number of racialized linguistic varieties and their intersections with other identity categories (gender, sexuality, socio-economic class), as well as emergent new scholarship on language and racialization.

Prerequisite: Prerequisite(s): Ling 50.

LING 137 - Queer Linguistics (5)

The study of queer linguistics is deeply multi-disciplinary, informed by linguistics, sociolinguistics, anthropology, women’s studies, post-colonialism, and queer theory. It has been insightful regarding the contribution of language to the construction of all identities: for our understanding of what identity categories are; their intersectional natures; and our agency, as speakers, when using language in non-standard ways. This course touches upon these issues; class format includes lectures, video-viewing, small group discussions, and class discussion. Focuses on language use across genders and sexualities, and on connections between groups of speakers and the theoretical developments which work on these communities set in motion.

Prerequisite: Prerequisite(s): LING 50 or LING 80C or LING 101 or LING 112.

LING 140 - Language Change (5)

Methods and problems in the study of change in linguistic systems. Reconstruction of proto-languages; the comparative method. Theories of change and implications for the theory of grammar.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 141 - Ellipsis (5)

Introduction to and survey of the ellipsis in natural language, including the typology of ellipsis processes, cross-linguistic uniformity and variation in ellipsis, and theoretical approaches and issues.

Prerequisite: Prerequisite(s): LING 53 and LING 101; and LING 111 or LING 112.

LING 144 - Computational Methods for Linguists (5)

Introduction to computational methods for linguists with little background in computer programming. Possible topics include: regular expressions, annotation, databases, and search. Students learn contemporary techniques in team-based programming and annotation.

Prerequisite: Prerequisite(s): LING 50, and either LING 53, LING 101, LING 111, LING 112 or LING 171.

LING 145 - Native Languages of North America (5)

Selective survey of the indigenous languages of North America, including a formal/structural component and an historical/social component. Topics include typological properties of these languages, current status, and revitalization efforts.

Prerequisite: Prerequisite(s): LING 101, and either LING 111 or LING 112.

LING 147 - Quantitative Methods in Linguistics (5)

Introduces quantitative methods for linguistics. Focuses on categorical data and continuous data, and using R. Students learn the basics of probability, statistics, and experimental design, and use R to apply them to linguistic data sets.

Prerequisite: Prerequisite(s): LING 53; and LING 100 or LING 112 or LING 171.

LING 149 - Research Skills in Linguistics (5)

Designed to give students practical experience with contemporary research topics, methods and skills in

linguistics and the broader language sciences. Students engage directly with local researchers and conduct targeted in-class skills activities. Students complete a portfolio of assignments which allow them to broaden their understanding of potential research areas in linguistics and language sciences and also to develop a particular topic of interest, culminating in a literature review and project proposal. Enrollment is by permission of the instructor.

LING 151 - Phonetics II (5)

Hands-on introduction to instrumental phonetic analysis, phonetic analysis using experimental methods. Emphasis is on the acoustics and perception of speech. (Formerly Phonetic Analysis.)

Prerequisite: Prerequisite(s): LING 100.

LING 152 - Applied Phonetics (5)

Examines areas in which phonetic analysis and experimentation are used in practice. Emphasizes problem-solving, experiments, and analytical tasks.

Prerequisite: Prerequisite(s): LING 151.

LING 154 - Language and Social Identity (5)

Introduction to sociolinguistics exploring the relationship between language and such social parameters as social status, ethnicity, race, gender, etc., including the role of language differences in the creation of social stereotypes. Emphasis on gathering, examining, and reporting data.

Prerequisite: Prerequisite(s): LING 101, and either LING 111 or LING 112.

LING 155 - Language and Cognition (5)

Introduces and examines some of the foundational assumptions, practices, and methods of generative grammar in comparison to those of other areas of cognitive science, notably psychology and philosophy.

Prerequisite: Prerequisite(s): LING 111 or LING 112; and LING 53 and LING 101.

LING 160 - Language Engineering (5)

Addresses a particular problem in language engineering, chosen for its practical and theoretical interest and its tractability. The entire course focuses on a team project to design a solution to the problem. Permission of instructor required.

LING 164 - Linguistics for Engineers (5)

Introduction to computational linguistics for engineers with a focus on providing background and skills in linguistics. Students are expected to already have programming skills and basic computer science. Knowledge of shell scripting or a scripting language suggested.

Prerequisite: Prerequisite(s): CSE 10 and CSE 14, or permission of instructor.

LING 171 - Psycholinguistics I (5)

Theory and methods in psycholinguistics, covering perception, production, and acquisition of language and linguistic structure. A hands-on, laboratory-style introduction to the topic, focusing on the relation between experimental findings and linguistic theory. (Formerly LING 157, Psycholinguistics and Linguistic Theory.)

Prerequisite: Prerequisite(s): LING 50.

LING 172 - Psycholinguistics II (5)

Advanced topics in psycholinguistics and experimental linguistics, contemporary memory models, computational models of comprehension and production, and neurolinguistic findings and methodologies. Student work revolves around an extended research project in which students learn to apply advanced analytical techniques. (Formerly LING 158, Advanced Psycholinguistics.)

Prerequisite: Prerequisite(s): LING 171.

LING 174 - Neurolinguistics (5)

Discusses groundbreaking findings in neurolinguistics that illustrate fundamental principles of how language is represented and processed in the brain. Additionally, provides basic understanding of how the brain works, the tools that we use to study the brain, and the statistical and analytic methods of processing and analyzing neuroscientific data. Also considers the relations between linguistic theory, psycholinguistics, and the brain.

Prerequisite: Prerequisite(s): LING 171, or by permission of the instructor.

LING 176 - Variation in Language Processing (5)

Variation is an inseparable and natural part of being human. This course focuses on variation in language, a unique part of the human experience. How do differences in language background, cognition, and modality contribute to variation in language processing? Course approaches these questions guided by the premise that there are many ways to use language. Students critically examine scientific findings relating to individual and cross-population differences in language processing, with the intention of reframing deficit-based views of language use.

Prerequisite: Prerequisite(s): LING 50.

LING 180 - Structure of a Particular Language (5)

Topics in the phonology, morphology, syntax, or semantics of a language that is the research interest of the instructor. The language investigated changes with each offering of the course.

Prerequisite: Prerequisite(s): LING 101; and LING 111 or LING 112.

LING 181 - Structure of Romance Languages (5)

Discusses topics in the phonology, syntax, and semantics of Romance languages, with emphasis left to the discretion of

the instructor. Students read original research articles and pursue empirical investigation of Romance languages by collecting data from scholarly publications, fieldwork, and/or corpus analysis. Some knowledge of Italian, French, or Spanish is required.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 182 - Structure of Spanish (5)

The phonology and syntax of Spanish, studied from a modern linguistic perspective. Some knowledge of Spanish is required.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 183 - Structure of French (5)

The phonology, morphology, and syntax aspects of French. Some knowledge of French is helpful.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 185 - Structure of Russian (5)

The phonology, morphology, and syntax of Russian. Some knowledge of Russian is helpful.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 186 - Structure of German (5)

Phonological, morphological, and syntactic aspects of the structure of the German language. Some knowledge of German is required.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 187 - Structure of Japanese (5)

The phonology, morphology, and syntax of Japanese.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 188 - Structure of Chinese Languages (5)

Introduces the syntax and semantics of Chinese Languages (particularly Cantonese and Mandarin), especially those aspects that are typologically different from Indo-European languages like English. Students learn to appreciate typological differences in natural languages and develop skills to analyze them. Course involves a global classroom component: throughout the quarter students meet and work with students from another institute in an international location to explore language differences.

Prerequisite: Prerequisite(s): LING 101; and LING 111 or LING 112.

LING 189 - Structure of Arabic (5)

The phonology, morphology, and syntax of Arabic. (Mainly modern standard, but also some regional dialects.) No knowledge of Arabic is required.

Prerequisite: Prerequisite(s): LING 101, and LING 111 or LING 112.

LING 190 - Senior Research (2)

Students produce a research paper or other significant project to satisfy the capstone requirement. Prerequisite(s): LING 101, and either LING 111 or LING 112. Concurrent enrollment in a specified upper-division course is required. Enrollment is by permission of the instructor and is restricted to senior linguistics and language studies majors.

LING 193 - Field Study (5)

Students submit petition to sponsoring agency.

LING 195 - Senior Thesis (5)

Deadline for submission of thesis proposal is one year in advance of proposed completion. Students submit petition to sponsoring agency.

LING 198 - Independent Field Study (5)

Provides for department-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision by correspondence). Preparation and approval must be completed by the fifth day of instruction of any given quarter. Students submit petition to sponsoring agency.

LING 199 - Tutorial (5)

Students submit petition to sponsoring agency.

LING 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

LING 211 - Phonology A (5)

First part of a three quarter introduction to phonology. Topics of the sequence include fundamentals of acoustic phonetics; introduction to optimality theory; theories of syllabification, stress, and prosodic organization; prosodic morphology; advanced issues in faithfulness and correspondence; segmental and suprasegmental processes.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor.

LING 212 - Phonology B (5)

Second part of a three quarter introduction to phonology. Topics of the sequence include fundamentals of acoustic phonetics; introduction to optimality theory; theories of syllabification, stress, and prosodic organization; prosodic morphology; advanced issues in faithfulness and correspondence; segmental and suprasegmental processes.

Prerequisite: Prerequisite(s): LING 211. Enrollment is restricted to graduate students or by permission of instructor.

LING 214 - Phonetics (5)

Introduction to phonetic theory concentrating on acoustic phonetics and speech perception along with common experimental methods, the role of phonetic principles in explaining phonological patterns and markedness.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor.

LING 215 - Phonetics B (5)

The second class in the graduate sequence on phonetics. Covers topics in speech perception, such as auditory physiology, psychophysics, categorization, learning and acquisition, cross-linguistic perception, and word recognition. Students learn a variety of experimental methods, their strengths and weaknesses, and how to appropriately construct stimuli, analyze data, and report results from these experimental designs.

Prerequisite: Prerequisite(s): LING 214. Enrollment is restricted to graduate students or by permission of instructor.

LING 216 - Phonology Proseminar (5)

One or more topics in phonological theory. Topics vary from year to year, covering literature and current research in phonology.

Prerequisite: Prerequisite(s): LING 212. Enrollment is restricted to graduate students or by permission of instructor.

LING 219 - Phonology Seminar (5)

Advanced topics in phonology drawn from the current research interests of the instructor.

Prerequisite: Prerequisite(s): LING 212. Enrollment is restricted to graduate students or by permission of instructor.

LING 219G - Phonology Seminar (3)

Advanced topics in phonology drawn from the current research interests of the instructor. Three-credit version of LING 219. Does not require a final paper.

Prerequisite: Prerequisite(s): LING 212. Enrollment is restrictedto graduate students.

LING 221 - Syntax A (5)

Introduction to syntactic theory. Phrase structure; subcategorization; lexical entries; passive; infinitival constructions.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor.

LING 222 - Syntax B (5)

Continuation of Syntax A. The syntax of unbounded dependencies, including constituent questions, relative clauses, clefts, topicalization. Constraints on extraction; unbounded versus successive cyclic movement; the licensing of gaps.

Prerequisite: Prerequisite(s): LING 221. Enrollment is restricted to graduate students or by permission of instructor.

LING 226 - Proseminar in Syntax (5)

In-depth investigation of some topic in syntactic theory. Topics vary from year to year, covering literature and current research in grammatical structure from varying theoretical perspectives.

Prerequisite: Prerequisite(s): LING 222. Enrollment is restricted to graduate students.

LING 226G - Proseminar in Syntax (3)

In-depth investigation of some topic in syntactic theory. Topics vary from year to year, covering literature and current research in grammatical structure from varying theoretical perspectives. Three-credit version of LING 226. Does not require a final paper.

Prerequisite: Prerequisite(s): LING 222. Enrollment is restricted to graduate students.

LING 229 - Syntax Seminar (5)

Advanced topics in syntax drawn from the current research interests of the instructor.

Prerequisite: Prerequisite(s): LING 222. Enrollment is restricted to graduate students or by permission of instructor.

LING 229G - Syntax Seminar (3)

Advanced topics in syntax drawn from the current research interests of the instructor. Three-credit version of LING 229. Does not require a final paper.

Prerequisite: Prerequisite(s): LING 222. Enrollment is restricted to graduate students.

LING 231 - Semantics A (5)

Introduction to linguistic semantics: nature of lexical entries, thematic relations, representation of logical form; relation between semantic interpretation and syntactic representation, quantification and scope relations, reference and presupposition.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor.

LING 232 - Semantics B (5)

Model-theoretic semantics for natural language. Truth-conditional, compositional semantics. Various logical ontologies and their application to natural language categories. Dynamic interpretation of discourse and anaphoric relations. Treatment of illocutionary force.

Prerequisite: Prerequisite(s): LING 231. Enrollment is restricted to graduate students or by permission of instructor.

LING 236 - Proseminar in Semantics (5)

In-depth investigation of some topic in semantics and pragmatics. Topics vary from year to year, covering literature and current research in linguistic semantics and pragmatics.

Prerequisite: Prerequisite(s): LING 231. Enrollment is restricted to graduate students or by permission of instructor.

LING 236G - Semantics Proseminar (3)

In-depth investigation of some topic in semantics and pragmatics. Topics vary from year to year, covering literature and current research in linguistic semantics and pragmatics. Three-credit version of LING 236. Does not require a final paper.

Prerequisite: Prerequisite(s): LING 231. Enrollment is restricted to graduate students, or by consent of instructor.

LING 239 - Semantics Seminar (5)

Advanced topics in semantics drawn from the current research interests of the instructor.

Prerequisite: Prerequisite(s): LING 232. Enrollment is restricted to graduate students or by permission of instructor.

LING 239G - Semantics Seminar (3)

Advanced topics insemantics drawn from the current research interests of the instructor. Three-credit version of LING 239. Does not require a final paper.

Prerequisite: Prerequisite(s): LING 232. Enrollment is restricted to graduate students.

LING 240 - The Pedagogy of Linguistics (1)

Provides training for graduate students in university-level pedagogy in general and in the pedagogy of linguistics specifically. Under the supervision of a faculty member, coordinated by a graduate student with substantial experience as a teaching assistant.

Prerequisite: Enrollment is restricted to graduate students.

LING 244 - Computational Methods for Linguists (5)

Practical introduction to computational methods for linguists. Topics covered: database development; indexation and search; morphological and syntactic parsing; and modern annotation methodologies. Students concurrently learn Python and JavaScript. No background in programming is required.

Prerequisite: Enrollment is restricted to graduate students, or by consent of the instructor.

LING 248 - Topics in Computational Methods and Models (5)

Seminar in computational approaches in linguistics and the language sciences with topics drawn from the current interests of the instructor.

Prerequisite: Prerequisite(s): LING 221 and LING 231. Enrollment is restricted to linguistics graduate students.

LING 249 - Morphology Seminar (5)

Presents theoretical and descriptive issues, particularly those raised by the framework of distributed morphology and its current competitors. Course work consists of readings, squibs, and a term paper.

Prerequisite: Enrollment is restricted to graduate students.

LING 249G - Morphology Seminar (3)

Presents theoretical and descriptive issues, particularly those raised by the framework of distributed morphology and its current competitors. Coursework consists of readings and squibs. Three-credit version of LING 249. Does not require a final paper.

Prerequisite: Enrollment is restricted to graduate students.

LING 257 - Psycholinguistics and Linguistic Theory (5)

Theory and methods in psycholinguistics, covering perception, production, and acquisition of language and linguistic structure. A hands-on, laboratory-style introduction to the topic, focusing on the relation between experimental findings and linguistic theory.

Prerequisite: Enrollment is restricted to graduate students.

LING 258 - Advanced Psycholinguistics (5)

Advanced topics in psycholinguistics and experimental linguistics. Contemporary memory models. Computational models of comprehension and production. Neurolinguistic findings and methodologies. Student work revolves around an extended research project in which students learn to apply advanced analytical techniques. Graduate students have separate evaluation criteria. Students cannot receive credit for this course and LING 258G.

Prerequisite: Prerequisite(s): LING 257. Enrollment is restricted to graduate students.

LING 258G - Advanced Psycholinguistics (3)

Advanced topics in psycholinguistics and experimental linguistics. Contemporary memory models. Computational models of comprehension and production. Neurolinguistic findings and methodologies. Student work revolves around an extended research project in which students apply advanced analytical techniques. Graduate students have separate evaluation criteria. Three-credit version of LING 258. Does not require a final paper. Students cannot receive credit for this course and LING 258.

Prerequisite: Prerequisite(s): LING 257. Enrollment is restricted to graduate students.

LING 259 - Phonetics Seminar (5)

Advanced topics in acoustic and articulatory phonetics.

Prerequisite: Prerequisite(s): LING 214. Enrollment is restricted to graduate students.

LING 259G - Phonetics Seminar (3)

Advanced topics in acoustic and articulatory phonetics. Three-credit version of LING 259. Does not require a final paper.

Prerequisite: Prerequisite(s): LING 214. Enrollment is restricted to graduate students.

LING 279 - Research Seminar in Psycholinguistics (5)

Contemporary research in psycholinguistic theory models, and methods. Topics vary with research interests of faculty and graduate students.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor.

LING 280 - Proseminar in Experimental Linguistics (5)

Examines experimental design and analysis for gathering linguistic data; the advantages and disadvantages of major response measures, including reaction times; interaction with extra-grammatical factors; and statistics on categorical and continuous measures. Students present results in research papers. Students cannot receive credit for this course and course 280G.

Prerequisite: Enrollment is restricted to graduate students.

LING 280A - Linguistic Investigation (5)

Methods of primary linguistic investigation. Close study of one language typologically different from English. Data analysis and elicitation techniques.

Prerequisite: Enrollment is restricted to graduate students.

LING 280B - Linguis Investigati (5)

Linguis Investigati

Prerequisite: Enrollment is restricted to graduate students.

LING 280G - Proseminar in Experimental Linguistics (3)

Examines experimental design and analysis for gathering linguistic data: the advantages and disadvantages of major response measures, including reaction times; interaction with extra-grammatical factors; and statistics on categorical and continuous measures. Three-credit version of LING 280. Does not require a final paper.

Prerequisite: Enrollment is restricted to graduate students.

LING 282 - Field Methods (5)

Exploration of a language previously unfamiliar to students through elicitation from a native speaker. Discussion of elicitation techniques. Students investigate selected aspects of the language in depth. Enrollment is restricted to graduate students; enrollment is by instructor permission only.

LING 290 - Research Seminar (5)

A research seminar for undergraduate and graduate students to develop the skills of the profession. Critical reading, reviewing, teaching, presentation, and writing. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students or by permission of instructor.

LING 295 - Directed Reading (5)

Directed reading which does not involve a term paper. Enrollment is restricted to graduate students or by permission of instructor.

LING 296 - Linguistics Colloquium (2)

Independent graduate-level activities and assignments relating to professionalism; organizing and attending colloquium and conferences; participation in discussion at such events; and preparation of commentaries on academic papers. Students submit petition to sponsoring agency. Enrollment is restricted to linguistics graduate students.

LING 297A - Independent Study (5)

Enrollment restricted to graduate standing or consent of instructor.

LING 297B - Independent Study (10)

Enrollment restricted to graduate standing or consent of instructor.

LING 297C - Independent Study (15)

Enrollment restricted to graduate standing or consent of instructor.

LING 297F - Independent Study (2)

Two-credit independent study. Enrollment restricted to graduate students, or by consent of instructor.

LING 299A - Thesis Research (5)

LING 299B - Thesis Research (10)

LING 299C - Thesis Research (15)

LIT - LITERATURE

To view planned offerings for the current academic year, please visit this page.

Lower-Division

LIT 1 - Literary Interpretation (5)

Close reading and analysis of literary texts, including representative examples of several different genres and periods. An introduction to practical criticism required of all literature majors; should be completed prior to upper-division work in literature.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to first-year students and sophomores, or literature and proposed literature majors and literature minors.

LIT 42D - Student Directed Seminar: Critical Engagement with

Capitalism Through Literature and Media (5)

Familiarizes students with key topics in socioeconomic and societal critique of capitalism through a variety of readings. By the end of the course, students will engage with important concepts through a variety of literature and media in order to provide a multifaceted introduction to literary modes of social criticism and analysis.

LIT 60A - The Graphic Novel: Memoirs (5)

Survey of graphic novel memoirs. Class focuses on how the pairing of text and images in sequential art offers a form of disclosure for conveying experiences of personal identity, self-invention, and environmental degradation. Special attention is given to the work of non-binary, queer, and feminist perspectives. Students write weekly creative-critical responses and a final creative-critical paper.

LIT 61C - Devils, Dervishes, and Bawdy Tales from Baghdad to Canterbury: The Story within the Story (5)

A story within a story, the frame tale is a playful and enduring literary genre. Focuses on frame tales of the global middle ages, tracing their movement from the Indian subcontinent to the British Isles. Readings include selections from Fables of Bidpai, The Arabian Nights, Libro de Buen Amor, and The Canterbury Tales. (Formerly The Frame Tale.)

LIT 61F - Introduction to Reading Fiction (5)

Close reading of short stories and some novels with the aim of developing critical methods for the analysis and interpretation of prose fiction. Topics include character, plot, narrative structure, and the poetics of prose. The course topic changes; please see the Class Search for the current topic.

LIT 61H - Reading the Movies (5)

Introduces techniques for the close reading of film (shot-by-shot analysis, etc.), with particular attention to what makes film different from other media. Films studied will cohere around a specific theme, geography, or genre, like film noir. (Formerly Introduction to Film Analysis.)

LIT 61J - Introduction to Jewish Literature and Culture (5)

Surveys 3,000 years of Jewish literature and culture. Themes include origins of the Jews in the ancient world; formation and persistence of the Jewish diaspora; coherence and diversity of Jewish experience; Jewish narrative and textual traditions; interaction between Jews and other cultures; tensions between tradition and modernity.

LIT 61K - Introduction to the Fairy Tale (5)

Introduces the fairy tale as a genre, including historical, cultural, and political contexts; relation to identity, performance, transnationalism; contemporary transformations of tales and their expression in other media (e.g., film, art, theater); and current scholarship.

LIT 61L - True Stories: Memoir (5)

Historical overview of the genre from Augustine to contemporary experiments in memoir. Student write weekly creative-critical responses and a final creative-critical paper.

LIT 61M - Approaches to Classical Myth (5)

Introduction to Greek myths, including selected ancient texts and visual artifacts, historical and cultural context of their creation and reception, modern theoretical approaches such as structuralism and psychoanalysis, and interpretations in various media.

LIT 61N - Introduction to Children's Literature (5)

Introduction to children's literature as a literary genre, including historical, cultural, and political considerations of the genre's relationship to gender, race, sexuality, nationalism, colonialism, and popular culture through primary texts, secondary criticism, and other media (e.g., film, illustration, comics).

LIT 61P - Introduction to Reading Poetry (5)

An introduction to selected modes and forms of poetry with an emphasis on close textual analysis. Examples will be taken from different historical periods and poetic traditions. Course topic changes; please see the Class Search for the current topic.

LIT 61R - Race in Literature (5)

An investigation into the various uses and abuses of race in literature. Course topic changes; see the Class Search for current topic.

LIT 61S - Sacred Texts (5)

Studies religious texts held sacred by different cultures and communities around the world, concentrating primarily on their literary dimensions. Course topic changes; please see the Class Search for current topic.

LIT 61T - Travel Narratives (5)

Travel narratives may be of many types: odysseys of self-discovery, adventures in nature, or journeys to exotic lands off the beaten track. This course examines travelers' accounts drawn from periods ranging from the Middle Ages to the contemporary.

LIT 61U - Introduction to Speculative Fiction (5)

Examines speculative and science fiction (SF) texts to develop critical methods for the analysis and interpretation of SF as a critique of science, technology, and culture. Themes include encounters across species; novelty and change; expanded concepts of life; and the role of technology in human development.

LIT 61W - Writing and Research Methods (5)

Intensive training in the practice of literary analysis and the writing of polished research papers. Topics include manuscript sources, variant editions, reading techniques,

publication technologies, web research. Workshop format. Strongly recommended for majors and/or transfer students who have completed LIT 1 or its equivalent.

LIT 61X - Tragedy: Learning Through Suffering (5)

Reading representative Greek tragedies with attention to history, form, and content. Course examines how Greek tragedy responds to the fact of human mortality, i.e., to the myriad and culturally specific ways in which characters in tragedy accept, evade, or deny death.

LIT 61Y - Arthurian Romance (5)

Reading of selected Arthurian romances in verse and prose from the French, Welsh, and English traditions.

LIT 61Z - Introduccion a generos literarios de Espana y America Latina (5)

Speaking, reading, and writing proficiency in Spanish required. The study of poetry, drama, and prose in Spain and Latin America.

LIT 80B - Monsters and Literature (5)

Every age has the monsters it needs. From medieval marvels to GMO chimeras, monsters serve as figures of a culture's deepest fears, anxieties, and hidden desires. This course takes a multidisciplinary, transhistorical approach to the problems and promises of monsters, and introduces monster theory.

LIT 80D - Literary Traditions of India (5)

Introduces the fundamental questions of interpretation and cultural analysis through engagement with varying literary and cultural traditions of the Indian subcontinent since antiquity. Emphasis is on language, communicative media, literary form, memory, transmission, interpretive approaches, and translation. The course topics change; please see the Class Search for the current topic.

LIT 80E - Animals and Literature (5)

Examines the copresence in literary works (fiction and non-fiction prose and poetry) of nonhuman and human animals from antiquity to the present across a variety of cultures.

LIT 80H - The Politics of Fashion (5)

Surveys the politics of fashion, focusing on how style has shaped ideology, culture, power, revolution, resistance, and a variety of identities, including nation, race, ethnicity, gender, sexuality, and class.

LIT 80I - Topics in American Culture (5)

A history of one or more cultural genres in written, visual, and/or musical forms. Course topic changes; please see the Class Search for the current topic.

LIT 80K - Topics in Medical Humanities (5)

Medical Humanities designate an interdisciplinary field of humanities (literature, philosophy, ethics, history, and religion) concerned with application to medical education and practice. The humanities provide insight into the human condition, suffering, personhood, and our responsibility to each other; and offer a historical perspective on medical practice.

LIT 80L - The Holocaust: The Destruction of European Jewry (5)

Focus is on the destruction of the Jews of Europe by Nazi Germany. Issues are historically grounded, and include works of literature, social sciences, philosophy, and film.

LIT 80M - China in the Post-Reform Period (5)

Speaking, reading, and writing proficiency in Mandarin Chinese required. Lectures, discussions, writing assignments, and all readings in Chinese. An investigation of Chinese culture, society, and politics in the post-1978 period through literature, film, critical essays, and internet media. Topics include labor, gender, generational divisions, family, urban life, social media, nationalism.

LIT 80N - Latino Expressions in the U.S (5)

An introduction to Latino literature and culture in the U.S. A study of the creative expressions of Chicanos/as, Nuyoricans, Cuban Americans, and other Latin Americans in the U.S.

LIT 80O - Love, Anarchy, Revolution (5)

Considers love, anarchy, and revolution as three modes of liberation. Concentrating on the contemporary period, with explorations of philosophy, literature, film, popular culture, political movements and manifestos, and personal or collective experience, this course considers these variant, but overlapping, scenes of the dialectics of liberation.

LIT 80P - Topics in Latin American Culture (5)

Through films, literary texts, historical, sociological, and anthropological writings, explores topics pertaining to Latin American culture and society. Course topic changes; please see the Schedule of Classes for current topic.

LIT 80Q - Jane the Virgin: Latinx Readers and (Latin) American Literature (5)

What does a telenovela spoof about a virgin Latinx mother and aspiring romance novelist have to do with literature? Course explores Jane the Virgin as a commentary on the tastes, identities, and politics of 21st-century Latinx readers and writers.

LIT 80T - Practical Magic (5)

Explores the early history of written magic in Africa, Europe, and Asia, as well as the ramifications of that history for the shape of the modern world. Students learn how to cast ancient spells efficaciously and compose spells of their own. (Formerly Literature and Magic.)

LIT 80U - Introduction to Contemplative Reading (5)

Combines contemplative practice, including meditative practice, with close reading of literary works to provide students with a more precise ability to interpret and respond to

texts, both literary and non-literary. Works include poetry, imaginative prose, and essays.

LIT 80V - Literature and History (5)

Examines literature's relationship to the past and to the experience of history. Course topic changes; please see the Class Search for current topic.

LIT 80W - Captive Minds: The Literature of Pre-modern Slavery (5)

Examines the literary production of slave societies by looking at the literatures of several pre-modern slave societies; also develops a cultural-historical narrative that explains the origins of genocidal forms of plantation slavery in the Americas by tracing their origins back to Greece and Rome.

LIT 80X - Global Narratives (5)

A survey of global narratives, with a focus on the novel over several centuries, traditions, languages, and cultures.

LIT 80Y - Harry Potter (5)

From The Sorcerer's Stone to The Deathly Hallows, this course approaches the Harry Potter books and films from a variety of critical angles, using the analytical tools of literary and cultural studies to shed new light on this dizzying phenomenon.

LIT 80Z - Introduction to Shakespeare (5)

Study of representative plays. No previous experience with Shakespeare is assumed.

LIT 81A - Homer's Odyssey (5)

Introduction to Homer's Odyssey, its hero, and its world. An epic tale of a man who abandons his family to fight in the Trojan War, then returns two decades later, the Odyssey was a profound influence on the culture of ancient Greece and Rome, and continues to shape our self-understanding today.

LIT 81B - Literature and Photography (5)

Explores the close relationship between photography and literature, from the origins of photography to 19th-century realism and the contemporary photographic novel, interpreting photographs and literature to study how these fields influence each other and how their forms of representation relate.

LIT 81C - The Novels of Toni Morrison (5)

Examines novels by Toni Morrison, including The Bluest Eye, Song of Solomon, Sula, and Jazz, as sites of discontent and transformation, while also considering literary techniques such as form, voice, metaphor, and narrative structure. Includes discussion of Morrison's ideas about the intersection of race and sexuality, blackness as a shifting signifier, the role of the artist in society, and uses of literature for re-imagining the relationships between history, culture, and individuality.

LIT 81D - The Prophet and the Qur’an (5)

Introduction to the life of the Prophet Muhammad as a literary text and as a primary hermeneutic framework for understanding the Qur'an, including its relationship to a deep narrative prophetic tradition shared with other Abrahamic traditions.

LIT 81E - Social Media and Society (5)

Introduction to social media's evolving impact on society. How are social media changing communication, politics, identity, privacy, and what we believe? Materials include critical texts and real-world case studies, as well as films and short fiction.

LIT 81F - Ghosts of Slavery, 1960-80s/2000-20s (5)

Why does the history of slavery reappear at certain moments in literary and popular culture? Course focuses on the 1960s and the 2000s, when slavery was frequently featured in popular and academic history, fiction, film, and television, in both imaginative and documentary forms.

LIT 81G - The Good Life (5)

Do current social, political, and psychological conditions make it more difficult to live a good life? Drawing on the broad tradition of critical theory and utopian imaginings, the course aims to give practical and theoretical guidance toward achieving a good life.

LIT 81H - Literature and Pandemic: The World at the End of the World (5)

Surveys some of the most famous accounts and representations of historical and fictional pandemics in the history of literature, mostly from the Western tradition. Students read excerpts from works by Thucydides, Lucretius, Boccaccio, Manzoni, Poe, Camus, London, and Elkhadem. Conversation centers on the question of how Western literature have attempted to both document and investigate the destruction of human society, but also to recreate it.

LIT 81I - Engineering California (5)

Online course using literary and artistic texts to investigate the history and engineering of California, and to imagine a virtual, material, and cultural infrastructure for California's future. Course begins and ends with the Internet, and includes topics such as cyberspace, the Gold Rush, Spanish/Mexican missions, wartime development, and early cybernetics.

LIT 81J - The 1001 Nights (5)

An exploration of the great story tradition of the Arabian Nights, or, closer to its Arabic title, The 1001 Nights. Course traces the tales' origins and diffusion through world literature, focusing on its cultural contexts and powerful exploration of folk, mythical, and psychological themes of fate, gender, jealousy, and the act of telling stories.

LIT 87 - Introduction to Literary Topics (2)

Introduces topics in literature. The course topic changes; please see the Class Search for the current topic.

LIT 90 - Introduction to Creative Writing (5)

Introduction to the culture and values of creative writing as an academic and artistic discipline. Introduces the practice of the writing life. Students write and/or revise weekly fictional, poetic or creative nonfiction experiments and discuss these experiments in two weekly peer workshops led by their teaching assistants. Students attend weekly lectures in which working writers read fiction or poetry, and hybrid creative forms, and answer questions about the writing life. Alternately, the instructor will give craft lectures and relevant writing prompts based on the readings. The visiting writers' work and the other readings are used as inspiration for students' own creative and critical reader responses.

Prerequisite: Prerequisite: satisfaction of the Entry Level Writing requirement. Enrollment is restricted to first-year students, sophomores, and juniors.

LIT 90X - Introduccion a la Escritura Creativa/Introduction to Creative Writing (5)

Speaking, reading, and writing proficiency in Spanish is required. Explores creative writing from a bilingual (Spanish-English) perspective, and considers bilingualism in the literary arts (como el ejercicio de una identidad), as a way of thinking and a way of being, as a creative lens (el pensamiento de frontera), as a framework, as a border (que quiere ser cruzada).

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing requirement. Enrollment is restricted to first-year, sophomore, and junior students.

LIT 91A - Intermediate Fiction/Prose Writing (5)

An intermediate-level course in fiction designed for prospective applicants to the creative writing concentration.

LIT 91B - Intermediate Poetry Writing (5)

An intermediate-level course in poetry designed for prospective applicants to the creative writing concentration.

LIT 92A - Escritura de ficción, prosa intermedia / Intermediate Fiction, Prose Writing (5)

This intermediate-level course will explore prose writing from a bilingual (Spanish-English) perspective. Primarily in English, but may delve into Spanish passages or phrasing. Work can be completed in English, Spanish, or Spanglish.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 92B - Escritura de poesía intermedia / Intermediate Poetry Writing (5)

This intermediate-level course engaged with poetry that incorporates unfamiliar languages, explores the aesthetics and politics of translation, and the creative possibilities (and limitations) of bilingualism. Discussions primarily conducted in English but may include Spanish lines or phrasing. Work can be completed in English, Spanish, or Spanglish.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 99A - Tutorial (5)

Study of literature in English or English translation. Students submit petition to sponsoring agency.

LIT 99B - Tutorial (5)

Speaking, reading, and writing proficiency in French, German, Greek, Italian, Latin, Spanish or other non-English language required. Students submit petition to sponsoring agency.

LIT 99C - Tutorial (5)

Study of creative writing. Students submit petition to sponsoring agency.

LIT 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

LIT 101 - Theory and Interpretation (5)

Contemporary approaches to literary and cultural theory, with emphasis on how theoretical perspectives advance and broaden the reading of literary texts. Introduction to important new theoretical developments and their antecedents. Literature majors should complete this course as early as possible. Course topic changes; see the Class Search for the current topic.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to literature and proposed literature majors and literature minors.

LIT 102 - Translation Theory (5)

Promotes the understanding of translation and its role in redefining meanings across epochs and cultures, in establishing common norms, and in advancing mutual intelligibility; but also providing encounters with absolute alterity. Actual translations are used as case studies.

Prerequisite: Prerequisite(s): one year of college-level, non-English language study or the equivalent reading ability in a non-English language.

LIT 108A - Literature Internships (5)

Provides literature majors with pre-professional experience in a variety of fields to enable students to envision career pathways and to conceive of multiple ways for literature and humanities majors to work in and engage the world. Students meet three times as a cohort during the quarter of their internship and keep a reflective journal during that time, with a brief final report at the end. Internships can be located on or off campus. Enrollment is by application through the Literature Department website. Enrollment is restricted to declared and proposed literature majors and Italian studies minors.

LIT 108B - Literature Internships 2 (2)

Provides literature majors with pre-professional experience in a variety of fields to enable students to envision career pathways and to conceive of multiple ways for literature and humanities majors to work in and engage the world. Students meet three times as a cohort during the quarter of their internship and keep a reflective journal during that time, with a brief final report at the end. Internships can be located on or off campus. Enrollment by application through the Literature Department website. Enrollment is restricted to literature majors and minors and proposed literature majors and Italian studies minors.

LIT 109X - Marxist Literary Criticism (5)

This course is an opportunity for students to engage with the tradition of Marxist literary and cultural criticism. The course begins with Marx’s own writings and then explores how Marx’s thought has been adapted and developed in diverse contexts, but always taking as its point of departure the complicated relationships between social life, exploitation, and regimes of representation from classical modernity through the present. The class is intended to focus on methodological and theoretical approaches to the study of culture.

LIT 110A - The Traditional British Canon, Part I (5)

The constitution of the canon of English literature from Chaucer to Cowper. Critical approach designations: Canons. Histories. Distribution requirements: Poetry, Pre-1750.

LIT 110B - The Traditional British Canon, Part II (5)

Explores poetry and prose from 1800 to 1950 through extensive reading in the Romantics, Victorians, Moderns, articulating the connections among them, and connecting their work to key social, political, scientific, and technological moments defining these eras. Critical approach designations: Canons, Histories. Distribution requirement: Poetry.

LIT 110C - The Traditional U.S. Canon: Beginnings to 1900 (5)

Major works from the colonial and early national periods to 1900, with attention to their social and cultural context. Critical approach designations: Canons, Histories.

LIT 110D - The Traditional U.S. Canon, 1900 to the Present (5)

Major works from 1900 to the present, with attention to their social and cultural context. Critical approach designation: Canons, Histories.

LIT 111B - Geoffrey Chaucer (5)

Close study of Chaucer's poetry, with some attention to relevant cultural, philosophical, and historical issues in the context of the late medieval period. Particular emphasis on The Canterbury Tales. Critical approach designations: Canons, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 111C - John Milton (5)

Selected poetry and prose. Distribution requirement: Pre-1750, Poetry.

LIT 111D - William Shakespeare (5)

Study of representative works by William Shakespeare. Course topic changes; please see the Class Search for the current topic. Critical approach designations: Canons, Media. Distribution requirements: Poetry, Pre-1750.

LIT 111E - Edmund Spenser (5)

Studies in Spenser's major poetry: Faerie Queene, Book I; Epithalamion; Mutabilitie Cantos. Critical approach designations: Canons, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 112A - Jane Austen (5)

Representative Austen novels within political, historical, and cultural context; considers form and genre, nationalism, feminist, postcolonial, and other critical readings. Examines poetry and other writings that illuminate cultural issues of the period, as well as film and other adaptations of Austen's novels. Critical approach designations: Canons, Histories.

LIT 112C - Charles Dickens (5)

Study of representative work by Charles Dickens. Critical approach designations: Canons, Histories.

LIT 112E - Bob Dylan as Poet: From Folk Hero to Electric Messiah (5)

Focuses primarily on the poetry and poetics of Dylan's by now substantial canon of works--early, middle, and late. Stresses poetic syntax, various lyric genres, surrealist imagery, and narrative tactics used, as well as the more socially expansive dynamics of how Dylan forged his prophetic/visionary imagination.

LIT 112G - William Faulkner (5)

A survey of Faulkner's early fiction; focus on development of theme and technique. Also considers Faulkner as a Southern historian, stressing the relationship between personal and regional experience in time. Critical approach designations: Canons, Geographies.

LIT 112I - Kafka (5)

An intensive study of the works of Franz Kafka, with reference to the literary, social, and historical context in which his work emerged. Course topic changes; please see the Class Search for current topic. (Formerly Kafka in Translation.)

LIT 112K - Herman Melville (5)

Study of representative work by Herman Melville, including novels and short stories. Critical approach designations: Canons, Histories.

LIT 112M - Twain (5)

A chronological survey of Twain's major works, with an emphasis on the development of style and content. Among other works, *The Innocents Abroad, Roughing It, Life on the Mississippi,* and *Huckleberry Finn* are considered. Critical approach designations: Canons, Power and Subjectivities.

LIT 112P - Gwendolyn Brooks (5)

An examination of the major works of Gwendolyn Brooks, the first African American to win the Pulitzer Prize (in 1950), with particular attention to questions of race, gender, and class as modes through which to consider questions of form and content. Critical approach designations: Canons, Power and Subjectivities. Distribution requirement: Poetry.

LIT 114A - Orlando Furioso (5)

Reading the 46-canto Italian Renaissance adventure poem of Ludovico Ariosto, the most popular book of its century and a classic of humanist literature, students consider literary tradition, Renaissance humanism, and how entertainment literature may articulate moral and political criticism. Critical approach designations: Canons, Genres. Distribution requirement: Poetry, Pre-1750.

LIT 114B - Don Quixote de la Mancha (5)

A close study of Books I and II of the Cervantes novel together with an examination of some of the criticism on this work written in English throughout the centuries. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

LIT 114C - Dante's Divine Comedy (5)

Reading of the Inferno, the Purgatorio, and selected canti of the Paradiso, along with selections from Dante's lyrics and from medieval Italian and French poetry. Critical approach designations: Canons, Genres. Distribution requirements: Poetry, Pre-1750.

LIT 114D - Goethe's Faust (5)

An intensive study of Goethe's Faust, Parts I and II. All works are read in English. Critical approach designations: Canons, Histories. Distribution requirement: Poetry.

LIT 114E - One Way Ticket to Hell … and Back: Exploring Dante’s Inferno (5)

Focuses on the Inferno, the first cantica of Dante Alighieri's Divine Comedy. Examines different uses of metamorphosis in Dante's representation of Hell, including the relationship between the ancient idea of human metamorphosis and Dante's representation of the Christian contrappasso (retribution), and the medieval concept of imago Dei (in God's likeness). Critical approach designations: Canons, Power and Subjectivities. Distribution requirements: Poetry, Pre-1750.

LIT 114F - Finding Dante: A Reader’s Guide to Getting Out of Hell (5)

An epic poem about a journey of self-discovery, Dante's Comedy challenges all assumptions about literary genres, styles, and the meaning of narrative and of life. Course covers Purgatory and Paradise. Critical approach designations: Canons, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 116B - Encountering Antiquity (5)

Introduces selected modes and forms of poetry with emphasis on close textual analysis. Considers uses of Greek and Roman antiquity in English/Anglo-American poetic practice from early to post-modernity by historicizing the reproduction of antiquity through poetic forms. Critical approach designations: Canons, Genres. Distribution requirement: Poetry, Pre-1750.

LIT 116C - Ancient Myth/Modern Poetics (5)

Reading of Greek and Roman texts (in English translation) which utilize mythic material juxtaposed with later poems written in response to them. Readings from Homer, Sappho, Greek drama, Petrarch, modern poets; discussion of concepts of myth, strategies of response. Critical approach designations: Canons, Genres. Distribution requirement: Poetry, Pre-1750.

LIT 116F - Knights, Ladies, and Werewolves: Medieval French Literature in Translation (5)

Medieval French literature appeared rather suddenly in the the age of castles, Crusades, knights, and chivalry, and spawned a remarkable array of genres: epic, romance, lyric, lais, saint's lives, fabliaux (bawdy tales), drama, histories, and more. This course provides a sampling of the variety of this rich tradition. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

LIT 116G - Victorian Monsters (5)

Through an examination of monsters in literature, course explores anxieties, fears, and ideals of Victorian society, paying close attention to issues of gender, sexuality, class, race, empire, scientific, and technology.

LIT 116I - Philosophy in India (5)

Investigates various facets of premodern Indian thought. Emphasis of the course rotates and may fall upon metaphysics, epistemology, ontology, ethics, hermeneutics, or basic categories of Indian traditions (dharma, karma, samsara, moksha, etc.). Critical approach designations: Canons, Genres. Distribution requirement: Pre-1750.

LIT 117A - Old Iranian Literature (5)

The pre-Islamic literature of Iran is one of the world's richest literary traditions, and forms part of the Indo-European poetic heritage. Course offers an overview of and introduction to indigenous Iranian literary traditions. The course topic changes; see the Class Search for the current topic. Critical approach designations: Canons, Histories. Distribution requirements: Global, Poetry, Pre-1750.

LIT 118A - Hebrew Bible (5)

Introduction to textual, source, redaction, historical, and literary criticism of individual books of the Hebrew Bible and to exegesis as science and ideology. Covers texts and iconography of neighboring mythological traditions (Mesopotamian, Ugaritic, Egyptian, Greek) when appropriate. Course topic changes; see the Class Search for current topic. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

LIT 119A - American Archives (5)

Explores the relationship of archival research and theory to new ways of conceiving American literary study. The course includes literary readings and introduces students to changes in the field of American literature. Topics for discussion and exploration include new ways to conceive of American literature that includes marginalized and under-represented communities. Focuses on methodologies for research in digital and physical archives with the goal of expanding what counts as American literature. Distribution requirements: Research.

LIT 120A - Topics in Poetry (5)

Close reading--critical and creative--of poetry. Examines how poets teach, through their writing, to radically attend to reading. The course topics changes; please see the Class Search for current topic. Critical approach designations: Genres, Histories. Distribution requirement: Poetry.

LIT 120B - Poetry of the 17th Century (5)

Readings in the works of Donne, Jonson, Herbert, Herrick, Marvell, and others. Critical approach designations: Genres, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 120C - Victorian Poetry (5)

A reading of the major Victorian poets from Tennyson to early Yeats. Critical approach designations: Genres, Histories. Distribution requirement: Poetry.

LIT 120D - Nineteenth-Century American Poetry (5)

The major figures and important movements from Poe to Emerson through Whitman and Dickinson. Critical approach designations: Canons, Genres. Distribution requirement: Poetry.

LIT 120E - Early- to Mid-20th-Century American Poetry (5)

Poets include Emily Dickinson, Walt Whitman, H.D. (Hilda Doolittle), William Carlos Williams, Marianne Moore, Wallace Stevens, Langston Hughes, T.S. Eliot, and others, with attention to leading movements and critical issues. Critical approach designations: Canons. Genres. Distribution requirement: Poetry.

LIT 120F - Topics in Modern Poetry (5)

Survey of modern poetry; includes a variety of poetic forms. Course topic changes; see the Class Search for current topic. Distribution requirement: Poetry.

LIT 120H - American Poetry Since World War II (5)

Major poets since World War II, with attention to leading movements and critical issues. The course topic changes; please see the Class Search for the current topic. Critical approach designations: Genres, Histories. Distribution requirement: Poetry.

LIT 120J - Contemporary American Poetry (5)

Surveys contemporary poetry with attention to race, sex, and gender; includes a variety of poetic forms. Course topic changes; see the Class Search for the current topic. Critical approach designations: Genres, Histories. Distribution requirement: Poetry.

LIT 121A - The Heroic Epic (5)

A survey and analysis of primary epic: Gilgamesh, the Iliad, the Odyssey, and Exodus. Distribution requirement: Poetry, Pre-1750.

LIT 121D - Medieval Epic (5)

Medieval reworkings of stories and motifs drawn from the barbarian or Germanic tradition including Beowulf, The Song of Roland, Nibelungenlied, Snorri Sturlason: King Harald's Saga from Heimskringla, and Njal's Saga. Critical approach designations: Canons, Genres. Distribution requirement: Poetry, Pre-1750.

LIT 121G - The Idea of Poetry (5)

Focus is on the theories of rhetoric and poetry written between 1580 and 1620. Texts include English, Italian, French, and Spanish works. Critical approach designations: Genres, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 121H - Classical Poetics in Elizabethan Verse (5)

An introduction to Elizabethan poetry and poetics, with emphasis on shorter lyrics (sonnets, ballads, etc.), pastoral, erotic epyllia, devotional poetry, etc. Examines various Classical and Continental strains of influence at play in the production of English verse in the later 16th century, including Classical rhetoric, Ovidian mythology, and Petrarchanism. Critical approach designations: Canons, Genres. Distribution requirements: Poetry, Pre-1750.

LIT 121J - Medieval Romance (5)

A study of representative texts from the 12th through the 15th centuries. Questions of subjectivity, sexuality, and history in romance narratives are addressed. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Pre-1750.

LIT 121K - Radical Moderns/Poetry International (5)

Focuses on a generation of early 20th-century poets from Asia, Latin America, the Middle East, and beyond. Studying their poetic output through the lens of modernism and other genres, students discover a truly global moment in literature/politics. Critical approach designations: Genres,

Power and Subjectivities. Distribution requirements: Global, Poetry.

LIT 121L - Green Ache: Ecopoetics, Race, and Material (5)

Examines ecopoetics as theory, politic, and field of discourse. Focuses on literary and artistic production across a variety of texts that explore the role of race and representation, including literary theory, film, and visual art. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Poetry.

LIT 121M - Blue and Brown: Race, Gender, and Blackness (5)

Examines Blackness as race, identity, politic, field, and discourse. Exploration guided by poetry, narrative fiction, video, film, music, and the daily news. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Poetry.

LIT 121N - RAGE: Race and Performance (5)

Explores race, gender, and form in an interrogation of rage, and how it functions across an array of works by writers and artists in how they render rage's effects and configurations through poetry, prose, and performance. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Poetry.

LIT 121O - Body Theories and Embodied Poetics in Contemporary American Poetry (5)

Course investigates the body as a site of political and theoretical significance in contemporary American poetry. Considers how and when corporeal poetics succeed (and fail) at capturing elusive and/or precarious subjectivities of race, sex, gender, grief, and violence. Critical approach designations: Genres, Media. Distribution requirement: Poetry.

LIT 121Q - Queer Lyrics: A History of LGBTQ Poetry in the United States (5)

Considers theories of sexuality and the lyric side-by-side, through readings, lectures, class discussions, and writing assignments. Questions of language, community, and self-hood inform discussions of a wide range of poets. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Poetry.

LIT 123C - History of the Essay: From Seneca to Solnit (5)

Chronologically charts the essay's arc from the age of antiquity to the contemporary period. Considers how the genre has changed through time with attention to its form, language, and content.

LIT 124A - Masters of Modernist Short Fiction (5)

Acquaints students with the main stylistic features of modernism through the close reading of short stories. Critical approach designations: Genres, Histories.

LIT 124B - The Contemporary Latin American Short Story (5)

An exploration of the genres, forms, and history of the Latin American short story. Focus includes contemporary women writers and writers of color from throughout Latin America in dialogue with the Latin American short story tradition. Critical approach designations: Genres, Geographies. Distribution requirement: Global.

LIT 124C - The Contemporary Short Story (5)

Introduces contemporary short fiction, exploring works written in English and in translation from the last 25 years. Through readings and literary criticism, students examine how the genre both adheres to and challenges conventions, focusing on moments of truth and narrative structures. Explores how the short story has been historically marginalized compared to the novel, and how this has allowed it to address stigmatized topics and amplify new voices.

LIT 125A - Ancient Novel (5)

Roman prose fiction--the ancient novel and texts from other genres--in relation to the history of the novel. Critical approach designations: Genres, Histories. Distribution requirements: Pre-1750.

LIT 125B - Studies in the English Novel (5)

From the 18th to the 20th century. The course topic changes; please see the Class Search for the current topic. Critical approach designations: Genres, Geographies.

LIT 125C - Great French Novels (5)

Provides an introduction to important French novels of the nineteenth and twentieth centuries. All works are read in English. Critical approach designations: Genres, Geographies.

LIT 125D - Modern and Contemporary German Literature (5)

Selected readings from the novel and novella in modern and contemporary German literature. All works are read in English. Course topic changes; please see the Class Search for the current topic. (Modern German Fiction.)

LIT 125H - Modern Arabic Novel (5)

Examines the literary and cultural production of the modern Arab world, with an emphasis on the novel since the 1950s. Includes discussion of film, poetry, and mass culture. Critical approach designations: Genres, Histories. Distribution requirement: Global.

LIT 125I - What is the Novel? (5)

A survey of global narratives, focusing on the novel over several centuries, traditions, languages, and cultures. Examines the novel as a particular genre of literary expression; also examines its formative relationship with historical, social, cultural, and political processes. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Global.

LIT 125J - French Science Fiction (5)

Considers several French literary and cinematic examples of contemplating the present through the future—and the past—that paint a shifting picture of how time makes us human. Course also examines the French novel as it has developed in conversation with scientific thought since the late-19th century. All works are read in English. Critical approach designations: Genres, Geographies.

LIT 126A - International Cyberpunk (5)

Cyberpunk, considered a subgenre within science fiction, has achieved international prominence and presents interesting interpretative challenges. Course examines some issues as manifested in representative texts. Critical approach designations: Genres, Histories. Distribution requirement: Global.

LIT 126F - Speculative Fiction As Cultural Theory and Practice (5)

Readings of contemporary and historical speculative fiction, including examination of representational practices, technologies, and politics that emerge from and/or circumscribe their interrelations. Course topic changes; please see the Class Search for current topic. Critical approach designations: Genres, Histories.

LIT 126G - Science Fiction and the Sublime: Science, Technology, and Subjectivity (5)

Studies the sublime encounter in works of science fiction literature and film. Lyotard defined the sublime as the "presentation of the unpresentable." By examining what and who constitutes the sublime, we can explore relationships among fundamental concepts like knowing, being, and embodiment. Critical approach designations: Genres, Media.

LIT 126H - Artificial Intelligence and Human Imagination (5)

Uses a humanistic framework to study the promises and perils of artificial intelligence technosystems (AI). Studies cultural depictions of AI, co-creates cultural artifacts using AI, and analyzes the "anatomy" of specific AIs. (UCSC General Education Code: CC)

LIT 126P - Poe, Past and Present (5)

Who was Edgar Allan Poe, and who do we imagine him to be? This course considers popular culture’s longstanding obsession with Poe’s life, death, and writing. Discusses why Poe has lived on in popularity to this day, and how depictions of him have been influenced by his own stories and the stories of others, taking up his legacy. Distribution requirement: Poetry.

LIT 126T - Time Travel Narratives (5)

Explores time travel narratives in literature and film as an introduction to speculative and science fiction. Each week, a primary text is analyzed, supplemented with short stories and/or films. Focus is on both the imaginative/literary elements and the formal/logical structures of each time travel scenario. Authors may include Butler, Chiang, Delany, Heinlein, Russ, Vizenor, and Yu. Films may includeBranco sai perto fica (Brazil, 2014) and Primer (USA, 2004).

LIT 127D - Travel Writing (5)

Examines the genre of travel writing and the critical and cultural issues it engages. Critical approach designations: Genres, Geographies. Distribution requirements: Global.

LIT 127J - How to Write Like a Journalist (5)

Journalists generally talk about two kinds of stories: hard news and features. Hard news stories make you smarter. Features make you wiser. We'll be reading and writing both sorts in this class. We'll also be tweeting, taking photos, experimenting with opinion pieces and learning how journalistic writing differs from academic writing. We'll be analyzing the work of today's professional journalists (some will visit our class) and talking about where their articles succeed and fail. The class is highly interactive and students work both on their own and in teams. Course includes reading news weekly and writing news stories about campus and the community.

LIT 130A - Ancient Literature in Cross-Cultural Perspective (5)

Comparative approaches to the study of ancient literature and culture. Topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Global, Pre-1750.

LIT 130B - Travel Writing and Intercultural Relations in the Middle Ages (5)

Provides a historically-based and theoretically-informed introduction to medieval and early modern European contacts with other cultures. Readings include fourth through 17th-century writings about travel, discovery, and conquest in Asia, Africa, and America. Critical approach designations: Geographies, Histories. Distribution requirement: Global, Pre-1750.

LIT 130D - The Global Middle Ages (5)

Examination of texts from the global Middle Ages in a range of world cultures and traditions, with attention to their historical and social contexts. Course topic changes; please see the Class Search for the current topic. Satisfies the Global and Pre- and Early Modern distribution requirements.

LIT 131A - Problems (5)

Considers a range of phenomena from a critical world perspective: subject formation; human activity on a global scale; questions that demand a worlded answer. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 131B - Space/Time (5)

The world as understood through spatial and temporal divisions: regions, nations, empires, periods in a worlded perspective. Course topic changes; see the Class Search for

current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 131C - Worldings (5)

How to think about the world as a whole: representations, networks, systems, taxonomies, versions of globalization. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 131D - Literature in a Global Context (5)

Comparative examination of fiction in the modern world and of fictional responses to social change and crisis. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirements: Global.

LIT 132A - Germany in War and Peace (5)

Study of selected texts reflecting German society at war or in that ambiguous state called peace. Attention is given to the place of literature in German cultural life and its special role in the formation of national identity. Critical approach designations: Geographies, Power and Subjectivities.

LIT 133C - Modern Japanese Novel (5)

Important 20th-century novels and short stories in English translation may include works by Soseki, Kawabata, Mishima, Oe, and significant women authors. Discussion of literary themes in the context of changing Japanese society and thought. Japanese language skills are not required. Distribution requirement: Global.

LIT 133D - Topics in the Literatures and Cultures of Southern Asia (5)

Provides in-depth analysis of literary and cultural phenomena of southern Asia. The course topic changes; see the Class Search for the current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 133E - Contemporary Chinese Society, Culture, and Politics (5)

Focuses on contemporary China: society, politics, culture, and the economy. Critical approach designations: Geographies, Histories. Distribution requirement: Global. (Formerly Topics in Asian Modernism.)

LIT 133F - Pacific Rim Discourse (5)

Examines the rise of the idea of the Pacific Rim: its historical background, ideological assumptions, and various forms of its cultural manifestations. Critical approach designations: Geographies, Histories. Distribution requirements: Global.

LIT 133G - The Nuclear Pacific (5)

Examines a range of cultural representations, literature, and films that chart the transnational history and representational legacy of uranium and nuclear power. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 133H - Haunted by the Forgotten War: Literature and Film of the Korean War (5)

The Korean War has the dubious distinction of being known as the Forgotten War in a U.S. context. Course examines novels, short stories, film, popular visual narratives, and historical accounts of the Korean War and its often-circuitous legacies.

LIT 133I - Global Japan: Literatures of the Japanese Diaspora (5)

Examines the fiction of ethnic Japanese writers who are located outside of Japan. How do these writers situate themselves vis-a-vis Japan and the countries in which they were born or reside? How does their status as outsiders enable them to view Japan's social problems and colonial history? Critical approach designations: Genres, Geographies. Distribution requirement: Global.

LIT 133J - Colonial Punjab (5)

Examines colonial Punjab, focusing on the impact of British rule from the collapse of the Sikh Empire to Partition. Topics include the cultural prehistory of imperialism, colonial governance, Orientalism, and the region's division into India and Pakistan. Students explore the effects of colonialism on Sikh, Hindu, and Muslim communities, the rise of religious reform movements, and the contradictions of colonial rule. Distribution requirement(s): Global.

LIT 133K - Contemporary Asian Literature (5)

Explores contemporary Asian literature, focusing on how writers from Japan, Korea, Taiwan, and other regions address themes of identity, politics, trauma, and modernity. Through novels, short stories, and essays from the late 20th century to the present, students examine literary movements like surrealism, postmodernism, and magical realism, and how these genres reflect or challenge cultural and societal norms. See the schedule of classes for the current topic. Distribution requirement: Global.

LIT 134A - Caribbean Literature (5)

A study of major writing from the English-speaking Caribbean, with attention to the historical and cultural context out of which it arises and to which it responds. Critical approach designations: Canons, Geographies. Distribution requirement: Global.

LIT 135A - Topics in African Literature (5)

Thematic and stylistic linkages: classical texts, oral traditions, and modern developments in African literature. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 135E - The Historical Imaginary (5)

A survey of historical literature in the Americas that examines fictional attempts to re-imagine New World histories. Readings focus on secret or mangled histories, the legacies of slavery and colonialism, gendered critiques of national histories, and U.S. imperialism. Critical approach

designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 135F - Empire and After in the Anglophone Novel (5)

Examines fiction written in English, 1883 to 1948, in order to consider the complex relations--complicit, resistant, both--between literary and imperialist discourses. Likely novelists for study are Schreiner, Haggard, Conrad, Kipling, Forster, Hilton, Paton. Critical approach designations: Genres, Geographies.

LIT 135G - Postcolonial Writing (5)

Introduces students to a selection of postcolonial theory and texts. Critical approach designations: Geographies, Power and Subjectivities.

LIT 135H - African Futurisms (5)

Explores expressions of African futurism in a range of creative media--novels, short stories, and films--and analyzes them in conversation with theoretical texts. Recognizes African cultural producers and theorists as central to conversations about anti-colonialism, revolution, futurity, and the nonhuman and beyond human. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 136B - Beat Literature and the World (5)

Explores the sources and context of Beat writing, emphasizing the Beats' intense interest in and engagement with the world at large. Includes works by major and minor Beat writers. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Poetry.

LIT 137A - Global Cities (5)

Examines cities as social spaces and as local spaces in the global economy and global imaginary. Focus is interdisciplinary, including literature, film, cultural studies, history, and sociology. Topic changes; please see the Class Search for current topic. Critical approach designations: Geographies, Histories Distribution requirement: Global.

LIT 137C - Imagining Paris (5)

Examines ways in which Paris, France, a mecca of literature and art for the last two centuries, has spurred imagination, and has itself been the product of global imagination. Exploration of landmarks, monuments, and iconic aspects of Parisian culture via literary and artistic imaginings. Critical approach designations: Geographies, Media.

LIT 138A - Culture and Nation (5)

Course explores the role of literature and culture in the production of national communities. Course topic changes; please see the Class Search for the current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 138B - Regions in American Literature (5)

Examines development of regional writing in the U.S. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories.

LIT 138C - Modern Turkish Literature (5)

Explores the formation of modern Turkish literature from the late-Ottoman tale to the postmodern novel. Introduces key critical concepts/debates (orientalism, canon formation, belatedness/modernization, national allegory) used in the study of non-Western literatures. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 139A - Topics in American Literature and Culture (5)

Studies in American literature and culture, with attention to historical context. Course topic changes; please see the Class Search for current topic. Critical approach designations: Geographies, Histories.

LIT 139B - Los Angeles Circa 1992 (5)

In response to the acquittal of white police who brutally beat black motorist Rodney King, thousands of people took to the street. This course examines cultural narratives that arose in the lead-up to and aftermath of the 1992 L.A. uprising. Critical approach designations: Geographies, Power and Subjectivities.

LIT 141A - Early Mediterranean Cultures (5)

Examination of representations of medieval and early modern Mediterranean history. Course topic changes; please see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirements: Global, Pre-1750.

LIT 141B - Classical Chinese Culture and Literature, 10th Century B.C.E. through Sixth Century C.E (5)

Survey of writing and culture from the 10th century B.C.E. through the sixth century C.E., focusing on poetry, philosophical and historical writing, supernatural fiction, Buddhist/Taoist texts in contexts of fragmentation, empire building, dynastic collapse, rebellion, eremitism, and courtly society. Critical approach designations: Geographies, Histories. Distribution requirements: Global, Poetry, Pre-1750.

LIT 141C - Classical Chinese Culture and Literature, Sixth Century through 16th Century (5)

Survey of writing and culture from the Tang through early Ming dynasties (sixth century C.E. through 16th century C.E.). Themes include literary, religious, and philosophical innovation; courtly life; cultural contacts with non-Chinese people; and transformations of state and society. Critical approach designations: Geographies, Histories. Distribution requirements: Global, Poetry, Pre-1750.

LIT 141D - Classical Arabic Literature and Islamic Civilization

(5)

Examines the development of classical Arabic literature in historical context, including the appearance and importance of major genres and their broad relationship to the social and cultural history of the Arab-Islamic world. Distribution requirements: Global, Pre-1750. (Formerly Arab-Islamic Literatures I: 500-1200.)

LIT 141E - Post-Classical Arabic Literature and Culture (5)

Examines the evolution of Arabic and Islamic literatures and cultures through the late-Medieval and early-modern periods. These periods produce much of the body of literature and texts that survive today, and is profoundly influential. Distribution requirements: Global, Pre-1750. (Formerly Arab-Islamic Literatures II: 1200-1900.)

LIT 141G - Granada: The Moor's Last Sigh and the Muslim's Frontier: The City in the Mediterranean Imagination (6)

Traces the development of Granada from its first rise to prominence as Muslim city in the Ṭāʾifa Period (11th century) through its transformation into a Christian city in early modern Spain. Special emphasis is placed on its role as a point of contact between Spain and North Africa (or the Latin West and the Muslim Mediterranean more broadly) and the city's privileged position in the social and literary imaginaries of Muslims, Christians, and Jews, as a place of memory and intercultural contact. Distribution requirement(s): Pre-1750.

LIT 144A - Continental Renaissance (5)

Introductory survey of great prose writings of the continental Renaissance in their cultural and historical contexts. Authors include: Machiavelli, Castiglione, Erasmus, Rabelais, Montaigne, and Cervantes. Critical approach designations: Geographies, Histories. Distribution requirement: Pre-1750.

LIT 144G - Unruly Minds and Mental Illness in Literature (5)

Drawing on a disability studies framework, course explores how portrayals of madness, melancholy, and cognitive nonconformity both limit and expand literary expression. Course examines how mental illness might function as a source of insight or even empowerment, while simultaneously acting as a tool of marginalization. Distribution requirement: Pre-1750.

LIT 145A - Colonial American Literatures (5)

Surveys representations of the Euro-Amerindian encounter in the pre-national period. Readings include collective stories of indigenous peoples, European captivity narratives, reflections about spirituality and religion, poems, and a contemporary novel. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Pre-1750.

LIT 146A - Studies in Romanticism (5)

A survey of major Romantic themes and authors between 1780 and 1820. Explores relationships to pre-Romantic and post-Romantic authors. The main goal is to achieve familiarity with a wide range of individual poems in the general context of Romanticism. Critical approach designations: Genres, Histories. Distribution requirement: Poetry.

LIT 146B - Victorian Literature (5)

British Victorian literature (1830-1901) featuring representative texts and authors. Course topic changes; please see the Class Search for the current topic. Critical approach designations: Geographies, Histories.

LIT 146C - Victorian Prose (5)

Victorian prophecy, Victorian criticism: an examination of some major writings of 19th-century nonfiction prose by Carlyle, Mill, Ruskin, Newman, Arnold, Pater, and Wilde, with a glance at the social context and the minor fictional forms of the era. Critical approach designations: Genres, Histories.

LIT 146D - Nineteenth-Century American Fiction (5)

Examination of selected fiction written between the end of the 18th century and the Civil War, with attention to historical and cultural as well as literary issues. Critical approach designations: Canons, Histories.

LIT 146F - The Dissenting Tradition in America (5)

Antislavery writing of the 19th century profoundly shaped a resistant strain in American writing. By reading speeches, essays, and life writing along with more traditionally literary work, students examine what gives language the power to move people and to change the world. Critical approach designations: Histories, Power and Subjectivities.

LIT 146G - Queer(y)ing Victorian Literature (5)

Examines mid- to late-19th-century English representations of non-normative gender and sexuality in popular culture. Considers how these figures in fiction conform to or resist established perceptions of gender, sexuality, race, and empire. Critical approach designations: Histories, Power and Subjectivities.

LIT 147A - Twain, Slavery, and the Literary Imagination (5)

Using Mark Twain's later writings and other literary/non-literary materials, explores responses to popular and legal discourse on blood, race, sex, resurgence of racism, and imperialism. Critical approach designations: Histories, Power and Subjectivities.

LIT 148I - Toni Morrison's Americas (5)

Highlights the narrative innovations of Toni Morrison, reading several key works in the chronological order of their setting to show how the author retells American history through the lens of Atlantic slavery and racial capitalism.

LIT 149A - Behind the Berlin Wall (5)

Examines cultural life in the German Democratic Republic between 1946 and 1992 through films from the state-owned DEFA film studios. Topics include: socialist realism and international modernism in cinema; the representation of collective labor; the status of women; youth culture; and the

texture of everyday life and consumer culture in socialism. Critical approach designations: Histories, Media.

LIT 149B - Contemporary American Literature (5)

A selective examination of major writings since World War II, with attention to literary issues and historical context. Critical approach designation: Geographies, Histories.

LIT 149C - The 1960s (5)

An interdisciplinary study of the cultural and social movements of the 1960s. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Global.

LIT 149D - Topics in Modern Literature (5)

Study of 19th- and/or 20th-century literature, with attention to its literary and historical context. Course topic changes; please see the Class Search for current topic. Critical approach designations: Genres, Histories.

LIT 149E - Modern Fiction and Poetry (5)

Survey of modern fiction and poetry. Course topic changes; please see the Class Search for current topic. Critical approach designations: Genres, Histories. Distribution requirement: Poetry.

LIT 149F - Contemporary Mexican Narrative (5)

Examines 20th and 21st century Mexican literature, with attention to literary critical issues as they relate to cultural, historical, and political contexts. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 149G - War in Contemporary American Culture (5)

Considers the treatment of war in American literature since World War II. Close attention paid to both literary form and historical context. Also provides perspectives on, and critical tools for thinking about, contemporary armed conflict. Course topic changes; please see the Class Search for the current topic. Critical approach designations: Histories, Power and Subjectivities.

LIT 149H - The Future (5)

Examines modes of thinking and imagining the future throughout human history, and considers the fate of the future today. Topics include apocalyptic religion, utopia and dystopia, progress, revolution, finance, and everyday life. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Global.

LIT 149I - Contemporary Medievalisms (5)

Explores contemporary representations of medieval cultures by considering questions of historical memory, limits of adaptation, and the power of satire. Critical approach designations: Geographies, Histories.

LIT 149J - The Good Life (5)

The social, affective, and psychic structures of our neoliberal era make it difficult to live a good life. Drawing on the broad tradition of critical theory and utopian imaginings, the course aims to give practical and theoretical guidance toward achieving a good life.

LIT 150D - The Power of Writing: Books and Libraries 600-1500 (5)

Surveys the history of the book in the West from ca. 600-1500. Concentrates on the medieval illuminated manuscript and the first years of printing, and focuses on the relationship between text and image. Critical approach designations: Histories, Media. Distribution requirements: Pre-1750.

LIT 150E - Letters, Literature: A Correspondence Course (5)

Examines the form and function of the letter in literature from antiquity to the contemporary moment. Considers all writing, from the most expressly public to the most seemingly private, as a form of correspondence, and we will contribute our own letters, in both creative and critical modes, in an effort to expand our capacities for critical analysis of texts. Critical approach designations: Genres, Media.

LIT 151B - The Phenomenon of Tragedy (5)

Examines the theory of tragedy from Aristotle to Nietzsche, while inviting students to read and discuss classic dramatic pieces to which the label tragedy was applied. Relies on student presentations and contributions, and teaches skills both in handling theory and in practical literary criticism. Critical approach designations: Genres, Media. Distribution requirement: Pre-1750.

LIT 151G - English Drama: 1576-1642 (5)

Study of representative plays. Course topic changes; please see the Class Search for current topic. Critical approach designations: Canons, Media. Distribution requirement: Pre-1750.

LIT 151K - Gender, Race, and Disability in American Drama (5)

An investigation of how American playwrights represent and criticize the concepts of gender, race and disability. Analysis of the genre of drama as a contact zone of gender, race, and disability by studying how American playwrights have critically responded to historical and social alienation, sexism, racism, and ableism in their works about "disabled" bodies. Students cannot receive credit for this course and CRES 114. Critical approach designations: Media, Power and Subjectivities.

LIT 151L - Theater in India (5)

Historical introduction to the theatrical forms and dramatic performance styles that have characterized the Indian tradition at different times and places. Critical approach designations: Canons, Media. Distribution requirements: Global, Pre-1750.

LIT 154B - Literature and the Arts (5)

Literature and art challenge, collaborate with, and use each other as inspiration. Course examines the boundaries of and connections between literature and art; focuses on the relationship between self-expression, identity, and politics in art and literature. Critical approach designations: Media, Power and Subjectivities.

LIT 154C - Hip Hop Hi Art (5)

Explores the U.S. born and now global phenomenon hip hop as poetic discourse, and analytical frame by examining questions of race, gender, and sexuality via analysis of rap lyrics, music, visual art, video, film, and performance. Satisfies the Poetry distribution requirement.

LIT 154D - Literature and Sound (and Soundscapes) (5)

This course listens to 20th-century speculative fiction through a series of key words in sound study and themes in genre study. Topics include: sound and Afrofuturism, psycho-acoustic technologies in film, and extra-terrestrial musical voyages.

LIT 155A - Cinema and Subjectivity (5)

An examination of the ways in which the technological and institutional practices of cinema construct modes of modern and contemporary subjectivity. Course topic changes; please see the Class Search for current topic. Critical approach designations: Media, Power and Subjectivities. Distribution requirement: Global.

LIT 155C - New German Cinema (5)

Surveys the work of Fassbinder, Kluge, Herzog, Schlöndorff, von Trotta, Reitz, Straub, Sanders-Brahms, and others. Major themes include post-fascism and the problems of history, the burden of memory, mass culture, gender, social class, and migration in postwar Germany. Critical approach designations: Geographies, Media.

LIT 155D - Italian Cinema and Literature (5)

Explores the rich history of Italian cinema. Special attention is given to the links between literacy and visual narratives, Italian films and Italian novels, autobiographies, and short stories on which the films are based. Critical approach designations: Geographies, Media.

LIT 155E - Cinema and Social Change in Latin America (5)

Surveys selected Latin American and Latino feature and documentary films. Course topic changes; please see the Class Search for current topic. Critical approach designations: Media, Power and Subjectivities. Distribution requirement: Global.

LIT 155H - The Horror Film (5)

Shifting definitions of horror in the movies from the late silent period to the present through close analysis of representative films and critical texts. Course topic changes; please see the Class Search for current topic. Critical approach designations: Genres, Media.

LIT 155J - The Films of John Carpenter (5)

Study of development and central themes of preeminent genre director of the post-Hollywood era, concentrating on central core of major works in horror/science fiction genres from Halloween to In the Mouth of Madness, with attention to the comedies and action films. Critical approach designations: Genres, Media.

LIT 155L - Vampire Film (5)

Examines development and central themes of vampire film from the silent era to the present. Critical approach designations: Genres, Media.

LIT 155N - Cinema in India (5)

Examines cinema in India from the silent era to the contemporary production of Bollywood films. Attention is given to the rise of the culture industry in urban centers such as Mumbai, and the dialectical relationship between socio-political change and cultural form. Critical approach designations: Geographies, Media. Distribution requirement: Global.

LIT 155O - Women In/As Horror: Critical Approaches to the Horror Film (5)

What does horror film have to say about women? In treating horror film as text, students gain the necessary tools to read these movies as narrative; students also identify how race, class, gender, and genre function to create complex and challenging texts. Critical approach designations: Media, Power and Subjectivities.

LIT 156A - The Gothic Imagination in Fiction, Film, and Theory (5)

Readings include theoretical essays by Freud and Lacan and such fictions as The Monk, Frankenstein, Dracula, Maus, The Yellow Wallpaper, and Beloved. Films change each year. Critical approach designations: Histories, Media.

LIT 156E - Mapping Fictions: Geocritical Approaches to Cultural Studies (5)

Studies how literature maps the world and in what ways our experiences of the world are informed by literary maps. Critical approach designations: Geographies, Media. Distribution requirement: Global.

LIT 157A - Modern Ancient Drama (5)

The study of 20th- and 21st-century productions and adaptations of ancient Greek drama in theater, dance, music, and film, including Stravinsky, Graham, Pasolini, Breuer, and von Trier, discussing artists' goals, the sociopolitical context, ideas of authenticity, and audience response. Critical approach designations: Histories, Media. Distribution requirement: Pre-1750.

LIT 157C - Representations of Hamlet (5)

Examination of Shakespeare's Hamlet from various perspectives, including as a literary and historical object, and as a mirror of socio-political concerns. Readings include both

precursors to Shakespeare and modern adaptations and revisions of the Hamlet story. Critical approach designations: Canons, Media. Distribution requirements: Pre-1750.

LIT 157E - Greek Drama/Modern Film (5)

A reading of ancient Greek plays along with contemporary films similar to them in theme, form, and effect. Students discuss different definitions of tragedy; genre as a critical tool; and similarities and difference between the media of literature, drama, and film. Critical approach designations: Genres, Media. Distribution requirement: Pre-1750.

LIT 160C - Cruelty: Enjoying the Pain of Others (5)

Cruelty is the unmotivated infliction of pain on someone else. This course investigates the notion of cruelty cultures raised by Claude Levi-Strauss through the literatures of ancient Rome and 15th-16th century Mexico as well as contemporary world literature. Critical approach designations: Histories, Power and Subjectivities. Distribution requirements: Global, Pre-1750.

LIT 160E - Theorizing Race and Comics (5)

Examines comics' origins in the United States' legacies of racial caricature and political cartoons about slavery, Asian exclusion, yellow journalism, and imperial expansion. Analyses of graphic novel's 20th-century evolution around human-rights violations and post-atrocity representational strategies around race, nationalism and minority status. Critical approach designations: Media, Power and Subjectivities. Distribution requirement: Global.

LIT 160F - Topics in Cultural Studies (5)

Investigates the ways in which cultural texts--literary, aesthetic, visual, performative, and a variety of popular forms--create and transform individual experiences, everyday life, social relations, and power. Course topic changes; see the Class Search for the current topic. Critical approach designations: Media, Power and Subjectivities.

LIT 160G - Topics in Literary Theory (5)

Examination of major issues in contemporary theory, with emphasis on key concepts. Course topic changes; please see the Class Search for current topic. Critical approach designations: Canons, Power and Subjectivities.

LIT 160H - Topics In Narratives of Resistance (5)

Selections from writers from around the world, whose common theme is resistance to domination. In most cases, the domination is multiple and complex, involving gender oppression, and racial and colonial domination. Distribution requirement: Global. (Formerly Narratives of Resistance.)

LIT 160I - Race, Militarism, and Empire in Asia and the Pacific (5)

Theoretical and historical inquiry into the relationship between race, militarism, and empire; a comparative examination of the Japanese and U.S. empires in the Asia-Pacific region; and a consideration of how liberal ideologies around race were wielded as a tool of imperial governance. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 160J - Exile, Diaspora, Migration (5)

Analyzes how the figure of the refugee, migrant, and other travelling communities are produced, engaged and represented in literary texts, cultural texts, and theories. Course materials include fiction, memoir, essay, legal tracts, and film. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 160K - Race, Labor, and Migration (5)

Examines racialized labor from the mid-19th century to the present, including the racial protest novel as a cultural form. Investigates race, gender, and citizenship as technologies used to regulate labor and to circumscribe labor's power. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Global.

LIT 160L - Literature and Philosophy (5)

Provides critical insight into the complex dynamics that define our historical moment through an investigation of literary and philosophical treatments. Readings include novels, plays, philosophical essays, and political commentary. The course topic changes; see the Class Search for the current topic. Critical approach designations: Genres, Power and Subjectivities.

LIT 160M - The War on Terror (5)

Investigates the logic of U.S. imperialism, with a specific focus on the War on Terror. Includes texts in critical race and ethnic studies, history, and literature, and a diverse, range of media; novels, poetry, film, graphic literature, and music. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 160N - John Brown: Prophet or Fanatic? (5)

John Brown was a 19th-century advocate of the use of armed insurrection to overthrow the institution of U.S. slavery. Why has a man dismissed as a fanatic been taken up as the subject of novels, biographies, popular songs, films, and even internet memes for the past 160 years? Course explores this question through readings in literature, history, and theory. Critical approach designations: Histories, Power and Subjectivities.

LIT 160P - Misinformation, Disinformation, and Fake News (5)

Our world is saturated with information and much of it is inaccurate. This class teaches how to to identify bad information and how to keep it from spreading. It explores the role and responsibility of journalism in the world and why it matters. It investigates where information originates and the motivations of those producing, spreading, and sharing it, and pushes students to consider their media diet and how it affects their life and understanding of the world.

LIT 160Q - (Gender)Queer Theories (5)

Examines theory and practice of (gender) queer- and trans-ness in the present historical moment. Drawing primarily on critical theory from trans and queer studies, alongside literary texts and popular culture, the course introduces intellectual and affective resources for navigating questions about gender non-normativity.

LIT 160R - Gangsters, Bandits and Rogues: The Image of the Outlaw from the Middle Ages to the Present (5)

Is the outlaw a revolutionary defender of the people? Or a pillager of the defenseless poor? A social outcast or a folk hero? This course explores the ambivalences and ambiguities of "the outlaw" in popular, literary, and historiographic representation. Distribution requirements: Pre-1750.

LIT 160S - Cultures of Socialism (5)

Emphasizes socialism as an important aspect of modernity. Beginning with an overview of the left avant-gardes of the early 20th century, students look at the debates about the political implications of realism, modernism, and socialist realism.

LIT 160T - Reading Torture (5)

Course grapples with the ethical, political, aesthetic, racial, and cultural implications of torture. While the course analysis is grounded in looking at torture as practice—as a brutal manifestation of American nation- and empire-building—students will think conceptually about torture and pain. Materials draw heavily on writing from the U.S., but adopt global perspectives. The course is structured to begin with a theoretical introduction to the concept of torture before working through some historical examples, understanding how to "read" and interpret torture as represented in cultural production (literature, art, film), and finally devoting the last few weeks to our contemporary era and the so-called "war on terror." The class works to uncover the underlying logic of torture that links histories of racism and war to its institutionalized present. Distribution requirement: Global.

LIT 161A - African American Literature (5)

Examination of African American writing and cultural representations, with attention to the historical, cultural, and general literary contexts out of which they emerged and upon which they commented. Course topic changes; please see the Class Search for the current topic. Critical approach designations: Histories, Power and Subjectivities.

LIT 161B - African American Women Writers (5)

Explores the cultural, aesthetic, political, and feminist issues in select works by African American women. Through close analysis of the works, students develop an understanding of the intersections that race, gender, and class play in the literary imaginations of these writers. Critical approach designations: Histories, Power and Subjectivities.

LIT 162A - Asian American Literature (5)

Examination of Asian American literary works (fiction, poetry, dramatic essays) in the context of the historical presence of Asian Americans in the United States since the 1850s. Emphasis on comparison of select works from ethnic Asian writings. Critical approach designations: Geographies, Power and Subjectivities.

LIT 162B - Literature of the Asian Diaspora (5)

Study of literature of the Asian diaspora, attempting to discover and define a growing body of contemporary writing under this rubric, including immigrant/migrant histories, memories of exile and refuge, as well as the fiction of imagined homelands. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 162C - So Many Little Lives: Representations of Trauma in Asian American Literature (5)

Explores representations of trauma in contemporary Asian American literature. Critical approach designations: Geographies, Power and Subjectivities.

LIT 163A - American Indian Literature (5)

Explores works of fiction, creative non-fiction, drama, and poetry written by American Indians. Focuses on historical and political issues within the text as well as on formal and thematic structures. Critical approach designations: Histories, Power and Subjectivities.

LIT 164A - Jewish Travel Narratives (5)

Exploration of the idea of the Diaspora as a moving condition, and of the multli-dimensional character of global Jewish culture, covering authors who traveled across the Jewish world from medieval times to the present. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Pre-1750.

LIT 164B - Hebrew Poetry (5)

Hebrew poetry-Biblical, medieval, modern-explores cultural and literary issues central to our contemporary world. Texts and discussion focus on Jewish and Israeli literary traditions. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Poetry.

LIT 164C - Global Jewish Writing (5)

Comparative analysis of modern Jewish writers from Western and non-Western diasporas. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 164D - Jewish Diaspora, Ethnicity, and Urban Life (5)

Focuses on modern Jewish diaspora, ethnicity, and urban life. Critical approach designations: Geographies, Power and Subjectivities.

LIT 164G - Literature and the Holocaust (5)

Reading and analysis of fiction and poetry, focusing on Holocaust literature as a problem in critical theory, cultural studies, and literary history. Though most of the works are read in translation, some knowledge of European languages is helpful. Critical approach designations: Histories, Power and Subjectivities.

LIT 164H - Jewish Writers and the European City (5)

Interrogates the master narrative of a specific European city and discusses the ways in which Jewish life and Jewish actions helped to shape that story and were shaped by it. Course topic changes; please see the Class Search for current topic. Critical approach designations: Geographies, Power and Subjectivities.

LIT 164J - Jewish Writers and the American City (5)

An examination of some major Jewish writers and their responses to the American city. Major writers: Henry Roth, Saul Bellow, Bernard Malamud, J. Kaplan, Philip Roth. A look at Yiddish and other minority writers, and including sociological and historical materials on the American city. The course topic changes; please see the Class Search for the current topic. Critical approach designations: Histories, Power and Subjectivities.

LIT 164K - Jewish Comedy (5)

Examines literary, theatrical, cinematic, and televised representations of Jewish culture, focusing on the ways in which Jews have negotiated the transition to modernity via comedy and humor. Critical approach designations: Media, Power and Subjectivities.

LIT 165A - Chicanx/Mexican American Literature (5)

Considers the historical, current, and future directions of Chicano/a literary culture within the context of the long-standing exchanges of culture and politics across the U.S.-Mexican border and the challenges of globalization. Includes novels, essays, and films. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global. (Formerly Chicano/Mexicano Geographies.)

LIT 165B - Latino Fictions of the Americas (5)

Writers in the U.S., Latin America, and the Caribbean have been drawn repeatedly to the theme of intercultural conflict as they recall the traumatic history of the hemisphere. Examining fiction, poetry, and film expands the horizons of American literature. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Global. (Formerly Latin/o American Fiction.)

LIT 165C - Mesoamerican Indigenous/Indigenista Literature (5)

Analyzes literature about and by indigenous peoples in Mesoamerica: traces the construction of racialized categories of identity, such as indio and mestizo in Mesoamerican cultures and examines how they interact with definitions of the human that dominate in the West. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Global.

LIT 166A - Representations of Gender in Medieval Literature (5)

Explores medieval literature alongside major contributions to queer and trans theory in order to understand how gender, sex, and sexuality were constructed in premodern Europe. Focuses in particular on erotic expression, courtly tradition, and queer textuality: Chaucer, Gawain, and Heldris de Cornuälle. Distribution requirements: Poetry, Pre-1750.

LIT 166B - Early Modern Representations of Gender (5)

Explores representation of gender in early modern literature, with attention to contemporary aesthetic, cultural, and theoretical contexts. Texts include drama, poetry, and prose. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Pre-1750.

LIT 166C - Early Modern Italian Women Writers (5)

In early modern Italy several factors converged to foster a boom in women's writing and publication. Course addresses the context and content of these writings, dealing with key theoretical and historical issues surrounding women's entry into authorship in Europe. Knowledge of Italian not required. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Pre-1750.

LIT 166E - Women's Literature (5)

Works by women from the 18th century to the present, with special attention to the relationship of literature to history, psychology, and aesthetics. Course topic changes; please see the Class Search for current topic. Critical approach designations: Histories, Power and Subjectivities.

LIT 166J - Women Modernists (5)

Readings of a selection of British and U.S. women writers writing from 1920-1940, now critically framed and unearthed by feminist scholarship of the 1980s. Readings include: Jessie Redmon's The Chinaberry Tree, Vita Sackville-West's All Passion Spent, H.D.'s Asphodel, and Djuna Barnes' Nightwood. Also includes a selection of almost totally eclipsed female poets—reading selections of the poetry and prose of women writers including Dorothy Parker, Sarah Teasdale, Edna St. Vincent Millay, Marianne Moore, Louise Bogan, and Elinor Wylie. Discussion includes the varieties of modernism, canonicity, female literary collaboration and lesbian salons, and women writers' various negotiations of gender, race, and class intersectionality.

LIT 167B - Monsters and Humans (5)

Focuses on the historical development of what we broadly consider to be the human body from its Humanist instantiations in early modern Europe as seen through its alleged opposite: the monstrous body. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Pre-1750.

LIT 167C - Metamorphoses: Pre/Post Modern Transformations (5)

Examines transformations between god, human, and animal from ancient literature to medieval, renaissance, modern, and postmodern (especially science) fiction and poetry. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Poetry, Pre-1750.

LIT 167E - The Vampire in Literature and Popular Culture (5)

Traces the vampire's appearance in different historical moments, cultural contexts, genres, and media to interrogate its place in the shifting cultural politics of gender and sexuality, as well as in relation to race, ethnicity, class, and other identity positions. Critical approach designations: Media, Power and Subjectivities.

LIT 167F - Animals and Literature (5)

Examines the disruptive presences of nonhuman animals and nonanimal aliens as they appear in a variety of narrative forms: prose fiction, non-fiction, and poetry. Organized around central themes relating to the presence of animals in literature, including representation, difference, desire, and subjectivity. Critical approach designations: Histories, Power and Subjectivities.

LIT 167G - Reading the Weather: Literature and Global Climate Change (5)

An overview of climate change and its representations in literary and filmic texts. Asks how climate fiction and non-fiction narratives of climate change can help us to confront issues of environmental justice, inequalities of race and class, vulnerability, land rights, and refugeehood. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 167H - Disability in Transnational Asian American Studies (5)

Investigates U.S. imperialism in the Asia-Pacific region by focusing on race and disability; examines how disabled subjects have responded to historical and social alienation. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 167I - The Enviromental Humanities (5)

Explores how literary works and other cultural products have represented and defined relationships among the living and nonliving in the environment. Topics include the history of ideas about the nature/culture divide, the interconnectedness of life and non-life, and sustainability and reciprocity in ecological crisis.

LIT 167J - Exhibiting Monsters (5)

Monsters have long been an integral part of popular culture, reflecting anxieties, desires, and imaginative possibilities across time and space. This course focuses on how students and scholars of monster studies can frame our scholarly explorations of monsters' historical and cultural popularity for a specifically popular audience: how do we transform our monster studies research into public exhibitions about monsters? This in-person, research-based course is simultaneously an introduction to monster studies and an introduction to public humanities work. Specific objects of study for this course rotate.

LIT 167K - Race and the Environment in the Atlantic World (5)

This course explores how the ecologies of the Atlantic World became ground zero for racialization, colonization, and capital accumulation. We will study how the racialization of people became tied to the transformation of natural environments from 1492 onward. Distribution requirements: Pre-1750, Global.

LIT 167M - Creation and its Discontents: From the Human to the Posthuman (5)

Explores the trajectory of creation from the birth of humankind to the advent of the posthuman. Beginning with God’s creation of humans in the Garden of Eden, we turn to Frankenstein’s creation of the “human” at the advent of modern science, and finally technology’s creation of the posthuman in the modern age. What defines the human? How do we determine the difference between the human and nonhuman? How does the nonhuman help us to understand ourselves? What is the relationship between creator and created, and what obligations does the creator have to its creation? Distribution requirements: Poetry, Pre-1750.

LIT 168A - The Culture of Islamic Law (5)

Investigates the nature of Islamic law as a set of textual and interpretive practices that change over time and is fully enmeshed with Arabic culture, as well as its representation and role in literature as a force, standard, and context. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Global.

LIT 168B - Islamic Law and Society (5)

Introduction to Islamic Law and its development as a set of discursive practices and institutional formations, from its origins to its transformation by modern state systems. Focuses on development of legal theory as textual interpretation and translation into social practice. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Global.

LIT 169A - White Flow(n): Race, Gender, and Material (5)

Examines the question of whiteness as race, identity, politic, and field of discourse, focusing on cultural literary and artistic production from the 1990s that brought about the field of critical white studies. Includes prose, poetry, literary theory, film, and visual art. Critical approach designations: Genres, Power and Subjectivities.

LIT 179A - Advanced Writing: Fiction (5)

Intensive work in writing fiction. Critical approach designation: Genres.

Prerequisite: Enrollment is restricted to creative writing literature majors.

LIT 179B - Advanced Writing: Poetry (5)

Intensive work in writing poetry. Critical approach designation: Genres.

Prerequisite: Enrollment is restricted to creative writing literature majors.

LIT 179C - Methods and Materials (5)

Focuses on a particular process or subject used in the production of a literary text. Course is intended to work as a bridge between invention and scholarship. Course topic changes; please see the Class Search for current topic.

LIT 179E - Writing for Transformation (5)

Introductory cross-genre writing workshop exploring the social and political engagements of a wide array of BIPOC authors' work. In interactive lectures and small group discussion,students analyze authors' use of craft and form to inspire creation of our own poetry, flash nonfiction, and flash fiction. Course considers how authors thematize family, community, language, activism, love, culture, health, state and structural violence, relations with our natural environment, and more.

Prerequisite: Enrollment is restricted to declared and proposed literature and critical race and ethnic studies majors, literature minors, and Black studies minors.

LIT 181A - Biblical Hebrew, Part 1 (5)

Grammatical study interspersed with narrative excerpts from the Hebrew Bible. Recommended: previous study of a second language up to the advanced level. Critical approach designations: Canons, Histories. Distribution requirements: Global, Pre-1750.

LIT 181B - Biblical Hebrew, Part 2 (5)

Continuation of grammatical study interspersed with poetic texts from the Hebrew Bible. Critical approach designations: Genres, Geographies. Distribution requirements: Global, Poetry, Pre-1750. Together, Biblical Hebrew 1 and Hebrew 2 fulfill the language prerequisites for LIT 102; together they also satisfy the intensive major second-language course requirements.

Prerequisite: Prerequisite(s): LIT 181A or the equivalent.

LIT 181C - Coptic (5)

Intensive introduction to fundamentals of classical Coptic grammar (Sahidic dialect) designed to move rapidly into reading of primary texts. Readings include The Martyrdom of S. Coluthus, Gospel of Thomas, and the Gnostic treatise Thunder: Perfect Mind. Critical approach designations: Genres, Histories. Distribution requirement: Pre-1750.

LIT 181D - Reading Egyptian Hieroglyphs, Part 1 (5)

Introduction to Egyptian hieroglyphs as a graphic, conceptual, and communicative system. Covers the basic elements of classical Egyptian grammar, drawing primarily on inscriptions from extant Egyptian monuments. Students read one prose and one poetical text from the Middle Kingdom. Critical approach designations: Geographies, Media. Distribution requirement: Global, Pre-1750. Strongly recommended: two years previous study of a foreign language at the college level or the equivalent.

LIT 181E - Reading Egyptian Hieroglyphs, Part 2 (5)

Advanced Middle Egyptian grammar (two weeks). Close reading of the Tale of Sinuhe in Middle Egyptian, selected hymns and love poetry from the New Kingdom. Critical approach designations: Genres, Geographies. Distribution requirement: Global, Poetry, Pre-1750. Together, LIT 181D and LIT 181E, Egyptian Hieroglyphs 1 and 2, fulfill the language prerequisites for LIT 102; together they also satisfy the intensive major second-language course requirements.

Prerequisite: Prerequisite(s): LIT 181D.

LIT 181F - Reading Egyptian Hieroglyphs, Part 3 (5)

Close reading of the Tale of Sinuhe in Middle Egyptian. Critical approach designations: Genres, Geographies. Distribution requirements: Global, Poetry, Pre-1750.

Prerequisite: Prerequisite(s): LIT 181E.

LIT 181G - Sanskrit, Part 1 (5)

Systematic introduction to the grammar, syntax, and usage of Classical Sanskrit, to the oral dimensions of the language, and to the Sanskrit literary tradition. Critical approach designations: Canons, Histories. Distribution requirements: Global, Poetry, Pre-1750.

LIT 181H - Sanskrit, Part 2 (5)

Continued study of the grammar, syntax, and usage of Classical Sanskrit, and the Sanskrit literary tradition. Students read the entire Bhagavad-Gita, including key sections in the original Sanskrit. Critical approach designations: Canons, Geographies. Distribution requirements: Global, Poetry, Pre-1750. Together, LIT 181G and LIT 181H, Sanskrit Parts 1 and 2, fulfill the language prerequisites for Literature 102; together they also satisfy the intensive major second-language course requirements.

Prerequisite: Prerequisite(s): LIT 181G.

LIT 182A - Le Moyen Age (5)

Speaking, reading, and writing proficiency in French required. Study of 12th- and 13th-century texts, with attention to problems of history and social change. In modern translations with selected readings in Old French or Provencal. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 182E - Etudes de Poésie (5)

Speaking, reading, and writing proficiency in French required. Emphasizes the close study of a limited number of poetic texts in terms of their linguistic, stylistic, and rhetorical devices. Course topic changes; please see Class Search for current topic. Critical approach designations: Genres, Geographies. Distribution requirement: Poetry.

LIT 182F - Le théâtre (5)

Speaking, reading, and writing proficiency in French required. Studies in French drama and theories of theatricality. Course topic changes; see the Class Search for current topic. Critical approach designations: Genres, Media.

LIT 182H - Auteur et culture (5)

Speaking, reading, and writing proficiency in French required. Designed to provide an in-depth study of a given author's literary oeuvre and its cultural context. Course topic changes; see the Class Search for the current topic. Critical approach designations: Geographies, Histories.

LIT 182I - Littérature d'expression française hors de France (5)

Speaking, reading, and writing proficiency in French required. A study of texts written in French-speaking cultures: Belgium, Canada, Africa, the Caribbean. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 182J - Theorie (5)

Speaking, reading, and writing proficiency in French required. A discussion of recent developments in French literary theory. Critical approach designations: Canons, Geographies.

LIT 182K - Textes et contextes (5)

Speaking, reading, and writing proficiency in French required. Examines implications of social and political change in terms of literary theory and practice. Places equal emphasis on literary and other kinds of cultural texts: historical, political, and cinematic. Course topic changes; please see the Class Search for current topic. Critical approach designations: Histories, Power and Subjectivities.

LIT 182L - Science-Fiction Française (5)

Speaking, reading, and writing proficiency in French required. Course considers several French literary and cinematic examples of contemplating the present through the future and the past. Learn how reading across different cultural contexts can blur the distinction between "science" and "fiction"; how to read fictional texts alongside the films they inspire; and how to produce more effective essays and presentations in French. Critical approach designations: Genres, Media.

LIT 183A - Einführung in der deutschen Literatur (5)

Speaking, reading, and writing proficiency in German required. Wide reading of works representing the major authors, periods, and genres of German literature. Critical approach designations: Canons, Geographies.

LIT 183B - Themen in deutscher Literatur und Kultur (5)

Speaking, reading, and writing proficiency in German required. Course studies German literature and culture, with attention to historical context. Course topic changes; please see the Class Search for current topic. Critical approach designations: Geographies, Histories.

LIT 183D - Die deutsche Romantik (5)

Speaking, reading, and writing proficiency in German required. A study of the emergence and development of German Romanticism. Central concerns are the Romantics' attitude toward the role of the imagination in literature and their attempts to revitalize myth and folklore in their works. Authors read include Tieck, Novalis, Hoffmann, Eichendorff, and Heine. Critical approach designations: Genres, Histories.

LIT 183F - Die deutsche Novelle (5)

Speaking, reading, and writing proficiency in German required. A study of Novellen of the major 19th-century German authors. Critical approach designations: Canons, Genres.

LIT 183G - Deutsche Komödie (5)

Speaking, reading, and writing proficiency in German required. A study of a series of comic works by authors writing in German. In addition to discussing the texts in depth, we also look at theories of humor and laughter developed by thinkers such as Freud, Schopenhauer, and Bergson. Critical approach designations: Canons, Media.

LIT 183H - Das deutsche Drama (5)

Speaking, reading, and writing proficiency in German required. Selected readings of major German dramatists; attention given to various movements in theater. Critical approach designations: Canons, Media.

LIT 183I - Deutscher Film: Geschichte, Kultur, Gesellschaft (5)

Speaking, reading, and writing proficiency in German required. Course plots the thematic and formal trajectories of cinema in the German Democratic Republic between 1946 and 1992 to examine the key stress lines of socialist culture in East Germany. Critical approach designations: Histories, Media. (Formerly German Cinema: History, Culture, and Society.)

LIT 183K - Moderne deutsche Literatur und Film (5)

Speaking, reading, and writing proficiency in German required. Discusses a range of modern and contemporary German texts, including poetry, drama, and film. Critical approach designations: Geographies, Media.

LIT 183M - Moderne deutsche Fiktion (5)

Speaking, reading, and writing proficiency in German required. Selected readings from the novel and novella in 20th-century German literature. Critical approach designations: Genres, Geographies.

LIT 183N - Modern Deutsche Lyrik (5)

Speaking, reading, and writing proficiency in German required. Intensive analysis of selected poems is complemented by broader reading in certain authors and periods.Critical approach designations: Genres, Histories. Distribution requirement: Poetry.

LIT 183P - Fremdenangst: Ausländerfeindlichkeit in der deutschen Literatur und Kultur (5)

Speaking, reading, and writing proficiency in German required. Considers recent violence against immigrants and asylum-seekers in Germany, and moves on to examine images of people perceived as foreign or alien in German literature and culture from early times to the present. Critical approach designations: Genres, Power and Subjectivities.

LIT 184A - Introduction to Greek Literature (5)

Reading proficiency in Ancient Greek required. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

LIT 184B - Greek Drama (5)

Reading proficiency in Ancient Greek required. Course topic changes; see the Class Search for current topic. Critical approach designations: Histories, Media. Distribution requirement: Pre-1750.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 184C - Greek Poetry (5)

Reading proficiency in Ancient Greek required. Course topic changes; see the Class Search for current topic. Critical approach designations: Genres, Histories. Distribution requirements: Poetry, Pre-1750.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 184D - Prose Authors (5)

Reading proficiency in Ancient Greek required. Course topic changes; see Class Search for the current topic. Critical approach designations: Canons, Genres. Distribution requirement: Pre-1750.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 184E - Special Topics in Greek Literature (5)

Reading proficiency in Ancient Greek required. Readings in selected ancient Greek texts. Course topic changes; see the Class Search for current topic. Focus is on translation and interpretation; requirements normally include translation exams and interpretive essays. Critical approach designations: Canons, Genres. Distribution requirements: Global, Pre-1750.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 185B - Letteratura e cultura italiana (5)

Speaking, reading, and writing proficiency in Italian required. In-depth examination of a topic in Italian literary and cultural studies. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories.

LIT 185H - L'Opera italiana (5)

Speaking, reading, and writing proficiency in Italian required. Explores Italian opera as dramatic and spectacular cross-cultural phenomenon beginning in 1590s Florence through the 19th and 20th centuries. Attention to opera's function as a medium of cultural translation and political critique. Critical approach designations: Genres, Media. Prerequisite(s): Two years of university study of Italian language, or equivalent proficiency.

LIT 185I - Teatro italiano (5)

Speaking, reading, and writing proficiency in Italian required. Survey of Italian theater from its beginnings in medieval ritual through the development of Renaissance staged comedy and the commedia dell'arte, pastoral and tragicomedy, opera, melodrama, and 20th-century avant-garde and political theater. Critical approach designations: Genres, Media.

LIT 185J - Poesia moderna (5)

Speaking, reading, and writing proficiency in Italian required. Study of development of the Italian lyric from romanticism to present, with close stylistic and thematic analyses of works of Leopardi, D'Annunzio, Ungaretti, Quasimodo, Pavese, and Montale. Critical approach designations: Canons, Genres. Distribution requirement: Poetry.

LIT 185L - La novella italiana (5)

Speaking, reading, and writing proficiency in Italian required. Surveys short fiction in Italian, from bawdy medieval novellas to folk tales edited in the 19th century, to psychological and character studies. Focuses on the formal properties that distinguish short fiction from romances and novels and the social functions these writings can perform. Critical approach designations: Genres, Geographies.

LIT 185M - Fascismo e resistenza (5)

Speaking, reading, and writing proficiency in Italian required. The relationship between literature and Italian fascism is explored, including the rise and myths of fascism, critique and censorship, the persecution of minorities, the Resistance, the role of the intellectual. Authors include Borgese, Vittorini, Bassani, Pavese. Critical approach designations: Histories, Power and Subjectivities.

LIT 185N - Le donne nell'Italia moderna (5)

Speaking, reading, and writing proficiency in Italian required. Explores the specificity of Italian women's writing and studies their literary activities in historical and social context. Readings include Italian feminist and some history as well as literary texts. Critical approach designations: Geographies, Power and Subjectivities.

LIT 185O - "I need a hero:" Ariosto's (Un)Epic Renaissance (5)

Speaking, reading, and writing proficiency in Italian required. In this course, we will study the Italian Renaissance adventure poem by Ludovico Ariosto, Orlando Furioso (1532) and we will use it to penetrate the cultural, spiritual, and political tensions that marked the passage from pre- to early-modernity in the West. Distribution requirements: Poetry, Pre-1750.

LIT 185P - Boccaccio: Decameron (5)

Speaking, reading, and writing proficiency in Italian required. Critical study of The Decameron. Critical approach designation: Canons, Genres. Distribution requirements: Poetry, Pre-1750.

LIT 185Q - Dante: Divina Commedia (5)

Speaking, reading, and writing proficiency in Italian required. Reading of the Inferno, the Purgatorio, and selected canti of the Paradiso, along with selections from Dante's lyrics and from medieval Italian and French poetry. Critical approach designations: Canons, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 185S - Petrarca (5)

Speaking, reading, and writing proficiency in Italian required. The transition from medieval to Renaissance modes of poetry in the works of Francesco Petrarca. Readings in the Rime Sparse, the Trionfi, and the prose works. Critical approach designations: Canons, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 185Z - Italian Studies Writing in the Discipline (1)

Concurrent enrollment in an approved upper-division course in Italian literature, history of art and visual culture, or history satisfies the Disciplinary Communication requirement in Italian studies. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Students submit petition to sponsoring agency. Enrollment restricted to Italian studies majors and by permission of instructor.

LIT 186A - Introduction to Latin Literature (5)

Reading proficiency in Latin required. Course topic changes; see Class Search for the current topic. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

LIT 186B - Roman Poetry (5)

Reading proficiency in Latin required. Course topic changes; see the Class Search for current topic. Critical approach designations: Canons, Genres. Distribution requirements: Poetry, Pre-1750.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 186C - Prose Authors (5)

Reading proficiency in Latin required. Course topic changes; see the Class Search for current topic. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 186D - Special Topics in Latin Literature (5)

Reading proficiency in Latin required. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Pre-1750.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

LIT 188A - Literatura medieval (5)

Speaking, reading, and writing proficiency in Spanish required. Focuses on Spanish medieval literature, broadly covering the 12th to the 15th centuries. Examines and contextualizes literary genres developed in this period. Critical approach designations: Geographies, Histories. Distribution requirement: Pre-1750. (Formerly Medieval Spanish Literature.)

LIT 188B - Literatura peninsular: de los orígenes al siglo XVIII (5)

Speaking, reading, and writing proficiency in Spanish required. A critical study of several representative texts from the early period of Spanish literature in their sociohistorical context. Included among the readings are El Poema del Cid, the Romancero, La Celestina, Lazarillo de Tormes, and a Golden Age play. Critical approach designations: Geographies, Histories. Distribution requirements: Poetry, Pre-1750.

LIT 188E - Teatro del Siglo de Oro español (5)

Speaking, reading, and writing proficiency in Spanish required. Studies in Spanish Golden Age theater. Critical approach designations: Histories, Media. Distribution requirement: Pre-1750.

LIT 188F - Cuentos del Siglo de Oro español (5)

Speaking, reading, and writing proficiency in Spanish required. Focuses on the prose in the Renaissance period and the different genres that flourished before the creation of Cervantes' Don Quixote. Chosen texts constitute an amalgam of Renaissance ideology, and provide examples of 16th-century literature, including the picaresque novel, pastoral novel, the Byzantine novel, and the chivalresque novel. Critical approach designations: Genres, Histories. Distribution requirement: Pre-1750.

LIT 188G - Literaturay vida en Don Quijote y otros textos cervantinos (5)

Speaking, reading, and writing proficiency in Spanish required. A close reading of the works of Cervantes, with particular attention to Don Quijote, in an attempt to discover how these works reflect the conflictive period in which the author lived. Also looks closely at the Cervantine view of the

relationship of literature to life, as manifested in the works under study. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

LIT 188H - Erotismo y Mistica (5)

Speaking, reading, and writing proficiency in Spanish required. Examines the connections between erotic literature and mystical literature through poetic representations of sublime where Eros and Thanatos meet. As symbolisms of mystical and erotic experiences fuse and confuse each other, we are able to establish connections between Sufi, Hindi, and Judeo-Christian mystical poetry. Critical approach designations: Genres, Histories. Distribution requirement: Pre-1750.

LIT 188I - La novela picaresca (5)

Speaking, reading, and writing proficiency in Spanish required. The picaresque novel of 16th-century Spain considers the fictive environment as reality in order to introduce its protagonist as a rebel against social dominion. The picaresque novel is the only literary genre comparable to what is now called literature of social protest. Critical approach designations: Genres, Histories. Distribution requirement: Pre-1750.

LIT 188L - Literatura de la guerra civil española (5)

Speaking, reading, and writing proficiency in Spanish required. Examines literature related to the period of the Spanish Civil War (1936-39) and the Franco years (1939-75). Includes works by Spanish writers in exile during this period; also examines literary texts written prior to the outbreak of the war. Critical approach designations: Histories, Power and Subjectivities.

LIT 188M - Literatura peninsular: siglos XIX y XX (5)

Speaking, reading, and writing proficiency in Spanish required. A critical study of several representative texts from this period of Spanish literature. Critical approach designations: Geographies, Histories.

LIT 188R - Humanidades Ambientales (5)

Considers salient aspects of environmental aesthetics and ecological thinking in Latin America in a variety of genres including memoir, children's literature, graphic literature, documentary film, and visual arts. Critical approach designations: Media, Power and Subjectivities. Distribution requirement: Global.

LIT 188Z - Literatura de España (5)

Speaking, reading, and writing proficiency in Spanish required. Examines works by Spanish authors with attention to historical and cultural as well as literary issues. Course topic changes, see the Class Search for current topic. Critical approach designations: Geographies, Histories.

LIT 189A - De la conquista a Sor Juana (5)

Speaking, reading, and writing proficiency in Spanish required. A study of Hispanic American and Peninsular literatures from the chronicles of the conquest through the 17th century. Readings deal with transformations in both the idea of empire and the rights of the conquered. Includes the works of Colon, Cortes, El Inca Garcilaso de la Vega, Sor Juana Ines de la Cruz, and others. Critical approach designations: Canons, Histories. Distribution requirements: Global, Pre-1750.

LIT 189B - El Siglo XIX en América Latina: cultura, política y sociedad (5)

Speaking, reading, and writing proficiency in Spanish required. Follows the literary manifestations of the growing consciousness of the Latin American writer: discovery of native themes, comparative analysis of Spanish American and Peninsular European models, search for a new language literally and figuratively. Relates historical events with literary movements. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 189C - Introducción a Spanish Studies (5)

Speaking, reading, and writing proficiency in Spanish is required. Explores the social, cultural, economic, and political changes that connect Latin America, Spain, and the United States Latina/o communities. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or permission of instructor.

LIT 189D - Sor Juana Ines de la Cruz (5)

Speaking, reading, and writing proficiency in Spanish required. An in-depth examination of the life and work of Sor Juana Ines de la Cruz, a 17th-century nun, poet, playwright, and woman of genius and intellectual prowess whose ideas and accomplishments were ahead of her time. Critical approach designations: Canons, Histories. Distribution requirement: Pre-1750.

LIT 189E - Cuba (5)

Speaking, reading, and writing proficiency in Spanish required. Examines Cuban literature and culture, with attention to historical context. Course topic changes: please see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 189F - Literaturas Latinas en los Estados Unidos: en inglés, español y Spanglish (5)

Speaking, reading, and writing proficiency in Spanish required. Spanish-based, English/bilingual inclusive overview of Latino/a writing in the U.S. Critical approach designations: Genres, Geographies. Distribution requirement: Global.

LIT 189G - Cine y Literatura (5)

Speaking, reading, and writing proficiency in Spanish required. Analysis and interpretation of Spanish-language films derived from literary works by Latin American and Spanish authors. Topic changes; see the Class Search for

current topic. Critical approach designations: Genres, Media. Distribution requirement: Global.

LIT 189H - La Globalizacion en/del Cine Latin/o Americano (5)

Speaking, reading, and writing proficiency in Spanish required. Examines globalization of Latin/o American cinema as a cultural industry. Classical issues of cultural politics and political economy are revisited from the viewpoint of current global processes. Also provides access to the representation of different aspects of globalization in Latin/o American cinema. Critical approach designations: Media, Power and Subjectivities. Distribution requirement: Global.

LIT 189I - Literatura e indigeneidad (5)

Speaking, reading, and writing proficiency in Spanish required. Course examines the history, representation, and politics of Indigeneity and Indigenous literature in Latin America by analyzing novels, short stories, transcribed oral tradition, film, and radio. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 189K - El ensayo latinoamericano (5)

Speaking, reading, and writing proficiency in Spanish required. A study of the essay in Spanish America from Sarmiento to the present, concentrating on problems of national or cultural identity. Critical approach designations: Geographies, Histories. Distribution requirement: Global.

LIT 189L - Poesía latinoamericana (5)

Speaking, reading, and writing proficiency in Spanish required. Poets from modernismo to the present in Spanish America. Studies how this poetry attempts to define Latin America, its past, its present history, and its vision for the future. Critical approach designations: Genres, Geographies. Distribution requirements: Global, Poetry.

LIT 189M - Prosa contemporánea hispanoamericana (5)

Speaking, reading, and writing proficiency in Spanish required. Examines contemporary Spanish American prose. Course topic changes; please see the Class Search for current topic. Critical approach designations: Genres, Geographies. Distribution requirement: Global.

LIT 189N - Latinoamericano testimonio (5)

Speaking, reading, and writing proficiency in Spanish required. Contemporary non-fiction testimonial literature of Latin America. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Global.

LIT 189O - El Cuento Hispanoamericano: Variedades esteticas de la literatura breve en America Latina (5)

Speaking, reading, and writing proficiency in Spanish required. Explores various aesthetics of the Latin American short story including fantastic, detective, metaliterary, social critique, historical, and philosophical writings. Critical approach designations: Canons, Genres. Distribution requirement: Global.

LIT 189P - Las mujeres en la literatura latinoamericana (5)

Speaking, reading, and writing proficiency in Spanish required. Literary and sociological writings by and about women in Latin America-in Hispanic, indigenous, and African-Latino communities; in rural and urban settings; in historical and contemporary periods. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 189Q - Ficción y marginalidad (5)

Speaking, reading, and writing proficiency in Spanish required. Marginalized perspectives take center stage in this course that studies ways Latin American/Latino authors textually contest dominant representations and realities, opening symbolic spaces for emergent historical subjects who gain agency and authority by re/presenting unmapped terrains. Texts include chronicles, testimonios, writings of the self, and novels. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 189R - La Novela de la Dictadura (5)

Speaking, reading, and writing proficiency in Spanish required. An analysis of novels which focus on the theme of dictators and the rhetoric of dictatorships in Latin America. Texts are studied as literary manifestations of particular historical and political periods. Critical approach designations: Genres, Power and Subjectivities. Distribution requirement: Global.

LIT 189S - La cultura popular en la narrativa latinoamericana (5)

Speaking, reading, and writing proficiency in Spanish required. Explores short stories and novels that have been greatly influenced by popular culture, not only in theme, but also by appropriation of popular forms of language and modes of representation. Includes works by authors from Mexico, Argentina, Cuba, and Colombia. Critical approach designations: Genres, Geographies. Distribution requirement: Global.

LIT 189T - Historia de la lectura y los lectores: Recepcion y consumo cultural en el mundo Latino Americano (5)

Speaking, reading, and writing proficiency in Spanish required. Explores historical readers and reading practices in at least three different formations: colonial, national-popular, and transnational. Proposes a historical-theoretical reconstruction of the place of reading and readers at key moments in the history of culture in Latin America. Critical approach designations: Histories, Power and Subjectivities. Distribution requirement: Global.

LIT 189U - Modernidad y literatura: El Boom de la novela latinoamericana (5)

Speaking, reading, and writing proficiency in Spanish required. Explores the relationships between literature and mass culture, modernization, and globalization through the

study of the so-called Boom of Latin American narrative. Critical approach designations: Genres, Histories. Distribution requirement: Global.

LIT 189V - Andean Indigenismo (5)

An introduction to the indigenista movement in Peru, Bolivia, Ecuador, and Paraguay, and to the literary and ideological debates surrounding it. Authors include Mariategui, Gonzalez Prada, Arguedas, Icaza, Alegria, and Vallejo. Critical approach designations: Geographies, Power and Subjectivities. Distribution requirement: Global.

LIT 189X - Estudios mediaticos (5)

Investigates film, radio, video games, new media, and other newly emergent forms of cultural production in the Spanish-speaking world. Topics may include the historical study of media, media-focused analysis of literary texts, and new media translation. The course topic changes; see the Class Search for the current topic. Critical approach designations: Genres, Media.

LIT 189Z - Literatura de Chile (5)

Speaking, reading, and writing proficienty in Spanish required. Focusing on narrative and poetry in Chile and their transformations during the 20th century, course examines the relationships between literature, nation, and representation. Critical approach designations: Canons, Histories. Distribution requirement: Global.

LIT 190A - Topics in Pre- and Early Modern Studies (5)

Examination of individual authors or critical problems in ancient, medieval, or early modern/Renaissance literature. Course topic changes; see the Class Search for current topic. Critical approach designations: Canons, Histories. Distribution requirements: Pre-1750, Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190F - Studies in Poetry (5)

Studies in English-language poetry. Course topic changes; see the Class Search for current topic. Critical approach designations: Genres, Histories. Distribution requirements: Poetry, Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190I - Individual Authors (5)

Intensive examination of works by individual authors. Course topic changes; see the Class Search for current topic. Critical approach designations: Genres, Histories. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190J - Studies in English Language Literature (5)

Studies of selected authors or issues in English language literature. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior Literature majors.

LIT 190K - Studies in U.S. Literature (5)

Intensive examination of issues in U.S. literature. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190L - Topics in World Literature and Cultural Studies (5)

Course topic changes; see the Class Search for current topic. Critical approach designations: Histories, Power and Subjectivities. Distribution requirements: Global, Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190N - Studies in 19th-Century British Literature (5)

Study of selected authors or issues in 19th-century British literature. Course topic changes; see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190O - Studies in Slavery, Race, and Nation in the Americas (5)

Compares literatures and histories of slavery, abolitionism, and nationalism in 19th-century Cuba and the U.S. Readings include slave narratives and antislavery novels. Critical approach designations: Histories, Power and Subjectivities. Distribution requirements: Global, Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190T - Topics in Modern Literary Studies (5)

Selected authors or issues in modern literary and cultural studies. Course topic changes; see the Class Search for current topic. Critical approach designation: Histories. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190U - Topics in Theory (5)

Advanced work in theory (e.g., cultural, ideological, literary, social). Course topic changes; see the Class Search for the

current topic. Critical approach designations: Canons, Histories. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors and minors.

LIT 190V - Fiction Senior Seminar (5)

Satisfies the Creative Writing Literature concentration; also satisfies the senior seminar distribution requirement. Critical approach designation: Media. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior creative writing literature majors.

LIT 190W - Poetry Senior Seminar (5)

Satisfies the Creative Writing Literature concentration; also satisfies the senior seminar distribution requirement. Critical approach designation: Media. Distribution requirement: Senior Seminar.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior creative writing literature majors.

LIT 190X - Temas de la literatura y cultura espanolas y latinoamericanas (5)

Speaking, reading, and writing proficiency in Spanish is required. Examines authors or issues in Spanish and Latin American literature and cultures. Course topic changes; see the Class Search for the current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Senior Seminar. Spanish studies majors may use this course to satisfy the Spanish studies senior exit requirement.

Prerequisite: Prerequisite(s): LIT 101. Enrollment is restricted to senior literature majors.

LIT 190Y - Topics in Jewish Literature and Culture (5)

Study of selected authors or issues related to modern Jewish literature and culture. Topic changes; please see the Class Search for current topic. Distribution requirement: Senior Seminar. Jewish Studies majors may use this course to satisfy the Jewish Studies senior exit requirement.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and LIT 101 (for literature majors). Enrollment is restricted to senior literature and Jewish studies majors.

LIT 190Z - Topics in German Literature and Culture (5)

Study of selected authors or issues related to German literature and culture. Course topic changes; please see the Class Search for current topic. Critical approach designations: Geographies, Histories. Distribution requirement: Senior Seminar. German studies majors may use this course to satisfy the German studies senior exit requirement.

Prerequisite: Prerequisite(s): LIT 101 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior German studies and literature majors.

LIT 191 - Methodologies of Teaching (3)

This three-credit course provides students with the theoretical and practical knowledge to help others become more careful, sensitive, and sophisticated readers of complex texts. Enrollment by permission of the instructor.

LIT 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision. (See LIT 42.)

LIT 195A - Senior Essay (5)

Study of literature in English or English translation. Satisfies the Literature major senior exit distribution requirement. Students submit petition to sponsoring agency. Prerequisite(s): LIT 101. Enrollment is restricted to seniors.

LIT 195B - Senior Essay (5)

Speaking, reading, and writing proficiency in French, German, Greek, Italian, Latin, Spanish, or other non-English language required. Satisfies the Literature major senior exit distribution requirement. Students submit petition to sponsoring agency. Prerequisite(s): LIT 101. Enrollment is restricted to seniors.

LIT 195C - Senior Essay (5)

Satisfies the Creative Writing senior exit distribution requirement. Prerequisite(s): LIT 101. Students submit petition to sponsoring agency. Enrollment restricted to senior creative writing literature majors.

LIT 198A - Group Tutorial (5)

Study of literature in English or English translation. Students submit petition to sponsoring agency.

LIT 198B - Group Tutorial (5)

Speaking, reading, and writing proficiency in French, German, Greek, Italian, Latin, Spanish or other non-English language required. Students submit petition to sponsoring agency.

LIT 198C - Group Tutorial (5)

Study of creative writing. Students submit petition to sponsoring agency.

LIT 199A - Tutorial (5)

Study of literature in English or English translation. Students submit petition to sponsoring agency.

LIT 199B - Tutorial (5)

Speaking, reading, and writing proficiency in French, German, Greek, Italian, Latin, Spanish or other non-English language required. Students submit petition to sponsoring agency.

LIT 199C - Tutorial (5)

Study of creative writing. Students submit petition to sponsoring agency.

LIT 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

LIT 200 - Proseminar (5)

The proseminar provides a common experience for entering students, facilitates exchange of ideas and approaches to literary and extra-literary texts, critical issues, and theoretical problems. It focuses on broad aspects of the history of theory and criticism, on the students' critical writing, and on aspects of professional development.

Prerequisite: Enrollment is restricted to graduate students.

LIT 201 - The Pedagogy of Literature (2)

Provides training for graduate students in university-level pedagogy in general and in the pedagogy of literature specifically. Coordinated by a graduate student who has had substantial experience as a teaching assistant, under the supervision of a faculty member.

Prerequisite: Enrollment is restricted to graduate students.

LIT 202 - Colloquium (2)

Student receives credit for attending a designated number of freestanding lectures, colloquia, symposia, or conferences during the term and reports orally, or in writing, to instructor. Enrollment restricted to graduate students.

LIT 204 - Readings in Literature (2)

Focuses on selected texts or authors in literature and/or theory. Students meet with instructor to discuss readings and deepen their knowledge on a particular author, critic, theorist, or text.

Prerequisite: Enrollment is restricted to graduate students.

LIT 205 - Writing and Publication Practicum (2)

Introduces the methods and practice of dissertation writing and publication in literature. Workshop format. Meets one hour per week.

Prerequisite: Enrollment is restricted to graduate students.

LIT 206 - Critical Writing Practicum (5)

Reinforces writing and revision skills in the discipline of literary and cultural criticism and theory, covering various genres of writing in the profession. Designed for students preparing for QE or dissertation work. Workshop structure.

Prerequisite: Enrollment is restricted to graduate students.

LIT 221 - Canons (5)

Considers literary canon formation through the lens of neglected or lost works by authors otherwise considered peripheral because of their language, cultural tradition, or regional affiliation.

Prerequisite: Enrollment restricted to graduate students.

LIT 222 - Topics in English Language Literature (5)

Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 223 - Periods and Movements (5)

Examines a particular historical period or literary movement. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 224 - Transnational Literatures (5)

Investigation of English language literature which transcends national boundaries. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 230A - Topics in Theory (5)

Explores issues arising in both the modern practice of criticism and in writings on the theory of criticism. Course topic changes; please see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 230B - Narrative Theory (5)

A survey of 20th-century narratology, emphasizing structuralist and poststructuralist theories of narrative.

Prerequisite: Enrollment is restricted to graduate students.

LIT 230C - Feminist Theories/Historical Perspectives (5)

A critical examination of feminist and related theories (queer, critical race, post-humanist) and criticism in historical and culturally specific contexts.

Prerequisite: Enrollment is restricted to graduate students.

LIT 231A - Studies in Literary and Cultural History (5)

Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 237A - Modernism (5)

Focuses on modernism and the intellectual and social forces which help illuminate that period. Considers concepts by which the innovative tendencies in 20th-century modernist literature and arts have been theorized and periodized, including high and late modernism, avant-garde and experimental, and the concept of global modernisms.

Prerequisite: Enrollment is restricted to graduate students.

LIT 240A - Studies in Antiquity (5)

An in-depth study of a topic in Mediterranean and Near Eastern antiquity.

LIT 240G - History and Tragedy (5)

Examines history, tragedy, and early science as ways of representing human experience in the Western canon. Topics include truth claims and questions of evidence, the nature of historical events, and tragedy as a political medium.

Prerequisite: Enrollment is restricted to graduate students.

LIT 243A - Studies in Early Modernity (5)

In-depth examination of a topic in Early Modern Studies. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 243B - Early Modern Colonial Encounters (5)

This course will examine primary texts and interpretations, both fictional and archival, of the encounter between western Europe and non-European populations affected by European expansion from the 15th through the 18th centuries.

Prerequisite: Enrollment is restricted to graduate students.

LIT 246 - Individual Authors (5)

Focuses on work of a single author in literary historical and/or historical context. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 250 - Theory and Methods (5)

Global theories of history and cultural production. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 250B - Forms and Aesthetics (5)

Focuses on various forms and aesthetics in writing. Studentsl read and discuss published examples, then workshop their own writing. Students respond to class texts in a weekly journal and have the opportunity to lead one discussion and design a writing exercise inspired by the reading. Workshop projects may be creative or critical or resist categorization. Course topic changes. Open to all graduate students.

Prerequisite: Enrollment is restricted to graduate students.

LIT 251 - Topics in Cultural Studies (5)

The course topic changes; see the Class Search for the current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 254 - Religion and Post-Secular (5)

An introduction to religion studies theory with emphasis on areas pertinent to literary and cultural studies and structured around the idea of the sacred text as scripture, as performed ritually and legally in society, and as problematized by post-colonial perspectives.

Prerequisite: Enrollment is restricted to graduate students.

LIT 279A - Methods and Materials (5)

A combined seminar and creative-writing workshop with a concentrated focus on a particular problem, aspect, or genre of poetry or prose writing. Includes reading and analysis of selected texts with critical responses and creative writing. Explores the productive interaction between various practices of scholarship and creative invention. The course topic changes; please see the Class Search for the current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 279B - Writing Studio (5)

In this graduate-level, multi-genre course, students develop their own creative projects of publishable quality under the guidance of the instructor.

Prerequisite: Enrollment is restricted to graduate students in the creative/critical concentration or by permission of the instructor.

LIT 282A - Studies in Literary Genres (5)

An in-depth examination of one genre of French literature. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 282B - Studies in Literary and Cultural History (5)

In-depth examination of one period of French literature. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 282C - Texts and Contexts (5)

The implications of social and political change examined in terms of literary theory and practice. Equal emphasis placed on literary and other kinds of cultural texts: historical, political, cinematic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 282D - Topics in Theory (5)

Prerequisite: Enrollment is restricted to graduate students.

LIT 282F - French Literature Outside France (5)

A study of texts written in French-speaking cultures: Belgium, Canada, Africa, the Caribbean.

Prerequisite: Enrollment is restricted to graduate students.

LIT 283A - Deutsche Literatur und Kultur (5)

Examination of topics within German literature. Course topic changes; see the Class Search for the current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 285E - Boccaccio (5)

Critical study of the Decameron.

LIT 285H - Studies in Italian Literature and Culture (5)

Reading proficiency in Italian is required. Close examination of a topic in Italian literature and culture. Course topic changes; see the Class Search for current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288C - Don Quijote (5)

Concentrates on the study and analysis of Miguel de Cervantes' major work Don Quijote, with a three-part structure: life and literature in Don Quijote; Cervantes-the father of the modern novel; and madness and ingenio in Don Quijote.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288F - Writing and Re-Writing of the Conquest and Colonial Period in Spanish America (5)

Study of 1) the writings (chronicles, memoirs, diaries, letters) comprising European and indigenous accounts of the encounter and indigenous, criolla, and mestiza writings during the colony; and 2) the re-writings of these events in contemporary post-colonial novels.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288M - Cuba (5)

Course topic changes; please see the Class Search for the current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288O - The Conquest through the Eyes of Contemporary Writers (5)

Analyzes contemporary writers who fictionalize the phenomenon of the conquest of the Americas. These authors, who combine chronicles, biographies, and accounts with fiction, offer an imaginative way to view history.

LIT 288P - The Avant Garde in Latin America (5)

Emerging from a Europe in crisis, this 20th-century avante-garde movement opened a space in Latin/o American literature for the emergence of a post-western aesthetic exploring a cultural identity in difference. A deconstruction of vanguardismo, lo real maravilloso, lo fantástico, lo mítico-antropológico, and realismo mágico.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288S - Citiscapes (5)

Theories of space/place poetics and politics, and the literary and visual re-presentations of urban spaces in Latin/o America. Questions of identity and location in modernist poetics, and the ways difference (gender, ethnicity, and sexuality) inhabit and imagine the post-modern lettered city.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288U - Spain in the Eyes/Camera of Pedro Almodovar (5)

Contemporary Spain through the camera of Pedro Almodovar from transgressive enthusiasm, experimentation, and cultural disobedience of the 1980s to more universal themes of human nature and borderline experiences in the pursuit of love, relationships, beauty, and art.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288W - Becoming European (5)

Course considers the process of globalization as it has affected Spain in the last ten years. Through the study of a variety of cultural texts, it explores the challenges presented to national identity and the emergence of new subjectivities and collective identities.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288Y - Teoria Critica en America Latina (5)

Overview of contemporary theoretical issues in Latin American cultural critique. Course topic changes; please see the Class Search for the current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 288Z - Literatura y sociedad (5)

Analyzes the relationship between Latin American cultural products and their cultural, economic, and political contexts. The course topic changes; please see the Class Search for the current topic.

Prerequisite: Enrollment is restricted to graduate students.

LIT 291F - Advising (2)

Independent study formalizing the advisee-adviser relationship. Regular meetings to plan, assess, and monitor academic progress and to evaluate coursework as necessary. May be used to develop general bibliography of background reading and trajectory of study. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 293 - Independent Study: Creative Writing (5)

Individual study with a professor in the creative/critical concentration. Written work is required. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 294 - Teaching-Related Independent Study (5)

Directed graduate research and writing coordinated with teaching of undergraduates. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 295A - Directed Reading (5)

Study of literature in English or English translation. Directed reading that does not involve a term paper. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 295B - Directed Reading (5)

Speaking, reading, and writing proficiency in French, German, Greek, Italian, Latin, Spanish, or other non-English language required. Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 295C - Directed Reading (5)

Study of creative writing. Directed reading that does not involve a term paper. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 296A - Special Student Seminar (5)

Study of literature in English or English translation. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 296B - Special Student Seminar (5)

Speaking, reading, and writing proficiency in French, German, Greek, Italian, Latin, Spanish, or other non-English language required. Directed reading which does not involve a term paper. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 296C - Special Student Seminar (5)

Study of creative writing. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 297A - Independent Study (5)

LIT 297B - Independent Study (10)

Speaking, reading, and writing proficiency in French, German, Greek, Italian, Latin, Spanish, or other non-English language required. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 297F - Independent Study (2)

Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

LIT 299A - Thesis Research (5)

Thesis Research

LIT 299B - Thesis Research (10)

Thesis Research

MATH - MATHEMATICS

To view planned offerings for the current academic year, please visit this page.

Lower-Division

MATH 2 - College Algebra for Calculus (5)

Operations on real numbers, complex numbers, polynomials, and rational expressions; exponents and radicals; solving linear and quadratic equations and inequalities; functions, algebra of functions, graphs; conic sections; mathematical models; sequences and series.

Prerequisite: Prerequisite(s): mathematics placement (MP) score of 100 or higher. Students may not enroll in or receive credit for MATH 2 after receiving credit with a 'C' or better in AM 3, MATH 3, AM 11A, MATH 11A, MATH 19A, MATH 20A or equivalents.

MATH 2S - College Algebra for Calculus (2)

This two-credit, stretch course offers students two quarters to master material covered in MATH 2: operations on real numbers, complex numbers, polynomials, and rational expressions; exponents and radicals; solving linear and quadratic equations and inequalities; functions, algebra of functions, graphs; conic sections; mathematical models; sequences and series. After successful completion of this course in the first quarter, students enroll in MATH 2 the following quarter to complete the sequence and earn an additional 5 credits.

Prerequisite: Prerequisite(s): mathematics placement (MP) score of 100 or higher.

MATH 2T - Preparatory Math: Tutorial (2)

Independent study of algebra and modern mathematics using adaptive learning software. Instruction emphasizes clear mathematical communication and reasoning when working with sets, equations, functions, and graphs. Drop in labs, online forums, and readings provide opportunities for further learning and exploration.

Prerequisite: Prerequisite(s): mathematics placement (MP) score of 100 or higher.

MATH 3 - Precalculus (5)

Inverse functions and graphs; exponential and logarithmic functions, their graphs, and use in mathematical models of the real world; rates of change; trigonometry, trigonometric functions, and their graphs; and geometric series. Students cannot receive credit for both MATH 3 and AM 3.

Prerequisite: Prerequisite(s): MATH 2 or mathematics placement (MP) score of 200 or higher. Students may not enroll in or receive credit for MATH 3 after receiving credit with a 'C' or better in AM 11A, MATH 11A, MATH 19A, MATH 20A or equivalents.

MATH 4 - Mathematics of Choice and Argument (5)

Techniques of analyzing and creating quantitative arguments. Application of probability theory to questions in justice, medicine, and economics. Analysis and avoidance of statistical bias. Understanding the application and limitations of quantitative techniques.

Prerequisite: Prerequisite(s): MATH 2, or mathematics placement (MP) score of 200 or higher, or qualifying AP exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 11A - Calculus with Applications (5)

A modern course stressing conceptual understanding, relevance, and problem solving. The derivative of polynomial, exponential, and trigonometric functions of a single variable is developed and applied to a wide range of problems involving graphing, approximation, and optimization. Students cannot receive credit for both this course and MATH 19A, or AM 11A, or AM 15A, or ECON 11A.

Prerequisite: Prerequisite(s): MATH 3 or AM 3; or mathematics placement (MP) score of 300 or higher; or qualifying AP exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 11B - Calculus with Applications (5)

Starting with the fundamental theorem of calculus and related techniques, the integral of functions of a single variable is developed and applied to problems in geometry, probability, physics, and differential equations. Polynomial approximations, Taylor series, and their applications conclude the course. Students cannot receive credit for this course and MATH 19B, or AM 11B, or AM 15B, or ECON 11B.

Prerequisite: Prerequisite(s): MATH 11A or MATH 19A or AM 15A or qualifying exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 16A - Mathematics for Life Sciences (5)

Introduction to mathematical modeling of systems in biology and the environment. Mathematical topics include functions, sequences, conceptual calculus and differential equations, taught through examples, computation, and visualization. Computational tools include interactive graphing software, spreadsheets, and a high-level programming language (e.g., Python). Modeling systems in the environment, ecology, evolution, cell, and molecular biology. Representing systems in state space, and studying change through derivatives. Analyzing equilibria in one- and two-dimensional systems. (Formerly Mathematics for Life and Environmental Sciences.)

Prerequisite: Prerequisite(s): MATH 3 or AM 3 or mathematics placement (MP) score of 300 or higher or qualifying AP exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 16B - Mathematics for Life Sciences (5)

Mathematical modeling of systems in biology and the environment. Dynamical systems in environmental and life sciences, beginning with a study of oscillation, including trigonometry (sinusoids) and related differential equations. Stochastic systems, including random walks in one and two dimensions, and a study of diffusion. Computational techniques, including vectorization and random number generation, for modeling systems. An introduction to linear algebra, focused on vector geometry in two dimensions, linear transformations, eigenvalues, and eigenvectors. Applications of linear/matrix models and Markov processes to ecology and molecular biology. (Formerly Mathematics for Life and Environmental Sciences.)

Prerequisite: Prerequisite(s): MATH 16A.

MATH 19A - Calculus for Science, Engineering, and Mathematics (5)

The limit of a function, calculating limits, continuity, tangents, velocities, and other instantaneous rates of change. Derivatives, the chain rule, implicit differentiation, higher derivatives. Exponential functions, inverse functions, and their derivatives. The mean value theorem, monotonic functions, concavity, and points of inflection. Applied maximum and minimum problems. Students cannot receive credit for both this course and MATH 11A, or AM 11A, or AM 15A, or ECON 11A.

Prerequisite: Prerequisite(s): MATH 3; or mathematics placement (MP) score of 400 or higher; or qualifying AP exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 19B - Calculus for Science, Engineering, and Mathematics (5)

The definite integral and the fundamental theorem of calculus. Areas, volumes. Integration by parts, trigonometric substitution, and partial fractions methods. Improper integrals. Sequences, series, absolute convergence and convergence tests. Power series, Taylor and Maclaurin series. Students cannot receive credit for both this course and MATH 11B, or AM 11B, or AM 15B, or ECON 11B.

Prerequisite: Prerequisite(s): MATH 11A or MATH 19A or MATH 20A or qualifying exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 20A - Honors Calculus (5)

Methods of proof, number systems, binomial and geometric sums. Sequences, limits, continuity, and the definite integral. The derivatives of the elementary functions, the fundamental theorem of calculus, and the main theorems of differential calculus.

Prerequisite: Prerequisite(s): mathematics placement (MP) score of 500 higher; or qualifying exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 20B - Honors Calculus (5)

Orbital mechanics, techniques of integration, and separable differential equations. Taylor expansions and error estimates, the Gaussian integral, Gamma function and Stirling's formula. Series and power series, numerous applications to physics.

Prerequisite: Prerequisite(s): MATH 20A.

MATH 21 - Linear Algebra (5)

Systems of linear equations matrices, determinants. Introduces abstract vector spaces, linear transformation, inner

products, the geometry of Euclidean space, and eigenvalues. Students cannot receive credit for this course and AM 10.

Prerequisite: Prerequisite(s): score of 400 or higher on the mathematics placement examination (MPE) or MATH 3 or AM 11A or MATH 11A or MATH 19A or MATH 20A.

MATH 22 - Introduction to Calculus of Several Variables (5)

Functions of several variables. Continuity and partial derivatives. The chain rule, gradient and directional derivative. Maxima and minima, including Lagrange multipliers. The double and triple integral and change of variables. Surface area and volumes. Applications from biology, chemistry, earth sciences, engineering, and physics. Students cannot receive credit for this course and MATH 23A.

Prerequisite: Prerequisite(s): MATH 11B or MATH 19B or MATH 20B or AM 15B or qualifying AP exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 23A - Vector Calculus (5)

Vectors in n-dimensional Euclidean space. The inner and cross products. The derivative of functions from n-dimensional to m-dimensional Euclidean space is studied as a linear transformation having matrix representation. Paths in 3-dimensions, arc length, vector differential calculus, Taylor's theorem in several variables, extrema of real-valued functions, constrained extrema and Lagrange multipliers, the implicit function theorem, some applications. Students cannot receive credit for this course and MATH 22 or AM 30.

Prerequisite: Prerequisite(s): MATH 19B or MATH 20B or qualifying AP exam. See the UCSC Exam Equivalency Chart in the Undergraduate Academic Program section of the catalog for details.

MATH 23B - Vector Calculus (5)

Double integral, changing the order of integration. Triple integrals, maps of the plane, change of variables theorem, improper double integrals. Path integrals, line integrals, parametrized surfaces, area of a surface, surface integrals. Green's theorem, Stokes' theorem, conservative fields, Gauss' theorem. Applications to physics and differential equations, differential forms.

Prerequisite: Prerequisite(s): MATH 23A.

MATH 24 - Ordinary Differential Equations (5)

First and second order ordinary differential equations, with emphasis on the linear case. Methods of integrating factors, undetermined coefficients, variation of parameters, power series, numerical computation. Students cannot receive credit for this course and AM 20.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A or AM 30; MATH 21 is recommended as preparation.

MATH 24 - Ordinary Differential Equations (5)

First and second order ordinary differential equations, with emphasis on the linear case. Methods of integrating factors, undetermined coefficients, variation of parameters, power series, numerical computation. Students cannot receive credit for this course and AM 20.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A or AM 30; MATH 21 is recommended as preparation.

MATH 50 - Preparation for Proof (2)

Reading and writing proofs in mathematics. Preparation for theoretical mathematics, and particularly for MATH 100. Close reading of mathematical texts. Development of professional conventions in mathematical writing. Mathematical contexts include geometry, algebra, arithmetic, and discrete mathematics.

Prerequisite: Students cannot enroll in MATH 50 if they have previously completed MATH 100, CSE 16, CSE 101, or CSE 101M with a grade of B- or better.

MATH 99 - Tutorial (5)

MATH 99F - Tutorial (2)

Upper-Division

MATH 100 - Introduction to Proof and Problem Solving (5)

Students learn the basic concepts and ideas necessary for upper-division mathematics and techniques of mathematical proof. Introduction to sets, relations, elementary mathematical logic, proof by contradiction, mathematical induction, and counting arguments.

Prerequisite: Prerequisite(s): MATH 11A or MATH 19A or MATH 20A; and MATH 21 or AM 10.

MATH 101 - Mathematical Problem Solving (5)

Students learn the strategies, tactics, skills and tools that mathematicians use when faced with a novel (new) problem. These include generalization, specialization, the optimization, invariance, symmetry, Dirichlet's box principle among others in the context of solving problems from number theory, geometry, calculus, combinatorics, probability, algebra, analysis, and graph theory.

Prerequisite: Prerequisite(s): MATH 100.

MATH 103A - Complex Analysis (5)

Complex numbers, analytic and harmonic functions, complex integration, the Cauchy integral formula, Laurent series, singularities and residues, conformal mappings.

Prerequisite: Prerequisite(s): MATH 23B; and either MATH 100 or CSE 101.

MATH 103B - Complex Analysis II (2)

Conformal mappings, the Riemann mapping theorem, Mobius transformations, Fourier series, Fourier and Laplace transforms, applications, and other topics as time permits.

Prerequisite: Prerequisite(s): MATH 103A.

MATH 105A - Real Analysis (5)

The basic concepts of one-variable calculus are treated rigorously. Set theory, the real number system, numerical sequences and series, continuity, differentiation.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23B and either MATH 100 or CSE 101.

MATH 105B - Real Analysis (5)

Metric spaces, differentiation and integration of functions. The Riemann-Stieltjes integral. Sequences and series of functions.

Prerequisite: Prerequisite(s): MATH 105A.

MATH 105C - Real Analysis (5)

The Stone-Weierstrass theorem, Fourier series, differentiation and integration of functions of several variables.

Prerequisite: Prerequisite(s): MATH 105B.

MATH 106 - Systems of Ordinary Differential Equations (5)

Linear systems, exponentials of operators, existence and uniqueness, stability of equilibria, periodic attractors, and applications.

Prerequisite: Prerequisite(s): MATH 21 or AM 10; and either MATH 24 or AM 20; and either MATH 100 or CSE 101.

MATH 107 - Partial Differential Equations (5)

Topics covered include first and second order linear partial differential equations, the heat equation, the wave equation, Laplace's equation, separation of variables, eigenvalue problems, Green's functions, Fourier series, special functions including Bessel and Legendre functions, distributions and transforms.

Prerequisite: Prerequisite(s): MATH 21 or AM 10; and MATH 24 or AM 20; and either MATH 100 or CSE 101; MATH 106 is recommended as preparation.

MATH 110 - Introduction to Number Theory (5)

Prime numbers, unique factorization, congruences with applications (e.g., to magic squares). Rational and irrational numbers. Continued fractions. Introduction to Diophantine equations. An introduction to some of the ideas and outstanding problems of modern mathematics.

Prerequisite: Prerequisite(s): MATH 100 or CSE 101.

MATH 111A - Algebra (5)

Group theory including the Sylow theorem, the structure of abelian groups, and permutation groups. Students cannot receive credit for this course and MATH 111T.

Prerequisite: Prerequisite(s): MATH 21 or AM 10 and either MATH 100 or CSE 101.

MATH 111B - Algebra (5)

Introduction to rings and fields including polynomial rings, factorization, the classical geometric constructions, and Galois theory.

Prerequisite: Prerequisite(s): MATH 111A.

MATH 111T - Algebra (5)

Introduction to groups, rings and fields; integers and polynomial rings; divisibility and factorization; homomorphisms and quotients; roots and permutation groups; and plane symmetry groups. Also includes an introduction to algebraic numbers, constructible numbers, and Galois theory. Focuses on topics most relevant to future K-12 teachers. Students cannot receive credit for this course and MATH 111A.

Prerequisite: Prerequisite(s): MATH 100.

MATH 114 - Introduction to Financial Mathematics (5)

Financial derivatives: contracts and options. Hedging and risk management. Arbitrage, interest rate, and discounted value. Geometric random walk and Brownian motion as models of risky assets. Ito's formula. Initial boundary value problems for the heat and related partial differential equations. Self-financing replicating portfolio; Black-Scholes pricing of European options. Dividends. Implied volatility. American options as free boundary problems.

Prerequisite: Corequisite(s): STAT 131 or CSE 107.

MATH 115 - Graph Theory (5)

Graph theory, trees, vertex and edge colorings, Hamilton cycles, Eulerian circuits, decompositions into isomorphic subgraphs, extremal problems, cages, Ramsey theory, Cayley's spanning tree formula, planar graphs, Euler's formula, crossing numbers, thickness, splitting numbers, magic graphs, graceful trees, rotations, and genus of graphs.

Prerequisite: Prerequisite(s): MATH 21 or AM 10 and either MATH 100 or CSE 101.

MATH 116 - Combinatorics (5)

Based on induction and elementary counting techniques: counting subsets, partitions, and permutations; recurrence relations and generating functions; the principle of inclusion and exclusion; Polya enumeration; Ramsey theory or enumerative geometry.

Prerequisite: Prerequisite(s): MATH 100 or CSE 101. Enrollment is restricted to sophomores juniors, and seniors. Familiarity with basic group theory is recommended.

MATH 117 - Advanced Linear Algebra (5)

Review of abstract vector spaces. Dual spaces, bilinear forms, and the associated geometry. Normal forms of linear mappings. Introduction to tensor products and exterior algebras.

Prerequisite: Prerequisite(s): MATH 21 or AM 10 and either MATH 100 or CSE 101.

MATH 118 - Advanced Number Theory (5)

Topics include divisibility and congruences, arithmetical functions, quadratic residues and quadratic reciprocity, quadratic forms and representations of numbers as sums of squares, Diophantine approximation and transcendence theory, quadratic fields. Additional topics as time permits.

Prerequisite: Prerequisite(s): MATH 110 or MATH 111A.

MATH 120 - Coding Theory (5)

An introduction to mathematical theory of coding. Construction and properties of various codes, such as cyclic, quadratic residue, linear, Hamming, and Golay codes; weight enumerators; connections with modern algebra and combinatorics.

Prerequisite: Prerequisite(s): MATH 21.

MATH 121A - Differential Geometry (5)

Topics include Euclidean space, tangent vectors, directional derivatives, curves and differential forms in space, mappings. Curves, the Frenet formulas, covariant derivatives, frame fields, the structural equations. The classification of space curves up to rigid motions. Vector fields and differentiable forms on surfaces; the shape operator. Gaussian and mean curvature. The theorem Egregium; global classification of surfaces in three space by curvature.

Prerequisite: Prerequisite(s): MATH 21 or AM 10, and MATH 23B, and either MATH 100 or CSE 101. MATH 105A strongly recommended.

MATH 121B - Differential Geometry and Topology (5)

Examples of surfaces of constant curvature, surfaces of revolutions, minimal surfaces. Abstract manifolds; integration theory; Riemannian manifolds. Total curvature and geodesics; the Euler characteristic, the Gauss-Bonnet theorem. Length-minimizing properties of geodesics, complete surfaces, curvature and conjugate points covering surfaces. Surfaces of constant curvature; the theorems of Bonnet and Hadamard.

Prerequisite: Prerequisite(s): MATH 121A.

MATH 124 - Introduction to Topology (5)

Topics include introduction to point set topology (topological spaces, continuous maps, connectedness, compactness), homotopy relation, definition and calculation of fundamental groups and homology groups, Euler characteristic, classification of orientable and nonorientable surfaces, degree of maps, and Lefschetz fixed-point theorem.

Prerequisite: Prerequisite(s): MATH 100; MATH 111A recommended.

MATH 125 - Applied Topology (5)

Introduction to the theoretical foundations of topological data analysis (TDA), which is the study of datasets using tools from topology. Includes
some classical material from topology, elements of homological algebra and an introduction to the notion of persistence.

MATH 128A - Classical Geometry: Euclidean and Non-Euclidean (5)

Euclidean, projective, spherical, and hyperbolic (non-Euclidean) geometries. Begins with the thirteen books of Euclid. Surveys the other geometries. Attention paid to constructions and visual intuition as well as logical foundations. Rigid motions and projective transformations covered.

Prerequisite: Prerequisite(s): either MATH 100 or CSE 101.

MATH 128B - Classical Geometry: Projective (5)

Theorems of Desargue, Pascal, and Pappus; projectivities; homogeneous and affine coordinates; conics; relation to perspective drawing and some history.

Prerequisite: Prerequisite(s): MATH 21.

MATH 129 - Algebraic Geometry (5)

Algebraic geometry of affine and projective curves, including conics and elliptic curves; Bezout's theorem; coordinate rings and Hillbert's Nullstellensatz; affine and projective varieties; and regular and singular varieties. Other topics, such as blow-ups and algebraic surfaces as time permits.

Prerequisite: Prerequisite(s): MATH 100.

MATH 130 - Celestial Mechanics (5)

Solves the two-body (or Kepler) problem, then moves onto the N-body problem where there are many open problems. Includes central force laws; orbital elements; conservation of linear momentum, energy, and angular momentum; the Lagrange-Jacobi formula; Sundman's theorem for total collision; virial theorem; the three-body problem; Jacobi coordinates; solutions of Euler and of Lagrange; and restricted three-body problem.

Prerequisite: Prerequisite(s): MATH 19A and 19B; and MATH 23A or PHYS 5A or PHYS 6A; MATH 21 and MATH 24 strongly recommended.

MATH 134 - Cryptography (5)

Introduces different methods in cryptography (shift cipher, affine cipher, Vigenere cipher, Hill cipher, RSA cipher, ElGamal cipher, knapsack cipher). The necessary material from number theory and probability theory is developed in the course. Common methods to attack ciphers discussed.

Prerequisite: Prerequisite(s): MATH 100 or CSE 101; MATH 110 is recommended as preparation.

MATH 140 - Industrial Mathematics (5)

Students learn skills needed for solving problems found in industry. Course follows a problem-based approach, discovering the theory needed for solving problems, as well as

description skills. Students collaborate to solve industry-driven problems. Reports and presentations are expected to demonstrate the solution of problems. Examples include: Applied Graph Theory, Ramsey Theory, Game Theory, Markov Chains, Information Theory, Coding Theory, and Applied Number Theory.

Prerequisite: Prerequisite(s): MATH 100 or CSE 101.

MATH 145 - Introductory Chaos Theory (5)

The Lorenz and Rossler attractors, measures of chaos, attractor reconstruction, and applications from the sciences.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A; MATH 21 or AM 10; MATH 100 or CSE 101. Concurrent enrollment in MATH 145L is required.

MATH 145L - Introductory Chaos Laboratory (1)

Laboratory sequence illustrating topics covered in MATH 145. One three-hour session per week in microcomputer laboratory.

Prerequisite: Concurrent enrollment in MATH 145 is required.

MATH 148 - Numerical Analysis (5)

A survey of the basic numerical methods which are used to solve scientific problems and their mathematical analysis (derivation, convergence analysis, error bounds). The course includes both mathematical (analysis of algorithms) and computing assignments (implementation of algorithms). Some prior experience with Matlab (or similar) is helpful but not required. Some typical topics are: computer arithmetic; Newton's method for non-linear equations; linear algebra; interpolation and approximation; numerical differentiation and integration; numerical solutions of systems of ordinary differential equations and some partial differential equations.

Prerequisite: Prerequisite(s): MATH 22 or MATH 23A; and MATH 21 or AM 10; and MATH 24 or AM 20; and MATH 103A or MATH 105A or MATH 152 or AM 147 or CSE 101. Concurrent enrollment in MATH 148L is required.

MATH 148L - Numerical Analysis Laboratory (1)

Laboratory sequence illustrating topics covered in course 148. One three-hour session per week in the computer laboratory.

Prerequisite: Concurrent enrollment in MATH 148 is required.

MATH 152 - Programming for Mathematics (5)

Introduces programming in Python with applications to advanced mathematics. Students apply data structures and algorithms to topics such as numerical approximation, number theory, linear algebra, and combinatorics. No programming experience is necessary, but a strong mathematics background is required.

Prerequisite: Prerequisite(s): MATH 100.

MATH 160 - Mathematical Logic I (5)

Propositional and predicate calculus. Resolution, completeness, compactness, and Lowenheim-Skolem theorem. Recursive functions, Godel incompleteness theorem. Undecidable theories. Hilbert's 10th problem.

Prerequisite: Prerequisite(s): MATH 100 or CSE 101.

MATH 161 - Mathematical Logic II (5)

Naive set theory and its limitations (Russell's paradox); construction of numbers as sets; cardinal and ordinal numbers; cardinal and ordinal arithmetic; transfinite induction; axiom systems for set theory, with particular emphasis on the axiom of choice and the regularity axiom and their consequences (such as, the Banach-Tarski paradox); continuum hypothesis.

Prerequisite: Prerequisite(s): MATH 100 or equivalent, or by permission of instructor.

MATH 162 - Introduction to Computably Enumerable Functions and Sets and their Degrees (5)

Topics include computable functions; Church's thesis; Halting problem; computable and computably enumerable (c.e.) functions and sets; relative computability; Turing-degrees and the jump operator; Arithmetical hierarchy; oracle constructions; Post's problem; and finite injury priority method, and splitting theorems for c.e. degrees.

Prerequisite: Prerequisite(s): MATH 100 or CSE 101; MATH 160 recommended.

MATH 181 - History of Mathematics (5)

A survey from a historical point of view of various developments in mathematics. Specific topics and periods to vary yearly.

Prerequisite: Prerequisite(s): MATH 19B or MATH 20B. MATH 100 is strongly recommended for preparation.

MATH 192 - Dir Stu Teach (5)

MATH 194 - Senior Seminar (5)

Designed to expose the student to topics not normally covered in the standard courses. The format varies from year to year. In recent years each student has written a paper and presented a lecture on it to the class.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; MATH 103A or MATH 105A or MATH 110 or MATH 111A or MATH 111T or MATH 117. Enrollment priority is given to seniors; juniors may request permission from the undergraduate vice chair.

MATH 195 - Senior Thesis (5)

Students research a mathematical topic under the guidance of a faculty sponsor and write a senior thesis demonstrating knowledge of the material. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Students submit petition to sponsoring agency.

MATH 199 - Tutorial (5)

Students submit petition to sponsoring agency.

MATH 199F - Tutorial (2)

Tutorial

Graduate

MATH 200 - Algebra I (5)

Group theory: subgroups, cosets, normal subgroups, homomorphisms, isomorphisms, quotient groups, free groups, generators and relations, group actions on a set. Sylow theorems, semidirect products, simple groups, nilpotent groups, and solvable groups. Ring theory: Chinese remainder theorem, prime ideals, localization. Euclidean domains, PIDs, UFDs, polynomial rings. Prerequisite(s): MATH 111A and MATH 117 are recommended as preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 201 - Algebra II (5)

Vector spaces, linear transformations, eigenvalues and eigenvectors, the Jordan canonical form, bilinear forms, quadratic forms, real symmetric forms and real symmetric matrices, orthogonal transformations and orthogonal matrices, Euclidean space, Hermitian forms and Hermitian matrices, Hermitian spaces, unitary transformations and unitary matrices, skewsymmetric forms, tensor products of vector spaces, tensor algebras, symmetric algebras, exterior algebras, Clifford algebras and spin groups.

Prerequisite: Prerequisite(s): MATH 200 is recommended as preparation. Enrollment is restricted to graduate students.

MATH 202 - Algebra III (5)

Module theory: Submodules, quotient modules, module homomorphisms, generators of modules, direct sums, free modules, torsion modules, modules over PIDs, and applications to rational and Jordan canonical forms. Field theory: field extensions, algebraic and transcendental extensions, splitting fields, algebraic closures, separable and normal extensions, the Galois theory, finite fields, Galois theory of polynomials.

Prerequisite: Prerequisite(s): MATH 201 is recommended as preparation. Enrollment is restricted to graduate students.

MATH 203 - Algebra IV (5)

Topics include tensor product of modules over rings, projective modules and injective modules, Jacobson radical, Wedderburns' theorem, category theory, Noetherian rings, Artinian rings, affine varieties, projective varieties, Hilbert's Nullstellensatz, prime spectrum, Zariski topology, discrete valuation rings, and Dedekind domains.

Prerequisite: Prerequisite(s): MATH 200, MATH 201, and MATH 202. Enrollment is restricted to graduate students.

MATH 204 - Analysis I (5)

Completeness and compactness for real line; sequences and infinite series of functions; Fourier series; calculus on Euclidean space and the implicit function theorem; metric spaces and the contracting mapping theorem; the Arzela-Ascoli theorem; basics of general topological spaces; the Baire category theorem; Urysohn's lemma; and Tychonoff's theorem.

Prerequisite: Prerequisite(s): MATH 105A and MATH 105B are recommended as preparation.Enrollment is restricted to graduate students.

MATH 205 - Analysis II (5)

Lebesgue measure theory, abstract measure theory, measurable functions, integration, space of absolutely integrable functions, dominated convergence theorem, convergence in measure, Riesz representation theorem, product measure and Fubini 's theorem. L^p spaces, derivative of a measure, the Radon-Nikodym theorem, and the fundamental theorem of calculus.

Prerequisite: Prerequisite(s): MATH 204. Enrollment is restricted to graduate students.

MATH 206 - Analysis III (5)

Banach spaces, Hahn-Banach theorem, uniform boundedness theorem, the open mapping and closed graph theorems, weak and weak* topology, the Banach-Alaoglu theorem, Hilbert spaces, self-adjoint operators, compact operators, spectral theory, Fredholm operators, spaces of distributions and the Fourier transform, and Sobolev spaces.

Prerequisite: Prerequisite(s): MATH 204 and MATH 205 recommended as preparation. Enrollment is restricted to graduate students.

MATH 207 - Complex Analysis (5)

Holomorphic and harmonic functions, Cauchy's integral theorem, the maximum principle and its consequences, conformal mapping, analytic continuation, the Riemann mapping theorem.

Prerequisite: Prerequisite(s): MATH 103 is recommended as preparation. Enrollment is restricted to graduate students.

MATH 208 - Manifolds I (5)

Definition of manifolds; the tangent bundle; the inverse function theorem and the implicit function theorem; transversality; Sard's theorem and the Whitney embedding theorem; vector fields, flows, and the Lie bracket; Frobenius's theorem. MATH 204 recommended for preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 209 - Manifolds II (5)

Tensor algebra. Differential forms and associated formalism of pullback, wedge product, exterior derivative, Stokes theorem, integration. Cartan's formula for Lie derivative. Cohomology via differential forms. The Poincaré lemma and

the Mayer-Vietoris sequence. Theorems of deRham and Hodge.

Prerequisite: Prerequisite(s): MATH 208. MATH 201 is recommended as preparation. Enrollment is restricted to graduate students.

MATH 210 - Manifolds III (5)

The fundamental group, covering space theory and van Kampen's theorem (with a discussion of free and amalgamated products of groups), CW complexes, higher homotopy groups, cellular and singular cohomology, the Eilenberg-Steenrod axioms, computational tools including Mayer-Vietoris, cup products, Poincaré duality, the Lefschetz fixed point theorem, the exact homotopy sequence of a fibration and the Hurewicz isomorphism theorem, and remarks on characteristic classes.

Prerequisite: Prerequisite(s): MATH 208 and MATH 209 recommended as preparation. Enrollment is restricted to graduate students.

MATH 211 - Algebraic Topology (5)

Continuation of MATH 210. Topics include theory of characteristic classes of vector bundles, cobordism theory, and homotopy theory.

Prerequisite: Prerequisite(s): MATH 200, MATH 201, and MATH 202 recommended as preparation. Enrollment is restricted to graduate students.

MATH 212 - Differential Geometry (5)

Principal bundles, associated bundles and vector bundles, connections and curvature on principal and vector bundles. More advanced topics include: introduction to cohomology, the Chern-Weil construction and characteristic classes, the Gauss-Bonnet theorem or Hodge theory, eigenvalue estimates for Beltrami Laplacian, and comparison theorems in Riemannian geometry.

Prerequisite: Prerequisite(s): MATH 208. Enrollment is restricted to graduate students.

MATH 213A - Partial Differential Equations I (5)

First of the two PDE courses covering basically Part I in Evans' book; *Partial Differential Equations;* which includes transport equations; Laplace equations; heat equations; wave equations; characteristics of nonlinear first-order PDE; Hamilton-Jacobi equations; conservation laws; some methods for solving equations in closed form; and the Cauchy-Kovalevskaya theorem.

Prerequisite: MATH 106 and MATH 107 are recommended as preparation. Enrollment is restricted to graduate students.

MATH 213B - Partial Differential Equations II (5)

Second course of the PDE series covering basically most of Part II in Evans' book and some topics in nonlinear PDE including Sobolev spaces, Sobolev inequalities, existence, regularity and a priori estimates of solutions to second order elliptic PDE, parabolic equations, hyperbolic equations and systems of conservation laws, and calculus of variations and its applications to PDE.

Prerequisite: Prerequisite(s): MATH 106, MATH 107, and MATH 213A are recommended as preparation. Enrollment is restricted to graduate students.

MATH 214 - Theory of Finite Groups (5)

Nilpotent groups, solvable groups, Hall subgroups, the Frattini subgroup, the Fitting subgroup, the Schur-Zassenhaus theorem, fusion in p-subgroups, the transfer map, Frobenius theorem on normal p-complements.

Prerequisite: Prerequisite(s): MATH 200 and MATH 201 recommended as preparation. Enrollment is restricted to graduate students.

MATH 215 - Operator Theory (5)

Operators on Banach spaces and Hilbert spaces. The spectral theorem. Compact and Fredholm operators. Other special classes of operators.

Prerequisite: Prerequisite(s): MATH 204, MATH 205, MATH 206, and MATH 207 are recommended as preparation. Enrollment is restricted to graduate students.

MATH 216 - Advanced Analysis (5)

Topics include: the Lebesgue set, the Marcinkiewicz interpolation theorem, singular integrals, the Calderon-Zygmund theorem, Hardy Littlewood-Sobolev theorem, pseudodifferential operators, compensated compactness, concentration compactness, and applications to PDE.

Prerequisite: Prerequisite(s): MATH 204, MATH 205, and MATH 206 recommended as preparation. Enrollment is restricted to graduate students.

MATH 217 - Advanced Elliptic Partial Differential Equations (5)

Topics include elliptic equations, existence of weak solutions, the Lax-Milgram theorem, interior and boundary regularity, maximum principles, the Harnack inequality, eigenvalues for symmetric and non-symmetric elliptic operators, calculus of variations (first variation: Euler-Lagrange equations, second variation: existence of minimizers). Other topics covered as time permits.

Prerequisite: Prerequisite(s): MATH 204, MATH 205, and MATH 206 recommended as preparation. Enrollment is restricted to graduate students.

MATH 218 - Advanced Parabolic and Hyperbolic Partial Differential Equations (5)

Topics include: linear evolution equations, second order parabolic equations, maximum principles, second order hyperbolic equations, propagation of singularities, hyperbolic systems of first order, semigroup theory, systems of conservation laws, Riemann problem, simple waves, rarefaction waves, shock waves, Riemann invariants, and entropy criteria. Other topics covered as time permits.

Prerequisite: Prerequisite(s): MATH 205 and MATH 206. Enrollment is restricted to graduate students.

MATH 219 - Nonlinear Functional Analysis (5)

Topological methods in nonlinear partial differential equations, including degree theory, bifurcation theory, and monotonicity. Topics also include variational methods in the solution of nonlinear partial differential equations.

Prerequisite: Enrollment is restricted to graduate students.

MATH 220A - Representation Theory I (5)

Lie groups and Lie algebras, and their finite dimensional representations.

Prerequisite: Prerequisite(s): MATH 200, MATH 201, and MATH 202. MATH 225A and MATH 227 recommended as preparation. Enrollment is restricted to graduate students.

MATH 220B - Representation Theory II (5)

Lie groups and Lie algebras, and their finite dimensional representations.

Prerequisite: Prerequisite(s): MATH 220A. Enrollment is restricted to graduate students.

MATH 222A - Algebraic Number Theory (5)

Topics include algebraic integers, completions, different and discriminant, cyclotomic fields, parallelotopes, the ideal function, ideles and adeles, elementary properties of zeta functions and L-series, local class field theory, global class field theory. MATH 200, MATH 201, and MATH 202 are recommended as preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 222B - Algebraic Number Theory (5)

Topics include geometric methods in number theory, finiteness theorems, analogues of Riemann-Roch for algebraic fields (after A. Weil), inverse Galois problem (Belyi theorem) and consequences.

Prerequisite: Enrollment is restricted to graduate students.

MATH 223A - Algebraic Geometry I (5)

Topics include examples of algebraic varieties, elements of commutative algebra, local properties of algebraic varieties, line bundles and sheaf cohomology, theory of algebraic curves. Weekly problem solving. MATH 200, MATH 201, MATH 202, and MATH 208 are recommended as preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 223B - Algebraic Geometry II (5)

A continuation of course 223A. Topics include theory of schemes and sheaf cohomology, formulation of the Riemann-Roch theorem, birational maps, theory of surfaces. Weekly problem solving. MATH 223A is recommended as preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 225A - Lie Algebras (5)

Basic concepts of Lie algebras. Engel's theorem, Lie's theorem, Weyl's theorem are proved. Root space decomposition for semi-simple algebras, root systems and the classification theorem for semi-simple algebras over the complex numbers. Isomorphism and conjugacy theorems.

Prerequisite: Prerequisite(s): MATH 201 and MATH 202 recommended as preparation Enrollment is restricted to graduate students.

MATH 225B - Infinite Dimensional Lie Algebras (5)

Finite dimensional semi-simple Lie algebras: PBW theorem, generators and relations, highest weight representations, Weyl character formula. Infinite dimensional Lie algebras: Heisenberg algebras, Virasoro algebras, loop algebras, affine Kac-Moody algebras, vertex operator representations.

Prerequisite: Prerequisite(s): MATH 225A. Enrollment is restricted to graduate students.

MATH 226A - Infinite Dimensional Lie Algebras and Quantum Field Theory I (5)

Introduction to the infinite-dimensional Lie algebras that arise in modern mathematics and mathematical physics: Heisenberg and Virasoro algebras, representations of the Heisenberg algebra, Verma modules over the Virasoro algebra, the Kac determinant formula, and unitary and discrete series representations.

Prerequisite: Enrollment is restricted to graduate students.

MATH 226B - Infinite Dimensional Lie Algebras and Quantum Field Theory II (5)

Continuation of MATH 226A: Kac-Moody and affine Lie algebras and their representations, integrable modules, representations via vertex operators, modular invariance of characters, and introduction to vertex operator algebras.

Prerequisite: Enrollment is restricted to graduate students.

MATH 227 - Lie Groups (5)

Lie groups and algebras, the exponential map, the adjoint action, Lie's three theorems, Lie subgroups, the maximal torus theorem, the Weyl group, some topology of Lie groups, some representation theory: Schur's Lemma, the Peter-Weyl theorem, roots, weights, classification of Lie groups, the classical groups.

Prerequisite: Prerequisite(s): MATH 200, MATH 201, MATH 204, and MATH 208. Enrollment is restricted to graduate students.

MATH 228 - Lie Incidence Geometries (5)

Linear incidence geometry is introduced. Linear and classical groups are reviewed, and geometries associated with projective and polar spaces are introduced. Characterizations are obtained.

Prerequisite: Enrollment is restricted to graduate students.

MATH 229 - Kac-Moody Algebras (5)

Theory of Kac-Moody algebras and their representations. The Weil-Kac character formula. Emphasis on representations of affine superalgebras by vertex operators. Connections to combinatorics, PDE, the monster group. The Virasoro algebra.

Prerequisite: Enrollment is restricted to graduate students.

MATH 232 - Morse Theory (5)

Classical Morse Theory. The fundamental theorems relating critical points to the topology of a manifold are treated in detail. The Bott Periodicity Theorem. A specialized course offered once every few years.

Prerequisite: Prerequisite(s): MATH 208, MATH 209, MATH 210, MATH 211, and MATH 212 recommended as preparation. Enrollment is restricted to graduate students.

MATH 233 - Random Matrix Theory (5)

Classical matrix ensembles; Wigner semi-circle law; method of moments. Gaussian ensembles. Method of orthogonal polynomials; Gaudin lemma. Distribution functions for spacings and largest eigenvalue. Asymptotics and Riemann-Hilbert problem. Painleve theory and the Tracy-Widom distribution. Selberg's Integral. Matrix ensembles related to classical groups; symmetric functions theory. Averages of characteristic polynomials. Fundamentals of free probability theory. Overview of connections with physics, combinatorics, and number theory.

Prerequisite: Prerequisite(s): MATH 103, MATH 204, and MATH 205; MATH 117 recommended as preparation. Enrollment is restricted to graduate students.

MATH 234 - Riemann Surfaces (5)

Riemann surfaces, conformal maps, harmonic forms, holomorphic forms, the Riemann-Roch theorem, the theory of moduli.

Prerequisite: Enrollment is restricted to graduate students.

MATH 235 - Dynamical Systems Theory (5)

An introduction to the qualitative theory of systems of ordinary differential equations. Structural stability, critical elements, stable manifolds, generic properties, bifurcations of generic arcs.

Prerequisite: Prerequisite(s): MATH 203 and MATH 208. Enrollment is restricted to graduate students.

MATH 238 - Elliptic Functions and Modular Forms (5)

The course, aimed at second-year graduate students, will cover the basic facts about elliptic functions and modular forms. The goal is to provide the student with foundations suitable for further work in advanced number theory, in conformal field theory, and in the theory of Riemann surfaces.

Prerequisite: Prerequisite(s): MATH 200, MATH 201, MATH 202, and either MATH 207 or MATH 103A are recommended as preparation. Enrollment is restricted to graduate students.

MATH 239 - Homological Algebra (5)

Homology and cohomology theories have proven to be powerful tools in many fields (topology, geometry, number theory, algebra). Independent of the field, these theories use the common language of homological algebra. The aim of this course is to acquaint the participants with basic concepts of category theory and homological algebra, as follows: chain complexes, homology, homotopy, several (co)homology theories (topological spaces, manifolds, groups, algebras, Lie groups), projective and injective resolutions, derived functors (Ext and Tor). Depending on time, spectral sequences or derived categories may also be treated. MATH 200 and MATH 202 strongly recommended.

Prerequisite: Enrollment is restricted to graduate students.

MATH 240A - Representations of Finite Groups I (5)

Introduces ordinary representation theory of finite groups (over the complex numbers). Main topics are characters, orthogonality relations, character tables, induction and restriction, Frobenius reciprocity, Mackey's formula, Clifford theory, Schur indicator, Schur index, Artin's and Brauer's induction theorems. Recommended: successful completion of MATH 200-MATH 202.

Prerequisite: Enrollment is restricted to graduate students.

MATH 240B - Representations of Finite Groups II (5)

Introduces modular representation theory of finite groups (over a field of positive characteristic). Main topics are Grothendieck groups, Brauer characters, Brauer character table, projective covers, Brauer-Cartan triangle, relative projectivity, vertices, sources, Green correspondence, Green's indecomposability theorem. Recommended completion of MATH 200-MATH 203 and MATH 240A.

Prerequisite: Prerequisite(s): MATH 200, MATH 201, MATH 202, MATH 203, and MATH 240A recommended. Enrollment is restricted to graduate students.

MATH 246 - Representations of Algebras (5)

Material includes associative algebras and their modules; projective and injective modules; projective covers; injective hulls; Krull-Schmidt Theorem; Cartan matrix; semisimple algebras and modules; radical, simple algebras; symmetric algebras; quivers and their representations; Morita Theory; and basic algebras.

Prerequisite: Prerequisite(s): MATH 200, MATH 201, and MATH 202. Enrollment is restricted to graduate students.

MATH 248 - Symplectic Geometry (5)

Basic definitions. Darboux theorem. Basic examples: cotangent bundles, Kähler manifolds and co-adjoint orbits. Normal form theorems. Hamiltonian group actions, moment

maps. Reduction by symmetry groups. Atiyah-Guillemin-Sternberg convexity. Introduction to Floer homological methods. Relations with other geometries including contact, Poisson, and Kähler geometry.

Prerequisite: Prerequisite(s): MATH 204; MATH 208 and MATH 209 are recommended as preparation. Enrollment is restricted to graduate students.

MATH 249A - Mechanics I (5)

Covers symplectic geometry and classical Hamiltonian dynamics. Some of the key subjects are the Darboux theorem, Poisson brackets, Hamiltonian and Langrangian systems, Legendre transformations, variational principles, Hamilton-Jacobi theory, geodesic equations, and an introduction to Poisson geometry. MATH 208 and MATH 209 are recommended as preparation.

Prerequisite: MATH 208 and MATH 209 recommended as preparation. Enrollment is restricted to graduate students.

MATH 249B - Mechanics II (5)

Hamiltonian dynamics with symmetry. Key topics center around the momentum map and the theory of reduction in both the symplectic and Poisson context. Applications are taken from geometry, rigid body dynamics, and continuum mechanics. MATH 249A is recommended as preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 249C - Mechanics III (5)

Introduces students to active research topics tailored according to the interests of the students. Possible subjects are complete integrability and Kac-Moody Lie algebras; Smale's topological program and bifurcation theory; KAM theory, stability and chaos; relativity; quantization. MATH 249B is recommended as preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 252 - Fluid Mechanics (5)

First covers a basic introduction to fluid dynamics equations and then focuses on different aspects of the solutions to the Navier-Stokes equations.

Prerequisite: Prerequisite(s): MATH 106 and MATH 107 are recommended as preparation. Enrollment is restricted to graduate students.

MATH 254 - Geometric Analysis (5)

Introduction to some basics in geometric analysis through the discussions of two fundamental problems in geometry: the resolution of the Yamabe problem and the study of harmonic maps. The analytic aspects of these problems include Sobolev spaces, best constants in Sobolev inequalities, and regularity and a priori estimates of systems of elliptic PDE.

Prerequisite: MATH 204, MATH 205, MATH 209, MATH 212, and MATH 213A recommended as preparation. Enrollment is restricted to graduate students.

MATH 256 - Algebraic Curves (5)

Introduction to compact Riemann surfaces and algebraic geometry via an in-depth study of complex algebraic curves.

Prerequisite: MATH 200, MATH 201, MATH 202, MATH 203, MATH 204, and MATH 207 are recommended as preparation. Enrollment is restricted to graduate mathematics and physics students.

MATH 260 - Combinatorics (5)

Combinatorial mathematics, including summation methods, binomial coefficients, combinatorial sequences (Fibonacci, Stirling, Eulerian, harmonic, Bernoulli numbers), generating functions and their uses, Bernoulli processes and other topics in discrete probability. Oriented toward problem solving applications. Applications to statistical physics and computer science.

Prerequisite: Enrollment is restricted to graduate students.

MATH 264 - Inverse Problems and Integral Geometry (5)

Concepts of inverse problem and ill-posedness on the Hilbert scale. Approaches to inversion, regularization and implementation. In Euclidean geometry: Radon transform; X-ray transform; attenuated X-ray transform (Novikov's inversion formula); weighted transforms. Same topics in different geometric contexts: homogeneous spaces, manifolds with boundary. Non-linear problems: boundary rigidity, lens rigidity, inverse problems for connections. MATH 148, MATH 204, MATH 205, MATH 206, and MATH 208, are recommended for preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 280 - Topics in Analysis (5)

Prerequisite: Enrollment is restricted to graduate students.

MATH 281 - Topics in Algebra (5)

Prerequisite: Enrollment is restricted to graduate students.

MATH 282 - Topics in Geometry (5)

Prerequisite: Enrollment is restricted to graduate students.

MATH 283 - Topics in Combinatorial Theory (5)

Prerequisite: Enrollment is restricted to graduate students.

MATH 284 - Topics in Dynamics (5)

Prerequisite: Enrollment is restricted to graduate students.

MATH 285 - Topics in Partial Differential Equations (5)

Topics such as derivation of the Navier-Stokes equations. Examples of flows including water waves, vortex motion, and boundary layers. Introductory functional analysis of the Navier-Stokes equation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 286 - Topics in Number Theory (5)

Topics in number theory, selected by instructor. Possibilities include modular and automorphic forms, elliptic curves, algebraic number theory, local fields, the trace formula. May also cover related areas of arithmetic algebraic geometry, harmonic analysis, and representation theory. Courses 200, 201, 202, and 205 are recommended as preparation.

Prerequisite: Enrollment is restricted to graduate students.

MATH 287 - Topics in Topology (5)

Topics in topology, selected by the instructor. Possibilities include generalized (co)homology theory including K-theory, group actions on manifolds, equivariant and orbifold cohomology theory.

Prerequisite: Enrollment is restricted to graduate students.

MATH 288A - Pedagogy of Mathematics (2)

Prepares graduate students to become successful Teaching Assistants in mathematics courses. Topics include class management, assessment creation, evaluation and grading, student interaction, introduction to teaching and learning strategies, innovation in education, use of technology, and best practices that promote diversity and inclusion.

Prerequisite: Enrollment is restricted to graduate students.

MATH 288B - Pedagogy of Mathematics (2)

Prepares graduate students to become successful Graduate Student Instructors in mathematics. Topics include class management, assessment creation, evaluation and grading, student interaction, introduction to teaching and learning strategies, innovation in education, use of technology, and best practices that promote diversity and inclusion.

Prerequisite: Enrollment is restricted to graduate students.

MATH 292 - Seminar (0)

A weekly seminar attended by faculty, graduate students, and upper-division undergraduate students. All graduate students are expected to attend.

Prerequisite: Enrollment is restricted to graduate students.

MATH 296 - Special Student Seminar (5)

Students and staff studying in an area where there is no specific course offering at that time.

Prerequisite: Enrollment is restricted to graduate students.

MATH 297A - Independent Study (5)

Either study related to a course being taken or a totally independent study. Enrollment restricted to graduate students.

MATH 297B - Independent Study (10)

Either study related to a course being taken or a totally independent study. Enrollment restricted to graduate students.

MATH 297C - Independent Study (15)

Either study related to a course being taken or a totally independent study. Enrollment restricted to graduate students.

MATH 298 - Master's Thesis Research (5)

Enrollment restricted to graduate students.

MATH 299A - Thesis Research (5)

Enrollment restricted to graduate students.

MATH 299B - Thesis Research (10)

Enrollment restricted to graduate students.

MATH 299C - Thesis Research (15)

Enrollment restricted to graduate students.

MERR - MERRILL COLLEGE

Lower-Division

MERR 1 - Academic Literacy and Ethos: Reading Ourselves, Reading the World (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Engages students in Merrill's intellectual tradition of investigating social change and social justice.

Prerequisite: Enrollment is restricted to college members.

MERR 1A - Introduction to University Life and Learning (1)

Orientation to and exploration of the nature of the liberal arts, and of learning at research universities. Topics include: academic planning for upper-division coursework; enrollment processes; and understanding pathways to degree completion; UCSC resources that support health and well-being strategies for academic success; the cultivation of just communities; the prevention of sexual harassment and violence; campus conduct policies; awareness of risks associated with drug and/or alcohol use; and an introduction to traditions of community-engaged learning, ground-breaking research, and interdisciplinary thinking that define a UC Santa Cruz degree. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Merrill College students.

MERR 5 - WORD: Writing Originating from Reading and Discussion. (2)

Designed to provide students with practice using critical reading strategies with a variety of academic texts and genres and is graded Pass/No Pass only. Enrollment is restricted to frosh students and by permission of the instructor.

MERR 31F - Agency, Dialogue, Action: Fostering Critical

Engagement (2)

What exactly does it mean to have agency, what do we do with agency? Course examines theories of agency, in education and elsewhere, and engages students in opportunities to enact and examine effective approaches. Understanding that spaces of social collaboration are also learning environments, students investigate how different models of student engagement promote agency ultimately leading to investigating how we can utilize our agency to effect change and how dialogue plays an integral role in this process. Also explores effective practices for fostering and implementing agency and communication, and the theories from which these practices emerge. Enrollment is by permission and is restricted to students who are a member of a SOMeCA organization. (Formerly MERR 31.)

MERR 32F - Mindful Collaboration: Cultivating Radical Exchange (2)

Collaboration can be challenging, particularly in a society in which there is an emphasis on individualism and competitiveness. Compromise, for example, can be experienced or interpreted as personal sacrifice rather than fertile ground for possibility. Solving many of the world's most significant issues (climate change, economic instability, pandemic, etc.) will require collective effort and this will challenge us to create new ways of being and thinking. Through classroom discussions, journal reflections, and experiential exercises, students investigate models of collaboration, how social inequities can challenge collaborative work, the importance of common purpose, practices that support respectful and inclusive deliberation, and student organizations as sites of collaboration. Enrollment is by permission and is restricted to students who are a member of a SOMeCA organization.

MERR 33F - Transformative Leadership and Social Change (2)

Examines current state of constant division and dissent to look for solutions to society's largest problems and examples of leadership that exhibit the compassion, openness, and skills needed to reach inclusive and genuine consensus that students can learn from in becoming effective and transformative leaders. Students challenge their own assumptions regarding leadership and explore and assess different means through which they can be leaders who facilitate change with more than just their own ideas in mind. Through both class discussions and interactive practices, students explore ways of strengthening interpersonal relationships, developing shared frameworks, and creating a collective consensus that supports sustainable and inclusive change. Enrollment is by permission and is restricted to students who are a member of a SOMeCA organization.

MERR 34F - Careers in STEM (2)

Provides students with information, tools, and strategies to embark on STEM career exploration and preparation, including strategies for addressing challenges and opportunities related to diversity within STEM career fields. Students explore their career values, network with guest speakers in STEM fields (alumni, faculty, postdocs, graduate students, career coaches, and hiring managers), and prepare and create career-related documents (resumes, cover letters, networking plans). Enrollment is restricted to sophomore and junior STEM majors and proposed STEM majors, and by instructor permission. Students in the EOP program are given priority.

Prerequisite: Enrollment is restricted to sophomore and junior STEM majors and intended STEM majors, and by instructor permission. Students in the EOP program are given priority.

MERR 35A - Pathways to Graduate School Phase 1 (2)

Guides students in utilizing relevant and timely information, tools, and strategies to embark on the path to graduate school exploration and preparation, including strategies for addressing challenges and opportunities related to diversity within graduate education. Students explore their values and motivations for pursuing graduate school, network with guest speakers (current graduate students, faculty members, graduate school admissions professionals); and prepare to continue their development as scholars and researchers in order to deliver outstanding graduate school application materials (personal statements, CV/resumes, letters of recommendation requests). Through these course activities, students cultivate their scholarly identity and sense of self-efficacy as future graduate students. Enrollment is restricted to sophomores and juniors in the Arts, Humanities, and Social Sciences divisions and by instructor permission. Students in the EOP program are given priority.

MERR 35B - Pathways to Graduate School–Phase 2 (3)

Guides students via a strengths-based approach in utilizing the information, resources, support, and self-determination they identified in MERR 35A, Pathways to Graduate School–Phase 1, to navigate the graduate school application process and submit for admission to respective graduate programs and/or other competitive opportunities.

MERR 40 - Deafness & Sign Language (5)

Explores what we can learn about the human mind and brain by studying sensory loss and language in a different sensory modality. Topics include visual and spatial thinking, brain organization, compensating for sensory loss, and the nature of human language.

MERR 41 - Pandemics and Planetary Health (5)

Examines global health events through our own personal experiences and foundations in public health, environmental health, social theory, and governance, generating insight about how infectious disease spreads within our communities and across geographic boundaries. A focal objective is to explore lessons from present and past pandemics to inform future actions and responses within our global and local communities. Case study methods are used to analyze the COVID-19 pandemic and engage in learning across multiple global health events and intersecting planetary health challenges, in a theory and practice-based exploration of pandemics from the perspectives of global health, society, science, and human behavior. (Formerly offered as Pandemic Case Studies: Principles in Public Health.)

MERR 60 - Fake News: Its History and Why We Need Critical Media Literacy (5)

Teaches students how to take skillful possession of their power as citizens by participating in community focused news literacy service learning projects. Recently, debates about fake news in entertainment, politics, and news media have centered on the threat American citizens' waning news literacy skills pose to the democratic process. Course develops those skills, focusing on critical thinking, the history of fake news and journalism, differences between journalism and fake news, news and propaganda, news and opinion, bias and fairness, assertion and verification, and evidence and inference. Integrates coursework into collaborative community engagement projects that seek to advance the community's news literacy skills.

MERR 90 - Theory and Practice of Field Study (5)

Course provides an opportunity for lower-division students to learn about Santa Cruz, Calif., its contemporary history, culture, and politics through classroom theoretical learning integrated with individual field studies. Course also examines social change, qualitative research, and community organizing.

MERR 90F - Merrill Field Study Practicum (2)

Offers Merrill students an opportunity for practical field study experience with preparation and support for practical skill development and critical reflection on service-learning experience.

MERR 90S - Theory and Practice of Field Study (2)

Students spend 10 hours a week on an internship they choose, with the support of the instructor, working with a local organization. Includes class lectures and discussions of readings.

MERR 93 - Field Study (5)

Provides for individual programs of study sponsored by the college and performed off campus. Up to three such courses may be taken for credit in any one quarter. Approval of student's adviser and provost required.

MERR 93F - Field Study (2)

Provides for individual program of study sponsored by the college and performed off campus. Approval of instructor required.

MERR 93G - Field Study (3)

Provides for individual programs of study sponsored by the college and performed off campus. Approval of instructor required.

MERR 98F - Independent Study (2)

Independent Study

MERR 99 - Tutorial (5)

Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

MERR 99F - Tutorial (2)

Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

Upper-Division

MERR 120 - Personal Empowerment (5)

Intensive course on individual goal-oriented behavior, commonly called problem solving. Focus on purpose, goals, meaning, emotions, languages, model-building, reality, thinking, logic, creativity, the steps of problem solving, common blocks, and techniques of unblocking. Meet with instructor prior to advance enrollment; priority given to upper-level students.

MERR 180 - Research Skills for College and Beyond (2)

Focuses on exploration/development of skills for planning, study habits, research, networking, and communication skills for college, graduate and professional school, and beyond. Primary focus is on writing, public speaking, and academic and professional research.

MERR 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar by an upper-division student under faculty supervision. (See MERR 42.) Students submit petition to sponsoring agency, supported by faculty member willing to supervise.

MERR 193 - Field Study (5)

Provides for individual programs of study sponsored by the college and performed off campus. Up to three such courses may be taken for credit in one quarter. Approval of student's adviser and provost required.

MERR 193F - Field Study (2)

Provides for individual programs of study sponsored by the college and performed off campus. Up to three such courses may be taken for credit in one quarter. Approval of student's adviser and provost required.

MERR 193G - Field Study (3)

Provides for individual programs of study sponsored by the college and performed off campus. Up to three such courses may be taken for credit in one quarter. Approval of student's adviser and provost required.

MERR 194 - Group Tutorial (5)

A program of independent study arranged between a group of students and a faculty member.

MERR 195 - Senior Research Project (5)

Students submit petition to sponsoring agency.

MERR 198 - Independent Field Study (5)

Provides for college-sponsored individual study programs off campus, for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. This may be a multiple-term course extending over two or three quarters; in this case the grade and evaluation submitted for the final quarter apply to all previous quarters. Petitions may be obtained at the Merrill College Office. Approval of student's adviser, certification of adequate preparation, and approval by the Merrill Provost required.

MERR 198F - Independent Study (2)

Independent Study

MERR 199 - Tutorial (5)

Various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

METX - MICROBIOLOGY AND ENVIRONMENTAL TOXICOLOGY

Lower-Division

METX 41 - Physiology of Disease (5)

Introduces students to physiological processes governing cells and organs and covers mechanisms of physiological regulation and how their malfunction leads to disease. This course is designed to directly contribute to achieving the program learning outcomes for the B.S. in Global and Community Health and is specifically required for the Public and Community Health concentration. In addition, this course provides the foundation for a number of upper-division classes related to health including: BIOL130; METX 115; METX 135/METX 135L; METX 138; BIOL 117; METX 102. Prerequisites: METX 41 has no prerequisite but taking BIOL 20A is strongly recommended.

METX 80E - Aquatic Toxicology (5)

An introduction to the sources, cycling, and impacts of toxicants in aquatic systems, including acid rain, ground water, fresh water rivers and lakes, estuaries, and the ocean. Emphasis is on the properties of toxic chemicals that influence their biogeochemical cycles and factors that influence their toxicity to aquatic organisms and humans.

Upper-Division

METX 100 - Introduction to Microbiology (5)

Introduces the biology of microorganisms (bacteria, archaea, viruses, fungi, and unicellular eukaryotes), with an emphasis on bacteria. Topics include microbial cell structure and function, physiology, metabolism, genetics, and diversity. Also considers the role of microbes in human health, the environment, biotechnology, and food production. Students cannot receive credit for both this course and METX 119.

Prerequisite: Prerequisite(s): BIOL 20A.

METX 100L - Microbiology Laboratory (5)

An introduction to the principles and practices of laboratory microbiology, with a substantial presentation of optical microscopy. (Formerly METX 119L.)

Prerequisite: Prerequisites: Satisfaction of Entry Level Writing and Composition requirements; and one course from the following: BIOL 20L, or BIOL 101L, or BIOL 102L; and previous or concurrent enrollment in METX 100 or METX 119. Enrollment is restricted to declared Microbiology majors; Other majors may enroll during second pass enrollment, or by permission of the instructor. Students cannot enroll in METX 119L after receiving credit with a 'C' or better in BIOL 100L, BIOL 103L, BIOL 105L, BIOL 106L, BIOL 108L, BIOL 109L, BIOL 115L, BIOL 120L, BIOL 121L, BIOL 129L, and BIOL 186L.

METX 101 - Sources and Fates of Pollutants (5)

Presents in-depth important principles of environmental toxicology related to the introduction, transport, and fate of toxicants in aquatic and terrestrial environments, including environmental chemistry and biogeochemical cycles as well as exposure pathways and uptake by organisms. Additional emphasis placed on susceptibility and effects of toxicants across organ systems, toxicokinetic and biomarkers of exposure, and effects at the ecosystem level. Students cannot receive credit for this course and METX 201.

METX 102 - Cell and Molecular Toxicology (5)

Emphases of biochemical, cellular, and organ system basis of intoxication, including dose-response relationships, biotransformation of toxicants, biochemical mechanisms underlying toxicity, factors influencing toxic action, and biomarkers of exposure. Emphasizes effects of various classes of toxins, including heavy metals and persistent synthetic organics, with a focus on susceptible biochemical/cellular processes of the central nervous, immune, hepatic, and renal target organ systems. Designed for advanced undergraduates. Students cannot receive credit for this course and METX 202. (Formerly Cellular and Organismal Toxicology.)

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B or equivalent; BIOL 100 and BIOC 110 recommended. Enrollment restricted to juniors and seniors.

METX 108 - Introduction to Research Methods in Global and Community Health (5)

The health of populations is shaped by an intricate web of political, environmental, economic, and social determinants. To address complex challenges in global and community health, it is crucial to have a multifaceted research strategy that transcends borders and disciplines. This course covers the critical steps of global and community health research, from formulating research questions and selecting study designs to planning implementation and data collection. Students develop a research question from a global and community health topic that they are eager to explore. This course is open to upper-division undergraduate and graduate students and has no prerequisites. Lower-division undergraduate students may enroll with permission of the instructor.

METX 112 - Immunity and Infection (5)

Introduces students to the field of immunology, emphasizing innate and adaptive immune responses to microbes. Covers molecular mechanisms used by microbes to evade or manipulate immune defenses. Provides conceptual understanding of the experimental methods used in the fields of microbial pathogenesis and immunology.

Prerequisite: Prerequisite(s): METX 100.

METX 115 - Environmental Health Science (5)

Addresses challenges related to environmental health, their impact on the health of biological structures, and humans as active elements in the process of environmental degradation, and as passive elements as well. Students discuss events as case studies of environmental health that contributed to environmental protection, and disease control and prevention. Course involves collaborative endeavor in which students develop a group assignment throughout the 10 weeks of the course that is evaluated at the end of the course.

Prerequisite: Prerequisite(s): BIOL 20A or ENVS 23 or BIOL 89.

METX 119 - Microbiology (5)

Cell and molecular biology of bacteria and their viruses, including applications in medicine, public health, agriculture, and biotechnology. Students cannot receive credit for both this course and METX 100.

Prerequisite: Prerequisite(s): BIOC 100A or BIOL 101 or BIOL 100 or CHEM 103.

METX 125 - Practicing Safe Science (2)

Introduces research safety principles and practices. Instructors and guest experts discuss research hazards and control measures. Students explore the safe use of research methods and materials via hands-on and outside exercises. Issues include compliance with hazardous waste and other environmental safety regulations.

METX 133 - Medical Microbiology (5)

Covers the biology, experimental characterization, and diseases caused by important microbial pathogens, including bacteria, viruses, fungi, and parasites. Introduces basic microbiological characteristics, and then discusses diseases by organ systems, including pathogenesis, immunity, host response, transmission, treatments, and prevention. Course includes a hands-on laboratory component.

Prerequisite: Prerequisite(s): BIOL 20A.

METX 135 - Functional Anatomy (5)

A rigorous systems-based course in anatomy. Lectures provide an overview of functional anatomy at all levels from the systems to the tissues. Provides a mechanistic understanding of the structures of the body as a foundation for human-health oriented studies.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B. Concurrent enrollment in METX 135L is required.

METX 135C - Cadaver Dissection Laboratory (2)

Dissection of a human cadaver under the direction of an anatomy instructor.

Prerequisite: Prerequisite(s): METX 135 and METX 135L, or ANTH 102A.

METX 135L - Functional Anatomy Lab (3)

Complements lecture course 135. Emphasizes nomenclature and recognition; includes the embryology and histology of bones, muscles, and internal organs, and the interactions between the systems of the body.

Prerequisite: Prerequisite(s): BIOL 20A and BIOE 20B. Concurrent enrollment in METX 135 is required.

METX 140 - Molecular Biology and Microbial Genetics (5)

Introduces students to the field of molecular biology and microbial genetics. Covers the following topics: molecular mechanisms of DNA replication, transcription, translation, regulatory systems controlling replication, transcription, and translation; basic genetic principles with an emphasis on bacterial genetics; molecular biology and microbial genetics approaches used to understand the molecular mechanisms of interaction of microorganisms with their surroundings and other organisms; and experimental methods employing molecular biology and molecular genetics and biotechnology applications which have arisen from discoveries of bacterial mechanisms.

Prerequisite: Prerequisite(s): BIOL 100 or BIOC 100A.

METX 141 - Advanced Bacteriology Laboratory (5)

Involves students in a research project that combines advanced molecular methods with classical microbiological ones to investigate a topic of interest in the field of microbiology. Students learn to formulate hypotheses, identify and follow protocols, and interpret results. This course requires familiarity with basic microbiological concepts and techniques.

METX 150 - Applied and Environmental Microbiology (5)

Surveys both fundamental and applied topics relevant to understanding how microbes interact with their environments. The goal of the course is to gain a molecular, biological, and ecological understanding of microbial processes and methods relating to microbe-environment interactions. Although not required, completion of METX 100 is recommended to ensure success in this course.

Prerequisite: Prerequisite(s): BIOL 20A.

METX 195 - Senior Thesis (5)

An individually supervised course, with emphasis on independent research culminating in a senior thesis.

METX 195F - Senior Thesis (2)

An individually supervised course with emphasis on independent research culminating in a senior thesis.

METX 198 - Independent Study (5)

Provides for individual programs of study (a) by means other than the usual supervision in person or (b) when the student is doing all or most of the coursework off campus. With permission of the department, two or three courses may be taken concurrently, or the course repeated for credit.

METX 198F - Independent Study (2)

Provides for individual programs of study (a) by means other than the usual supervision in person or (b) when the student is doing all or most of the coursework off campus. With permission of the department, two or three courses may be taken concurrently, or the course repeated for credit.

METX 199 - Tutorial (5)

Reading, discussion, written reports, and laboratory research on selected topics.

METX 199F - Tutorial (2)

Reading, discussion, written reports, and laboratory research on selected topics.

Graduate

METX 200 - Interdisciplinary Approaches in Environmental Toxicology (5)

Introduction to interdisciplinary, case-based approaches to problem-solving. Demonstrates how important, current problems in environmental and human health have been addressed and solved. Presents assigned problems that integrate the different organization levels (environmental, molecular/cellular, organismal/public health) inherent to environmental and human health. Students work in collaborative teams to analyze each problem and create a proposal for a research plan/solution. This course must be taken for a letter grade.

Prerequisite: Enrollment is restricted to graduate students. Advanced undergraduates may enroll by permission of the instructor.

METX 200B - Graduate Research Project Development (5)

Presents a framework for scientific writing related to developing a thesis research proposal in a topical area of microbiology and/or environmental toxicology.

METX 201 - Sources and Fates of Pollutants (5)

Presents in-depth important principles of environmental toxicology related to the introduction, transport, and fate of toxicants in aquatic and terrestrial environments including environmental chemistry and biogeochemical cycles as well as exposure pathways and uptake by organisms. Additional emphasis will be placed on the susceptibility and effects of toxicants across organ systems, toxicokinetics and biomarkers of exposure, and effects at the ecosystem level. Students cannot receive credit for this course and METX 101.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduate science majors may enroll with permission of instructor.

METX 202 - Cell and Molecular Toxicology (5)

Emphasizes biochemical, cellular, and organ system basis of intoxication, including dose-response relationships, biotransformation of toxicants, biochemical mechanisms underlying toxicity, factors influencing toxic action, and biomarkers of exposure. Emphasizes effects of various classes of toxins, including heavy metals and persistent synthetic organics, with a focus on susceptible biochemical/cellular processes of the central nervous, immune, hepatic, and renal target organ systems. Students cannot receive credit for this course and METX 102 or BIOL 122.

Prerequisite: Enrollment is restricted to graduate students.

METX 203 - Cellular and Molecular Toxicology (5)

Presents in-depth cellular and molecular principles of environmental toxicology. These include modes of action and cellular and molecular targets of toxicants, as well as mechanisms of cellular and molecular responses to toxicants and their detoxification. State-of-the-art biological methodologies and approaches to identify and study cellular targets of toxicants. Designed to provide students with a broad and deep understanding of the biological aspects of toxicology at both cellular and molecular levels, and the skills to approach emerging challenges in the field.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with instructor's permission.

METX 205 - Scientific Grant Writing (5)

Provides fundamental training of graduate students in the scientific method; experimental design; ethics in science; grant proposal and scientific writing; and data presentation and scientific speaking. Students are evaluated on class participation, performance, and a written NIH/NSF-style research proposal. (Formerly Scientific Skills, Ethics, and Writing.)

Prerequisite: Enrollment restricted to graduate students. Advanced undergraduates may enroll with permission of the instructor.

METX 206A - Advanced Microbiology (5)

Focuses on aspects of bacterial molecular biology. Covers four main areas: (1) metabolism-catabolism, anabolism, building-block precursors; (2) transcription/signal transduction; (3) replication/plasmid biology/division; (4) translation/protein processing/secretion/cell structure. Strong focus on experimental techniques and approaches used in molecular biology, and on model bacteria, such as *Escherichia coli* and *Bacillus subtilis*.

Prerequisite: Enrollment is restricted to graduate students. Advanced undergraduates may enroll with permission of instructor.

METX 210 - Molecular and Cellular Basis of Bacterial Pathogenesis (5)

Focuses on the molecular basis of bacterial pathogenesis with specific emphasis on gene expression, regulation, and ecology and evolution.

Prerequisite: Enrollment is restricted to graduate students.Advanced undergraduates with extensive background in microbiology and biology may enroll with permission of instructor.

METX 215 - Antibiotics: Actions and Resistance (3)

Critical review of scientific literature covering genetic and physiological mechanisms conferring resistance to antibiotics and their spread in the population. Format based on structured discussion of selected topics and original research proposal.

Prerequisite: Prerequisite(s): METX 206A or METX 119, or by permission of the instructor. Enrollment is restricted to graduate students.

METX 238 - Pathogenesis: Molecular Mechanisms of Disease (5)

Provides an overview of the mammalian innate immune response and the role of inflammation in disease. Also, presents how both environmental stressors and microbial pathogens impact inflammation.

Prerequisite: Enrollment is restricted to graduate students.

METX 240 - Molecular Biology of Prokaryotes (5)

Focuses on several aspects of prokaryotic molecular biology. Covers transcriptional regulation, translational regulation, DNA replication and segregation, protein secretion, transport of small molecules, control of metabolism, stress response, bacterial differentiation, signal transduction, biofilm formation, and motility. Strong focus on experimental techniques and approaches used in prokaryotic molecular biology. Focus on model bacteria such as *Escherichia coli* and *Bacillus subtilis.*Students cannot receive credit for this course and METX 140.

METX 245A - Scientific Communication in Microbiology and Environmental Toxicology A (5)

Introduces multiple forms of scientific presentation and communication to graduate students. Students learn to craft and deliver multiple types of written and visual communications, including formal and informal modes, on a topic developed as part of the class.

Prerequisite: Prerequisite(s): METX 200. Enrollment is restricted to graduate students.

METX 245B - Scientific Communication in Microbiology and Environmental Toxicology B (5)

Continuation of METX 245A. Students develop and refine a capstone in-depth report in a written form and as an oral presentation.

Prerequisite: Prerequisite(s): METX 245A. Enrollment is restricted to graduate students.

METX 250 - Environmental Microbiology (5)

How microbes interact with their environments. Topics include anaerobic metabolism; biotransformation of toxic metals and organic pollutants; geomicrobiology; life in extreme environments; water quality. Advanced undergraduates with extensive background in microbiology and biology may enroll with permission of instructor.

Prerequisite: Enrollment is restricted to graduate students.

METX 281A - Seminar in Global Health (2)

Required for all members of the Lin Lab and is open to undergraduate (by permission) and graduate students. Course meets once a week for a research seminar, journal club, and/or discussion. Each week, a member of the Lin Lab will present their current research project and other lab members will provide feedback and suggestions. Students may opt to present a journal club, a presentation on a published scientific article, in lieu of a presentation on their research project. (Formerly offered as Topics in Environmental Toxicology.)

Prerequisite: Enrollment is restricted to graduate students; qualified upper-division science majors may enroll with instructor's permission.

METX 281C - Topics in Environmental Microbiology (2)

Seminar and discussion focusing on mechanism of microbial transformation of metals. Participants present results from their research projects in a seminar format. Relevant journal articles presented and discussed.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with instructor's permission.

METX 281J - Mechanisms of Virulence and Resistance to Infectious Disease (2)

Research seminar focusing on the mechanisms underlying host resistance or susceptibility to infectious diseases, and virulence strategies utilized by bacterial pathogens. Participants are required to present results from their own research and relevant journal articles.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduate students may enroll with instructor’s permission.

METX 281M - Topics in Molecular Toxicology (2)

Seminar and discussion on the mechanisms of toxicity in DNA alkylating agents. Participants present results from their research, and relevant journal articles are discussed.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates may enroll with instructor's permission.

METX 281O - Topics in Bacterial Pathogenesis (2)

Intensive seminar focusing on mechanisms of bacterial pathogenesis of the ulcer-causing bacterium *Helicobacter pylori.* Participants are required to present results from their own research and relevant journal articles.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

METX 281P - Origins and Applications of Human Gut Microbial Symbiosis (2)

Research seminar focusing on how beneficial and harmful bacterial species living in the human intestine compete with one another for nutrients in food, and how our immune systems influence the outcomes of these competitions. Emphasis is placed on the evolution of relationships between organisms. Discussion will include genetic, biochemical, bioinformatic, and immunological methods for advancing knowledge about the impacts of microbes on host health. Participants are required to present results from their own research, analyze current literature, and develop future aims for their studies. All lab members of the Patnode Lab are required to take this course.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduate students may enroll with instructor’s permission.

METX 281R - Topics in Genome-Environment Interactions (2)

Intensive research seminar focusing on the effects of exposure to environmental agents and multigenerational epigenetic inheritance of disease. Participants are required to present results from their own research and relevant journal articles.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduate students may enroll with instructor’s permission.

METX 281S - Cellular and Organismal Responses to Toxicants (2)

Intensive research seminar on the concepts, theory, and techniques in deriving physiologically based pharmacokinetic models of toxin exposure, metabolism, and efficacy of therapeutic treatment in mammalian models of human metal toxicity.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with permission of instructor.

METX 281V - Topics in Bacterial Pathogenesis and Innate Immunity (2)

Focuses on the interplay between the human gut bacterial pathogen Yersinia pseudotuberculosis and the innate immune system of the host. Participants are required to present the goals, results, and conclusions from their own research. Participation in the general discussion during others' presentations is also required.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduates performing research under the supervision of the instructor may enroll with instructor's permission.

METX 281Y - Biofilms: Processes and Regulation (2)

Intensive seminar series focusing on the most current work on genes and the processes that regulate biofilm development dynamics as well as on the recent developments on visualization of biofilms. Presentation and discussion based.

Prerequisite: Enrollment is restricted to graduate students. Qualified undergraduate students may enroll with instructor's permission.

METX 282 - Current Approaches to Molecular Pathogenesis (2)

Graduate level seminar focusing on the mechanisms by which bacterial pathogens cause disease. Specific topics include basic concepts of virulence and virulence factors, virulence factor regulation, toxins, and interactions of pathogens with mammalian cells and organs. Discussions focus on several key pathogens, including *Helicobacter pylori, Vibrio cholerae, Salmonella typhimuruim,* and *Listeria monocytogenes.*

METX 290 - Proseminar (5)

Special topics offered from time to time by faculty, visiting professors, or staff members.

Prerequisite: Enrollment is restricted to graduate students; qualified undergraduates may enroll with instructor's permission.

METX 290A - Epidemiology and Risk Assessment (5)

Approaches different techniques of biological monitoring and the exposure and effect of biomarkers related to occupational and environmental exposure to chemicals. Available methods for risk assessment and identification of protective exposure limits also considered.

METX 292 - Introductory Graduate Seminar (0)

Weekly seminars by academic and research faculty on their areas of special interest. Students write weekly abstracts on articles covered by the seminars. This course can be taken for Satisfactory/Unsatisfactory credit only.

Prerequisite: Enrollment is restricted to graduate students.

METX 297A - Independent Study (5)

Independent study for graduate students who have not yet settled on a research area for the thesis. Students submit petition to sponsoring agency.

METX 297B - Independent Study (10)

Independent study for graduate students who have not yet settled on a research area for the thesis. Students submit petition to sponsoring agency.

METX 297C - Independent Study (15)

Independent study for graduate students who have not yet settled on a research area for the thesis. Students submit petition to sponsoring agency.

METX 299A - Thesis Research (5)

Students submit petition to sponsoring agency.

METX 299B - Thesis Research (10)

Students submit petition to sponsoring agency.

METX 299C - Thesis Research (15)

Students submit petition to sponsoring agency.

METX 299Z - Thesis Research (2)

Students submit petition to sponsoring agency.

MSE-MATERIALS SCIENCE AND ENGINEERING

Lower-Division

Upper-Division

Graduate

MSE 200 - Introduction to Materials Science and Engineering (2)

Introduction to graduate studies in materials science and engineering. Provides overview of the areas of specialization of the academic program as well as research opportunities and facilities at UC Santa Cruz. Covers fundamental methods of the discipline. Summarizes areas of employment of graduates in materials science and engineering.

MSE 280 - Colloquium in Materials Science and Engineering (2)

Talks about current research topics in materials science and engineering presented by faculty members, visiting scientists, and graduate students. Students who present a seminar receive a letter grade; other students who attend receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable.

MSE 290 - Research Rotation (5)

Two quarters of rotations with research groups for first year MSE Ph.D. students. Aim is to expose incoming Ph.D. students to research groups and their projects so they can make an informed decision on which research group to join. Each rotation will require a short (~5 page) report on the research of said group. The two rotations may be taken from the same instructor. Enrollment is restricted to MSE graduate students.

MUSC - MUSIC

Lower-Division

MUSC 1C - University Concert Choir (2)

A study of selected works for mixed chorus, with emphasis on masterworks for chorus and orchestra, culminating in one or more public concerts. Familiarity with basic music notation recommended. Admission by audition with conductor prior to first class meeting.

MUSC 2 - University Orchestra (2)

A study of selected works for orchestra, culminating in one or more public concerts. Admission by audition with conductor prior to first class meeting.

MUSC 3 - Large Jazz Ensemble (2)

Instruction in performance in large jazz ensembles with written arrangements. Prepares a specific repertory for public performance. Admission by audition with conductor prior to first class meeting.

MUSC 5A - Beginning Sundanese Gamelan (2)

Instruction in practice and performance of gamelan music from Java or Sunda. Preparation of several works for public presentation. (Formerly West Javanese Gamelan Ensemble: Beginning.)

MUSC 5B - Intermediate Sundanese Gamelan (2)

Instruction in practice and performance of gamelan music from Java or Sunda. Preparation of several works for public presentation. Attend first class meeting. (Formerly West Javanese Gamelan Ensemble: Intermediate.)

MUSC 5C - Advanced Sundanese Gamelan (2)

Instruction in practice and performance of gamelan music from Java or Sunda. Preparation of several works for public presentation. Attend first class meeting. (Formerly West Javanese Gamelan Ensemble: Advanced.)

MUSC 6 - Classical Guitar Ensemble (2)

Study of selected repertoire and instruction in performance for classical guitar ensemble. Ensembles for guitar and other instruments will prepare works for public performances both on and off campus. All students enrolled in individual guitar lessons are expected to enroll. Students of other instruments or voice may also audition. Some additional rehearsal time, individually and with the group, is required. Admission by audition with instructor prior to first class meeting.

MUSC 8A - Beginning Balinese Gamelan (2)

Instruction in Balinese gamelan. Utilizes pitched percussion instruments to learn highly ornate and complex pieces through rote learning. Focuses on traditional repertoire and basic gamelan techniques for public performance. Students are not

required to read music, but some music and/or performance experience is recommended.

MUSC 8B - Advanced Balinese Gamelan (2)

Instruction in Balinese gamelan. Utilizes pitched percussion instruments to learn highly ornate and complex pieces through rote learning; students are not required to read music. Focuses on advanced traditional and contemporary repertoire for public performance.

Prerequisite: Prerequisite(s): MUSC 8A.

MUSC 9 - Wind Ensemble (2)

A study of selected advanced-level works for wind ensemble, culminating in one or more public concerts. Admission by audition with conductor prior to first class meeting.

MUSC 10 - Central Asian Ensemble (2)

Performing ensemble focusing on the vernacular and art musics of the Eurasian continent, with emphasis on Central Asia. (Formerly Eurasian Ensemble.)

MUSC 11A - Introduction to Western Classical Music (5)

A study of significant works of classical music from Gregorian chant to the present day in relation to the historical periods they represent. Emphasizes the listening experience and awareness of musical style and structure. Illustrated lectures and directed listening.

MUSC 11B - Introduction to Jazz (5)

Designed to provide students with thorough and comprehensive background in history and roots of jazz as a musical style from its African roots to the present. Essential jazz styles and traditions are discussed through lectures, required listening, readings, lecture demonstrations, and film presentations.

MUSC 11C - Popular Music in the United States (5)

Introduces music and cultural studies, surveys popular music in the United States from 18th-century minstrelsy to 21st-century social media consumer-producers. Emphasizes narratives of race, complicated by ethnicity, gender, and class, informing ways of valuing music, and its capacity for social representation. (Formerly MUSC 80P.)

MUSC 11D - Introduction to World Music (5)

Covers topics reflecting distinctive features of selected world music cultures. Introduces content, scope, and method of ethnomusicology. Focuses on understanding the musical styles, performance practices, and cultural functions of these musical traditions. Incorporates live class performance of selected music.

MUSC 11E - Global Popular Music (5)

This cultural study of global popular musics explores musical sounds, practices, and discourse via an examination of the development of the category world music. It explores how music and mass media engage broader issues around globalization, ethnic, national, and transnational identities; popular resistance; censorship; and cultural hegemony. Formerly MUSC 81C.)

MUSC 12 - Mariachi Ensemble (2)

Focuses on the stylistic practice of mariachi music of Mexico. Centralizes efforts learning dance music as the son jalisciense, as well as popular singing genres that include the huapango, canción ranchera, corridos, and boleros. Students must have previous experience with music performance and applicable instruments.

MUSC 12B - Mexican Folklorico Music and Dance (2)

Instruction in the aesthetic, cultural, and historical dimensions of Mexican Folklorico dance and music. Brings together a dance ensemble and a music ensemble. Enrollment is by permission of the instructor.

MUSC 14 - Beginning Western Theory and Musicianship (5)

Students learn basic elements of musical language: rhythms, meters, scales, intervals, and chords. All of these elements are studied both singly and in their interrelationships within musical compositions. The study of structural elements of music incorporates both theoretical and practical aspects of learning, including written, keyboard, singing, and aural exercises. Prerequisite(s): placement via the Theory Placement Exam. Enrollment is by permission of the instructor. (Formerly Beginning Theory Musicianship II.)

MUSC 15 - Preparatory Musicianship (5)

Basic studies in musicianship related to Western European notation and literature. Students with prior training in music notation develop literacy in basic tonal melody and harmony. Skills include dictation and sight-reading. Simple composition and analysis exercises accompany the training. Enrollment by placement examination and permission of instructor.

MUSC 20A - Global Music Theory and Musicianship (5)

Fundamentals of sound production notation in music. Emphasis on the development of the ear and rhythmic skills. Course involves significant participation through in-class performance. (Formerly MUSC 13, Beginning Theory & Musicianship I.)

MUSC 20B - Theoretical Foundations of Music (5)

Explores the physics and socio-historical foundations of music so that students are effectively equipped to undertake further culturally informed study in music theory. No prior formal music education is required for this class, though students should have some experience singing or playing an instrument. (Formerly MUSC 16.)

MUSC 20C - Beginning Jazz Theory (5)

Studies in the modes, scales, chord alternations and extensions, chord voicings, chord progressions, and forms that underlie jazz improvisation, composition, and arranging in a variety of styles. Enrollment is by instructor consent. Audition

required. Students should contact instructor for audition/interview information. (Formerly MUSC 75.)

MUSC 30A - Theory, Literature, and Musicianship I (5)

Integrated musicianship, theory, and analysis. Species counterpoint and fundamentals of tonal harmony. Analysis of literature from the Middle Ages and Renaissance. Prerequisite(s): Student must receive an "A" or "A+" in MUSC 14, or test in via the Theory Placement Exam. Concurrent enrollment in MUSC 31 is required. Contact the instructor to receive permission number if you have met the prerequisite conditions. (Formerly Theory, Literature, and Musicianship.)

MUSC 30B - Theory, Literature, and Musicianship II (5)

Integrated musicianship, theory, and analysis. Diatonic harmony and fundamentals of chromatic harmony and musical form, with an emphasis on early 18th-century styles. Prerequisite: MUSC 30A. Concurrent enrollment in MUSC 31 is required during all three MUSC 30-series sections (MUSC 30A, MUSC 30B, and MUSC 30C). (Formerly Theory, Literature, and Musicianship.)

Prerequisite: Prerequisite(s): MUSC 30A. Concurrent enrollment in MUSC 31 is required.

MUSC 30C - Theory, Literature, and Musicianship III (5)

Integrated musicianship, theory, and analysis. Chromatic harmony and large forms, with emphasis on late 18th- and early 19th-century styles. Prerequisite: MUSC 30B. Concurrent enrollment in MUSC 31 is required during all three MUSC 30-series sections (MUSC 30A, MUSC 30B, and MUSC 30C). (Formerly Theory, Literature, and Musicianship.)

Prerequisite: Prerequisite: MUSC 30B. Concurrent enrollment in MUSC 31 is required.

MUSC 31 - Ear Training (2)

Weekly schedule will be coordinated with MUSC 30A, MUSC 30B, or MUSC 30C lecture materials. Emphasizes recognition of triad and dominant-seventh inversions, dictation of diatonic melodies, and aural analysis of simple diatonic interval and chord progressions. Most of the ear-training materials consist of homophonic and polyphonic examples from music literature performed live in class. Concurrent enrollment in MUSC 30A, MUSC 30B, or MUSC 30C is required.

Prerequisite: Concurrent enrollment in MUSC 30A, MUSC 30B, or MUSC 30C is required.

MUSC 51 - Vocal Repertoire Class (2)

The study and performance of vocal repertoire from 1400 to the present, including solo song, oratorio, opera, ensemble music. Emphasis is given to the development of effective performance skills, culminating in public performance. Attend first class meeting; concurrent enrollment in individual voice lessons with instructor of this course is required.

MUSC 52 - Guitar Repertoire and Performance (2)

Designed to give guitar students who are pursuing the music major and minor, a weekly performance opportunity. Student performers receive feedback and constructive criticism from the instructors and from their peers. The instructors also offer insight and tips on choosing repertoire, performance anxiety and solutions, and historical and cultural context of the composers and music performed in the class. Enrollment by permission of instructor.

MUSC 53A - Beginning Ghanaian Ensemble (2)

Students learn to perform music that originates primarily from Ghana, West Africa as well as be introduced to the variety of different musical styles present in Ghana through guided viewing of multimedia and discussion of culture as a living, evolving entity. Uses a variety of instruments including drums, bells, rattles, clappers, and hands. Classes consist primarily of hands-on instruction and singing. In-class learning supplemented with audio and video clips and articles posted on Canvas. Repertoire each quarter varies at the discretion of the instructor.

MUSC 54 - North Indian Music Workshop (2)

A course covering the music of North India taught using the oral traditions of Indian music. For beginners as well as more experienced students, this course is well suited for instrumentalists and vocalists.

MUSC 55 - Rhythms of North India (2)

Introduces students to the richness of North Indian rhythms. Includes hands-on exploration of the language of rhythm that is specific to learning the tabla.

MUSC 55A - Intermediate Rhythms of North India (2)

Covers learning to vocalize and play tabla bols. Also works on perfecting the technique of playing the various drum sounds on the tabla, pakhavaj or the dholak. Fundamental rhythmic exercises are focused on learning and improving playing technique and concentrate on compositions, such as a theka, theka prakar, kaida, rela, and tihai. Much of class time is spent on"hands-on" performance interspersed with short instructional bursts to improve each student's level of playability. Lab hours allotted as per student's practice needs.

Prerequisite: Prerequisite(s): MUSC 55, or by permission of instructor.

MUSC 56 - Collaborative Music-Making for Beginners (2)

An active, hands-on introduction to music where no previous musical experience is needed. Using pitched and non-pitched percussion, students are placed into small groups where they create and perform new pieces. Within this framework, students learn about scales, modes, rhythmic structures and form.

MUSC 57 - Survey of Jazz Guitar Styles (2)

Provides a selective historical and technical survey of jazz guitar. In addition to short lectures that provide historical

context, students will also learn the basic building blocks of accompaniment and soloing in a variety of styles. Enrollment by permission of instructor.

MUSC 58 - Songwriting Craft and Practice (5)

Explores the craft of songwriting through listening, analysis, performance, and songwriting assignments. Students are exposed to a variety of writing styles from diverse musical backgrounds such as pop, rock, folk, jazz, avant-garde, classical, and world music. Students gain the ability to analyze a song's form, its textual rhythmic scheme, mood, and performative aspects. Students also compose, record, and perform song samples demonstrating their understanding and creative approach to the concepts discussed in class.

MUSC 59 - Introductory Keyboard Skills (2)

Introductory instruction in piano technique, staff notation, and music theory. Includes group and individual performance experience. A minimum of six hours per week individual practice required. Appropriate for students with little/no piano experience. Students are billed a materials fee of $100. Enrollment is by permission of the instructor. Students audition to determine their skill level.

MUSC 60 - Fundamental Keyboard Skills (2)

Elementary instruction in piano technique, including group and individual performance experience. A minimum of four hours per week of individual practice is required. Curriculum is coordinated with keyboard requirements of the MUSC 30 series. Concurrent enrollment in a theory course is strongly recommended. Students are billed a course fee of $150 upon enrollment, but the Music Department provides reimbursement for course fee in the form of a scholarship. Enrollment is by instructor permission. Contact instructor for enrollment instructions.

MUSC 61 - Individual Lessons: Half Hour (2)

One-half hour of individual instrumental or vocal instruction. Repertory, technique, and performance practice. A minimum of six hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed a course fee of $350. Admission by audition with the instructor prior to first class meeting. Enrollment priority given to music majors and minors.

MUSC 62 - Individual Lessons: One Hour (3)

One hour of individual instrumental or vocal instruction. Repertory, technique, and performance practice. A minimum of nine hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed a course fee of $650. Admission by audition with the instructor prior to first class meeting. Enrollment priority given to music majors and minors.

MUSC 63 - Group Instrumental and Vocal Lessons (2)

Elementary group instruction in instrumental (excluding piano) or vocal techniques, including group and individual performance experience. A minimum of six hours per week of individual practice is required. Students are billed a course fee of $100. Admission by audition with the instructor prior to first class meeting.

MUSC 70 - Hip Hop's Global Inclusiveness & African Roots (2)

Hip Hop is an umbrella term for art, music, dance, literature, identity, style and politics. Course examines the movements and politics that inspired the birth of Hip Hop as a form of art and music, the art and aesthetics of Hip Hop and the musical styles that made Hip Hop music possible. The ways it speaks to youth and speaks about oppression, violence, identity, culture, and power are also considered, and Hip Hop as a form of cultural politics and activism toward social justice is explored. Students create art or music toward Hip Hop-inspired social justice.

MUSC 71 - Laptop Music (5)

Basic digital audio editing and mixing; related concepts in the physics of sound, psychoacoustics, and the digital representation and computer control of audio. Musical notation of musical pulse, meter, and rhythm, and sonic realization via MIDI (musical instrument digital interface). Using their own computers, students complete projects involving recording and spectral analysis, creative editing and mixing of existing recordings, composition of polyphonic drum rhythms, and constructing a collaborative sonic environment. (Formerly MUSC 80Z.)

MUSC 72 - Fundamentals of Music Technology (2)

A practical introduction to the tools and techniques used for live sound reinforcement and studio recording. Hands-on demonstrations of different microphones, speakers, hardware and software processors, analog and digital systems. (Formerly MUSC 81T.)

MUSC 73 - Music and the Ocean (3)

Studio course designed to explore relationships between music, sound, and the ocean. Students learn from a broad selection of music from oceanic and western cultures, deep listening techniques, and scientific research on underwater sound and apply it to their own music making. Students also explore connections between electronic music making and environmental sound research, including an introduction to listening techniques, recording, editing and analysis, composition and installation. Open to performers, composers, and theorists, as well as those from other disciplines, who want to expand their knowledge and practice in an experimental environment. Course ends with an online performance/presentation of new student work.

MUSC 74 - Beginning Spontaneous Composition and Improvisation (5)

Introduction to the basics of jazz improvisation, including theory, harmony, rhythm, improvisation techniques, aesthetics and idiomatic devices. Exposure to jazz repertoire through in-class performances of swing, blues, modal and Latin styles. Admission is by audition with instructor at first class meeting.

Enrollment is by instructor consent. Audition required; attend first class meeting for interview/audition. (Formerly Spontaneous Composition/Improvisation I.)

MUSC 77 - Raga Jazz: Application of Indian Music to Western Instruments (5)

North India has some of the most melodic, and rhythmically complex musical forms in the world. Jazz, rock, pop and classical musicians are increasingly studying Indian music to give themselves an edge in today's musical landscape. The purpose of this class is to provide all musicians with a theoretical and practical performance approach using the knowledge of the North Indian music system. The goal is to enhance the melodic and rhythmic sensibilities and to open new doors to boost creativity and give a unique slant to composing and playing music.

MUSC 78 - Popular and Raga-Based Songs of South Asia (2)

Songs have long been a tool used by humans to capture the essence of certain life’s experiences. They therefore have aided in forming a belief system within a community, passing along to future generations insights of a system of beliefs and codes of conduct. Course involves studying and learning to sing a select group of songs that have been a staple of the people of South Asia along with trying to understand the context and the sentiments behind their creation and cultural popularity.

MUSC 80A - Music of the Silk Road (5)

Exploration of the commonalities between music cultures found along ancient trade routes through Asia.

MUSC 80B - Music of Asia (5)

Introduces basic concepts of ethnomusicology; instructs students in the development of listening and analytical skills; and explores selected musical areas of East Asia, Southeast Asia, and South Asia.

MUSC 80C - History, Literature, and Technology of Electronic Music (5)

This survey of electronic music from previous centuries to the present studies the works and aesthetics of important composers, acoustics, musical perception, the effects of technological innovation on cultural evolution, and the development of synthesizers and computer music.

MUSC 80E - Race and American Music (5)

Survey of American music and its dynamic formation through cultural constructions of racial difference. Students hear music as contentious signals of identity, power, and transgressions, contextualized by wide-ranging testimony on racial difference, ethnicity, gender, sexuality, and musical practice.

MUSC 80F - Music in Latin American Culture: Regional Traditions (5)

In-depth study of select music cultures of Mexico, Central America, the Caribbean, Brazil, Chile, Argentina, Colombia, and Peru. Characteristic regional genres, ensembles, instruments, and music rituals. Case studies by ethnomusicologists with expertise in specific regional musics. Also Latin American Nueva Canción, women's musics, and overarching themes in Latin American music, as a whole.

MUSC 80G - American Musical Theater (5)

Surveys American musicals from operetta through rock musicals with a historical approach focusing on selected examples from the literature. Music reading or musical experience helpful but not required.

MUSC 80H - The Hollywood Musical (5)

Introductory study of the Hollywood music film, exploring the theory of film sound, the musical genre, and representative works from the 1920s to the present. Students expected to view about two films each week, read assigned section of texts, and contribute to class discussions.

MUSC 80I - Music of Modern Israel (5)

Historical, musicological, and anthropological study of the many (and often conflicting) worlds brought together by Israeli popular and art music: Jewish and Arabic traditions, Western ideals, and modern beats.

MUSC 80J - American Folk Music (5)

Surveys American folk music, both instrumental and vocal, by region and period. Approach is primarily through listening. Previous musical experience helpful, but not required.

MUSC 80K - Listening to the Environment (5)

Introduces the transformative potential of sound and listening in times of environmental change. Studies the role of sound in artistic creation and scientific research related to the environment. The course explores sound in a variety of thematic modules, teaches different ways of listening and provides a hands-on introduction to the fundamentals of recording, composing, editing, and analyzing scientific recordings. Weekly online discussion forums engage students in sound studies that include listening as activism; an introduction to environmental sound; and an interdisciplinary lecture series on scientists, sound artists, composers, theorists, and bio-acoustics. (Formerly Sound in Art, Science, and the Environment.)

MUSC 80L - Artificial Intelligence and Music (5)

An introduction to basic concepts in music and artificial intelligence, and to algorithmic composition (composition by a set of explicit instructions, often using the computer). Other topics include basic introductions to related concepts in linguistics, mathematics, neural nets, pattern matching, genetic algorithms, fuzzy logic, and interactive systems. Previous experience in one or more of these topics is helpful but not required. Students produce a project based on one of the models presented in class.

MUSC 80M - Film Music (5)

A survey of film music including a discussion of current trends and film composers. Techniques and styles of film music are explored through lectures, required listenings, readings, and viewing of relevant films. A musical background, including the ability to read music, is helpful but not necessary.

MUSC 80N - Music of the Grateful Dead (5)

In-depth exploration of the music of the Grateful Dead. Contextual study of the sociology and history of the late 1960s psychedelic movement supplies background for study of the music as the band evolved through time.

MUSC 80O - Music, Politics, and Protest (5)

Examination of relationship between music, politics, and protest in the U.S. in the 20th century, with focus on how music commented upon and reflected different eras in American cultural and political life.

MUSC 80Q - A Survey of African Music (5)

Traces the various stylistic musical areas throughout the African continent and explores the development of traditional African music from antiquity into the 20th century.

MUSC 80R - Music in the Digital Age (5)

A survey of how the Internet has influenced how music is made, transmitted, and consumed. Students discuss the history and ethics of file sharing and open source software, telematics and methods of music-making via the Internet, virtual communities, and social media. Students explore these topics through research and creative projects.

MUSC 80S - Women in Music (5)

Surveys the role of women as music-makers throughout history in a variety of cultural, social, and musical contexts. The course material consists of musical works (in written and aural form) and primary source writings by composers and performers as well as scholarly writing that places primary source material in context along with critical commentary. The major topics include women in Western Art Music history from the medieval through 20th century; women in popular music; women in electronic and computer music; and selections of women music-makers from around the world.

MUSC 80T - Mizrach: Jewish Music in the Lands of Islam (5)

A survey of the musical traditions of the Jews of North Africa and the Middle East. Based on the Maqamat, the Arabic musical modes, Jewish music flourished under Islamic rule, encompassing the fields of sacred, popular, and art music.

MUSC 80V - The Music of the Beatles (5)

The most significant group in the history of popular music, the Beatles spanned the gamut of styles from hard-edged R & B to sophisticated art-rock. This course explores their work in detail, in its own terms, and in the historical/cultural/technological contexts. MUSC 11C is recommended, but not required, as preparation.

MUSC 80W - Music Business (5)

Explores the many facets of the music industry: history, technology, economics, sociology, and legislation. Provides both a broad understanding of the industry and a pragmatic survey of available career paths. Students cannot receive credit for both this course and MUSC 180W in the same quarter.

MUSC 80X - Musics of South Asia (5)

A survey course in the musics of South Asia, covering classical, folk, and popular traditions. Consideration is given to the historical development of various musical and socio-musical genres, the social functions of the music throughout history, and instrumental and vocal forms with an emphasis on listening.

MUSC 80Y - Music, Anti-Semitism, and the Holocaust (5)

The musical legacy of the Holocaust: music and anti-Semitism in the 19th century; morality, collaboration, and composing in the Third Reich; music in the ghettos and concentration camps; impact on post-war music; second-generation composers' trauma; music in Holocaust films.

MUSC 81A - Survey of Rap and Hip Hop Music (5)

Involves examination, evaluation, performance, and discussion of rap music and its relationship to hop hop culture. Looks at three primary areas: historical periods of rap, aspects of performance practice, and lyrical content related to issues in contemporary society. Students engage in listening exercises, performances and presentations, and discuss the placement of rap in an academic setting. No prior musical knowledge is required.

MUSC 81D - Music and Empire (3)

Examines the roles music played in empire building across geographical regions and timeframes. Focuses both on how colonizers employed music to further the colonial project and how local communities used music and cultural practices to preserve their identities and resist colonization.

MUSC 81E - Music and Resilience in Latin America (5)

Introduces the role of music and musical practices in social movements, cultural changes, and activism in the 20th and 21st centuries in Latin America and Latina/o communities in the United States and other parts of the world where Latin American cultures are vibrant.Case studies covered in class demonstrate how actions occur within social, political, economical, and environmental spheres that impact the formation of identities, the negotiation around human rights, and the well-being of communities.

MUSC 81F - Music, Mass Media, and Marketing (5)

Examines the relationship between music, advertising, and consumer behavior. Music is an integral part of our lives–it accompanies us in many different places and we encounter it quite a bit throughout the day. It can stimulate a wide range of emotions and is a vital factor in the interactive process of consumer behavior. It receives significant consideration in

marketing research, which examines its influence on consumer reactions through advertisements. Course surveys examples dating from the rise of commercial radio through current commercials.

MUSC 81G - A Cultural History of the Guitar (5)

Surveys the history of the guitar--one of the world's most popular, adaptable, and ubiquitous instruments--by tracing its organological development in the late Renaissance and analyzing representative historical moments of widespread cultural relevance through a technological lens.

MUSC 81H - The Golden Age of Hip Hop (3)

During the Golden Age Era of Hip Hop (late 1980s to mid-1990s) there was a creative explosion of musical representation in rap/hip hop music. Beginning after the commercial success of Run DMC in 1986, class focus continues until the deaths of Tupac Shakur (1996) and the Notorious BIG (1997). In between these points some of the most influential and controversial figures in hip hop history emerge.

MUSC 81I - Music of Indonesia (5)

Explores the wealth of musical culture from throughout the Indonesian archipelago, including islands such as Bali, Java, Sumatra, and Lombok. Students learn about traditional, popular, and contemporary musics from this these islands and examine their historical, cultural, and religious interconnections. Major themes include global music theory, cultural identity, religious identity, and cultural exchange. This course also features a lab element in which students have the chance to get hands-on experience learning to play the music of Indonesia using the university’s diverse collection of Balinese and Javanese instruments.

MUSC 81J - Jazz Mirror of Global Interconnection (5)

Examines global cultural history through the primary lens of jazz music evolution from its traditional African source through the nexus of the primary elements of sound. Students use music to examine and explore the intersections between many global cultural developments.

MUSC 81K - Scenes and Subcultures (5)

Introduces students to ethnographic research methods through study and application in a local music scene. Explores issues of music culture and genre; issues of space in terms of communities, scenes, and subcultures; and the cultivation of music values within a scene. These topics are integrally related to ontologies of difference and their relation to dominant power discourses, including but not limited to issues of class, race, sex, orientation, age, and so on. No previous knowledge of music is assumed.

MUSC 81L - Music in Animated Film (5)

Introduces a selective survey of music in animated film (Disney, Pixar and DreamWorks), both instrumental and vocal, highlighting the representative works from the 1930s to the present. Through listening and viewing, students explore the use and role of music in animated film.

MUSC 81M - Chicano/Latino Music in the United States (5)

Examines the process of music making and how it is tied to the notion of space, place, identity and ethnicity, focusing on musical styles, genres, forms, and repertoires in Chicana/o and Latina/o communities in the United States.

MUSC 81P - History of Jewish Music (5)

Survey of the diverse and rich musical traditions of Jewish music in the diaspora from biblical times to the present. Examines the historical, social, and anthropological aspects of the different communities from sacred music through art and popular songs.

MUSC 81R - The 1970s: A Decade in Rock (3)

Rock in the 1970s topped music charts while expanding far beyond the radio single. Many 70s artists, such as Elton John, Led Zeppelin, and Pink Floyd, continue to enjoy widespread popularity today. Music 81R engages with key albums and artists from the 1970s and provides students with opportunities to cultivate analytical listening skills and examine this decade in rock, its roots, and its biases. Through weekly discussion assignments culminating in a final album review project, students develop the creative practice of rock music criticism.

MUSC 81S - Music and Science Fiction (3)

Examines the historical and cultural role of music in science fiction literature, film, and television, asking students to question how music is used to convey the strange and unfamiliar and to further think critically about why music is able to do so. Also covers science fiction in opera, symphonic music, and popular music, highlighting the musical elements that comprise the sounds of science fiction.

MUSC 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Admission requires approval of department.

MUSC 99 - Tutorial (5)

A program of directed study arranged with a department faculty member. Students submit petition to sponsoring agency.

MUSC 99F - Tutorial (2)

A program of directed study arranged with a department faculty member. Class time is proportionally less than a five-credit course. Students submit petition to sponsoring agency.

Upper-Division

MUSC 101A - Western Music History (c. 1150 - 1750) (5)

First quarter of a three-quarter chronological study of Western music. Coordinated lectures, readings, listening, and analysis of representative works.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition Requirements; or by permission of instructor.

MUSC 101B - Western Music History (1750-1910) (5)

Surveys major developments in European (and some U.S.-American) composition, performance practice, style and aesthetics, and music business (patronage, institutions, publishing, etc.) between approximately 1750 and 1910. Second quarter of a three-quarter chronological study of Western music. Coordinated lectures, readings, listening, and analysis of representative works.

Prerequisite: Prerequisite(s): MUSC 30A and satisfaction of the Entry Level Writing and Composition requirements; or by permission of instructor.

MUSC 101C - Western Music History (1910-present) (5)

Surveys major stylistic developments in European and American composition during the 20th and 21st centuries. Third quarter of a three-quarter chronological study of Western art music. Coordinated lectures, readings, listening, and analysis of representative works.

Prerequisite: Prerequisite(s): MUSC 30B and satisfaction of the Entry Level Writing and Composition requirements; or by permission of instructor.

MUSC 101E - Musics of South and Southeast Asia (5)

In-depth ethnomusicological studies of selected music cultures of South and Southeast Asia. Emphasizes comparison of historical, theoretical, contextual, and cultural features. Includes basic ethnomusicological points of reference, as regards organology, music ritual, notation and transcription, and aspects of field research.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; or by permission of the instructor.

MUSC 101F - Musics of Africa and the Americas (5)

In-depth ethnomusicological studies of selected music cultures of sub-Saharan Africa and South and North America, including Native America. Emphasizes comparison of historical, theoretical, contextual, and cultural features. Includes basic ethnomusicological points of reference, as regards organology, music ritual, notation and transcription, and aspects of field research.

Prerequisite: Prerequisite(s): MUSC 30A and satisfaction of the Entry Level Writing and Composition requirements, or by permission of instructor. Concurrent enrollment in a non-Western performing ensemble is strongly recommended. Anthropology majors may enroll with permission of instructor.

MUSC 101G - Musics of Central Asia (5)

An in-depth, ethnomusicologically oriented course on select music cultures in Central Asia. Comparison of theoretical, historical, and cultural aspects of musical practices from Kyrgyzstan, Uzbekistan, Tajikistan, Afghanistan, Turkmenistan, Kazakhstan, Mongolia, and the Xinjiang region of China, as well as from the Caucasus (Azerbaijan, Georgia, and Armenia). Students are expected to become conversant in both musical and cultural norms of the region, in order to develop their skills in the analysis of non-Western musics.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and one of the following courses: MUSC 10, MUSC 11D, MUSC 20A, MUSC 30A, MUSC 80A, or MUSC 80S; or by permission of instructor.

MUSC 101H - Music of Insular Southeast Asia (5)

Comparative studies of selected music cultures focusing on the cosmology, music rituals, and organology of varied cultures in Malaysia, Indonesia, Papua New Guinea, and the Philippines. Introduction to ethnomusicology field research and transcription, and hands-on ensemble workshops. (Formerly MUSC 180D.)

Prerequisite: Prerequisite(s): MUSC 5A or MUSC 5B or MUSC 5C or MUSC 8A or MUSC 8B; or by permission of instructor.

MUSC 102 - University Orchestra (2)

A study of selected works for orchestra, culminating in one or more public concerts. Admission by audition with conductor prior to first class meeting. Enrollment restricted to juniors and seniors.

MUSC 103 - University Concert Choir (2)

A study of selected works for orchestra, culminating in one or more public concerts. Prerequisite(s): admission by audition with conductor prior to first class meeting.

MUSC 105A - Music of the United States (5)

Traces major developments in the history of American music since the Revolutionary Era, focusing on what makes music in the United States unique. Material drawn from classical, popular, religious, jazz, and avant-garde traditions.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; or by permission of the instructor.

MUSC 105C - Folk and Traditional Music in California (5)

A comparative study of the folk and traditional musical productions of five different cultural communities found in California, through a body of media that intersects history, sociology, anthropology, ethnomusicology, and more.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; or by permission of instructor.

MUSC 105E - Early Keyboard Music (5)

Survey of four centuries of early keyboard music, including representative genres, instruments, composers, and

compositions from the late-Gothic to the Classical period. Harpsichord, virginal, organ and fortepiano works studied through scores, recordings, and live performance. Social context, instrument tuning and representative performance practices will coordinate each unit.

Prerequisite: Prerequisite(s): MUSC 101A or MUSC 101B or MUSC 101C. Enrollment is restricted to junior and senior music majors.

MUSC 105H - Hip Hop Music and Culture in the 20th Century (5)

Explores the history and global spread of hip hop music and culture. In addition to hip hop history and hip hop studies in the U.S., course also examines the ways that hip hop artists outside of the U.S. have employed African American modes of cultural resistance and commercial engagement. Within that process, continuities between the African American experience of “double consciousness” and the global discrepancies and asymmetries in the postcolonial world are unveiled.

Prerequisite: Prerequisite(s): MUSC 81A or MUSC 81H; or by permission of the instructor.

MUSC 105I - Improvisation and Collaborative Practices in the 20th Century (5)

Study of music repertories and performance practices based on improvisation and collaborative approaches to real-time composition in the areas of jazz and other new music.

Prerequisite: Prerequisite(s): MUSC 30A or by permission of instructor.

MUSC 105L - The Music and Life of Prince (5)

Prince Rogers Nelson was a complex and sophisticated African-American musician who challenged aesthetic and music genre boundaries. Prince’s political thought fueled his musical commentaries. A shrewd businessman who had an ambivalent relationship with the internet, he was a pioneer in selling music in digital format (e-commerce). Since his death in 2016, the burgeoning critical music studies discourse has blossomed in multidisciplinary directions. Course examines how Prince’s musical practices have become a locus to study composition, performance and production techniques, racial politics, and gender fluidity. This is an interdisciplinary course designed for undergraduate students who want to know more about Prince’s contributions to American popular music while being introduced to a critical music studies discourse.

MUSC 105M - Solo Song: from Monophony to Monody (5)

Traces the changing landscape of the secular solo song from the earliest notated examples of the troubadours through the explosion of monody in print at the beginning of the 17th century. Enrollment is by permission of the instructor. Contact instructor for enrollment details.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and MUSC 30A and MUSC 101A, or by permission of instructor.

MUSC 105O - Opera from Peri to Pergolesi (5)

Traces the development of opera from its origins in the late 16th century through the works of the early 18th century. Explores all aspects of this multimedia genre, with significant research and writing components. Enrollment is by permission of the instructor. Contact instructor for enrollment details.

MUSC 105P - The Piano (5)

Research-based survey of the history of the piano and related keyboard instruments. Topics include instrument mechanics, design, and tuning; important players and innovators in piano technique; repertoire written for piano in classical, jazz, vernacular, and experimental traditions and performance practices, including improvisation; the socioeconomics of the piano industry; the piano's use as a pedagogical tool.

MUSC 105Q - The String Quartet from Haydn to the Present (5)

Traces the development of the string quartet from its origins in the mid-18th Century through the works of the mid-late 20th Century. Emphasis is on listening and analysis with significant research and writing component.

Prerequisite: Prerequisite(s): MUSC 30A and satisfaction of the Entry Level Writing and Composition requirements, or by permission of instructor.

MUSC 105R - History of Russian Music (5)

Focuses on Russian music in its historical development from the Middle Ages to the 20th century. Class lectures, as well as listening and reading materials, draw together different musical strata. All musical events viewed in their cultural, historical, and social contexts.

Prerequisite: Prerequisite(s): MUSC 30A or by permission of instructor.

MUSC 105S - The Politics of Aesthetics and Spirituality (5)

This course examines the relationship between music and the politics of spirituality and aesthetics in classical, folk, functional, and popular musics. Attention will be paid to both pre-modern and modern vernacular and cosmopolitan formations in South and Southeast Asia, China, Europe, and the Americas.

Prerequisite: Enrollment is restricted to juniors and seniors. Crosslisted as: Enrollment is restricted to graduate students.

MUSC 105T - Tuning and Acoustics Through Monophony, Heterophony, and Polyphony (5)

Explores tuning and acoustics across various cultures throughout music history. Surveying foundational tuning theories developed in ancient Greece, the course follows tuning developments up to the modern era with a focus on how these theories are manifest in the acoustics of instrument building. Categorizations specific to instruments and instrument building (chordophone, aerophone, idiophone, etc.) are outlined in relationship to their historical acoustic

and tuning practices. Additionally, the categorizations of monophony, heterophony, and polyphony are applied to the various cultures of music that is surveyed, informing the ensuing considerations pertaining to tuning, acoustics, and instrument building.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and MUSC 30A, or by permission of instructor.

MUSC 105V - Mexican Music and Conviviality (5)

Focuses on the act of gathering in the context of Mexican folk living culture. Discussions are centralized around music-making spaces that call people into action thinking about Christopher Small's characterization of "musicking" (1998). Course asks what goes into organizing a gathering, what goes on during a gathering, and positions students to think about what people potentially leave with from an event.

Prerequisite: Prerequisite(s): MUSC 80F or MUSC 81M, and satisfaction of the Entry Level Writing and Composition requirements; or by permission of instructor.

MUSC 120 - Seminar in Music Composition (5)

Instruction in individual composition offered in the context of a group; composition in traditional large and small forms. Repeatable for credit with different instructors.

Prerequisite: Prerequisite(s): MUSC 30B or by permission of instructor.

MUSC 121A - Jazz Analysis (5)

Analytic exploration of the evolution of jazz in America. The process involves independent listening, analysis, transcription, weekly seminar discussions, and oral presentation to students in MUSC 11B lecture (if courses are offered concurrently).

Prerequisite: Prerequisite(s): MUSC 30A and MUSC 11B; or by permission of instructor.

MUSC 121B - Orchestration (5)

A study of the nature of each instrument of the orchestra. Scoring for various small instrumental combinations, culminating in a transcription for full orchestra.

Prerequisite: Prerequisite(s): MUSC 30B, or by permission of instructor.

MUSC 122 - Conducting (2)

The development of basic conducting techniques, including understanding and demonstration of the conductor's posture, best practices of dynamics, left hand usage, mixed meter, and breath.

Prerequisite: Prerequisite(s): MUSC 130 or by permission of the instructor.

MUSC 123A - Electronic Music: Synthesis & Composition I (5)

Introduction to electronic music studio techniques, electronic music composition and relevant electroacoustical studies. Course provides practical exposure to the UCSC electronic music studios. Required application form available on department website during last three weeks of the previous quarter. Preference given to music majors, students in the film and game design programs, and those with substantial musical experience. Prerequisite(s): MUSC 80C or MUSC 30A placement. Enrollment is by permission of the instructor via application.(Formerly MUSC 123, Electronic Sound Synthesis.)

MUSC 123B - Electronic Music: Synthesis & Composition II (5)

Continued study of electronic music studio techniques as developed in MUSC 123A, including a deeper look into sound synthesis, audio analysis, and sound processing techniques. Emphasis placed on creating a number of short works that require varied approaches to electronic music composition. Prerequisite(s): MUSC 123A. Enrollment is by placement exam or by permission of the instructor. (Formerly MUSC 124, Intermediate Electronic Sound Synthesis.)

Prerequisite: Prerequisite(s): MUSC 123A or placement via exam. Enrollment is by permission of the instructor.

MUSC 123C - Electronic Music: Synthesis & Composition III (5)

The final course in the electronic synthesis & composition sequence continues to develop studio skills and centers around the student’s own creative practices and interests. Emphasis is placed on building a portfolio of projects and creative work, and on skills in critique and communication surrounding the completed work. Prerequisite(s): MUSC 123A or placement via exam. Enrollment is by permission of the instructor. (Formerly MUSC 125, Advanced Electronic Sound Synthesis.)

Prerequisite: Prerequisite(s): MUSC 123A or placement via exam. Enrollment is by permission of the instructor.

MUSC 129 - Live Electroacoustic Music Ensemble (2)

Explores the live performance practice of electroacoustic music, including historical repertoire, improvisation, and compositions by participants. All manner of electronic audio resources are applied to real-time performance. Participants need a basic proficiency in electronic audio and computer tools. Enrollments is by permission of the instructor at first class meeting.

MUSC 150A - Music Analysis for Performers (5)

A study of homophonic forms in tonal music. Architectonic, thematic, harmonic, and hermeneutic analyses of instrumental and vocal compositions in their historical context. Deliberations of various interpretational solutions and comparative analyses of historical and modern performances.

Prerequisite: Prerequisite(s): MUSC 30C or permission of instructor.

MUSC 150B - Music Analysis and Composition (5)

A course designed to synthesize the analysis and the composition of musical works. Tonal and post-tonal music compositions analyzed, including harmonic, rhythmic, and formal structure analysis. Works discussed include J.S. Bach (and related music by Johannes Brahms, John Adams, Benjamin Britten, Krzysztof Penderecki); Claude Debussy and Bela Bartok; Arnold Schoenberg (and Anton Webern); Olivier Messiaen (and Karlheinz Stockhausen, Pierre Boulez, Elliot Carter).

Prerequisite: Prerequisite(s): MUSC 120.

MUSC 150C - Tonal Counterpoint (5)

Tonal counterpoint modeled on the music of J.S. Bach. Imitative and non-imitative forms including binary dance, invention, canon, and fugue. Discussion and analytical application of generalized intervallic and harmonic models. Development of related keyboard, singing, and aural skills, including dictation in two and three voices. (Formerly Special Topics in Music Theory: Tonal Counterpoint.)

Prerequisite: Prerequisite(s): MUSC 150H, or by permission of instructor.

MUSC 150D - Theory of Southeast Asia (5)

What is Southeast Asia (SEA) music? What is music theory, and how does theorization influence how we perceive SEA music? Course discusses SEA music and invites students to relearn and debunk music theory in SEA and global contexts. Students learn various SEA music scenes, understand music theory and various ways of making sense of the music of SEA (and beyond), and apply what they have learned when thinking of any music or scenes encountered.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; or by permission of instructor.

MUSC 150H - Harmony & Form in 19th-century Western Art Music (5)

Analysis, theory, musicianship, and aural skills associated with advanced tonal music. Study of chromaticism, larger forms, and other features of 19th-Century and early 20th-Century music.

Prerequisite: Prerequisite(s): MUSC 30C and Piano Proficiency Exam.

MUSC 150I - Hindustani Music Theory (5)

In-depth introduction into the music, culture, and theory of Hindustani music.

Prerequisite: Prerequisite(s): MUSC 54 or MUSC 55.

MUSC 150J - Intermediate Spontaneous Composition and Improvisation (5)

Through performance, composition, analysis, and transcription course gives students an opportunity to expand and enrich their skills in applying musical knowledge to the application of spontaneous composition over a range of jazz styles, including older standards and more contemporary tunes. (Formerly MUSC 174, Intermediate Spontaneous Composition and Improvisation.)

Prerequisite: Prerequisite(s): MUSC 74; or by permission of instructor.

MUSC 150K - Intermediate Jazz Theory (5)

Through transcription, analysis, and performance of jazz standards, composition, arranging, improvisation, and spontaneous creation explored. Students write a series of improvisations, short compositions, and arrangements throughout the course. (Formerly MUSC 175, Jazz Theory II.)

Prerequisite: Prerequisites: MUSC 3, or MUSC 74, or MUSC 75, or by permission of instructor.

MUSC 150N - Noise, Music, Politics (5)

How has noise become a resource for musicians, artists, and activists? Noise can be negative, disruptive, painful, annoying, or it can be transgressive, liberating, rebellious, and a critical expression of resistance. Noise can take on many forms: metaphorical, silent, visual, dissonant, literary, quiet or loud. Course focuses on modernist and postmodernist techniques and discourses, traversing many practices from how noise and silence have been used as weapons, to experimental art music, punk rock, death metal, Japanoise, improvised music, and electronic glitch amongst others in order to trace how noise has been harnessed as a tool for disruption.

Prerequisite: Prerequisite(s): MUSC 14 or MUSC 80O; or by permission of instructor.

MUSC 150P - 20th-Century Popular Song (5)

Analysis and composition in two 20th-century popular song genres. Part one (of two) is drawn from 1930s swing or Tin-Pan Alley standards. Part two varies according to instructor and may include genres outside the United States.

Prerequisite: Prerequisite(s): MUSC 20B, or MUSC 30A, or MUSC 58; or by permission of instructor.

MUSC 150R - Field Recording: Mapping and Composing Sound, Identity, and Place (5)

This practice-based class explores the art of field recording and the aesthetic, social, political, and ethical questions it engages. Through critical reading, listening, discussion, recording, and creative projects, investigates how sound interacts with nature, urban spaces, objects, people, and networks. Uses sound as our lens in order to gain a stronger appreciation of its presence in our environments and how we create, interpret, and interact with them.

MUSC 150S - Focus on Spontaneous Composition (5)

Examines both music and musical composition, and the characteristics they share with science, mathematics, and the natural world. Written for upper-division and graduate courses, the course text shows that music is part of an

interdisciplinary collection of artistic modes of expression, and that these modes can be better understood in the context of what students observe in the real world. Thinking about music, through a variety of angles, students aim to understand that creativity is a vehicle through which to explore the evolution and interconnectedness of music as well as other phenomena in our universe.

Prerequisite: Prerequisite(s): MUSC 30A or by permission of instructor.

MUSC 150T - Post Tonal Analysis (5)

Examines the analytic and compositional techniques associated with selected post tonal styles including the linear, harmonic, rhythmic, and textural elements of music by composers, such as Schoenberg, Stravinsky, Bartok, Debussy, Messiaen, Carter, Cage, and Reich. Students attend weekly keyboard/ear-training laboratories.

Prerequisite: Prerequisite(s): MUSC 150H; or by permission of instructor.

MUSC 150X - Theoretical Practices of American Music (5)

Examines theoretical practices and compositional methods of 20th-Century American composers including Charles Ives, Henry Cowell, Ruth Crawford, Johanna Beyer, Harry Partch, Conlon Nancarrow, John Cage, Cecil Taylor, James Tenney, Kenneth Gaburo, George Russell, and Ornette Coleman.

Prerequisite: Prerequisite(s): MUSC 30B or MUSC 101C; or by permission of instructor.

MUSC 150Z - Interdisciplinary Arts Production Lab (5)

The IAPL is open to musicians, visual artists, programmers, designers, writers, dancers, actors, or artists of any discipline. The course/lab addresses various topics regarding interdisciplinary, cross-cultural, and multimedia practices, including performance practices, collaborative art-making, improvisation and listening, music and video performance software, networked performance, distribution, and online broadcasting. Each Interdisciplinary Arts Production Lab series involves the creation and development of special projects and artworks that are presented either at the end of the term or at the conclusion of the academic year.

MUSC 158 - South African Music Ensemble (2)

Introduces music and performance practice from South Africa. Covers a selection of repertoire in many languages and many traditions, with strong emphasis on vocal music. Some performance experience is required; student skill level will be determined during the first class meeting.

MUSC 159A - Opera Workshop (2)

A workshop for singers, accompanists, and directors, the course develops a wide variety of skills related to opera through scenework. Attention will be given to movement, acting, coaching, and operatic stage-directing technique. Instruction culminates in studio productions of scenes from operas and musicals. Admission by permission of vocal instructor, or by audition with instructor prior to first class meeting.

MUSC 160 - University Opera Theater (5)

A production workshop, culminating in one or more staged performances of an entire opera or selected scenes from the operatic repertory. Admission by audition with instructor prior to first class meeting; auditions usually take place in fall quarter.

MUSC 161 - Individual Lessons: One Hour (3)

One hour of individual instrumental or vocal instruction. Repertory, technique, and performance practice. A minimum of nine hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed a course fee of $650. Admission by audition with the instructor prior to first class meeting. Enrollment priority given to music majors and minors.

MUSC 161A - Individual Lessons: Half Hour (2)

One-half hour of individual instrumental or vocal instruction, intended for upper-division students. Repertory, technique, and performance practice. A minimum of six hours per week of individual practice is required. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Admission by audition with the instructor prior to first class meeting. Enrollment priority given to music majors and minors.

MUSC 161B - Group Instrumental & Vocal Lessons (2)

Group instruction in instrumental or vocal techniques, including group and individual performance experience. A minimum of six hours per week of individual practice is required. Intended for upper-division students. Admission by audition with the instructor prior to first class meeting.

MUSC 162 - Advanced Individual Lessons: One Hour (5)

One hour of individual instruction for advanced students. Study of repertory, technique, and performance practice. A minimum of 18 hours per week of individual practice and at least one 30-minute recital are required. May be taken three times for credit. Concurrent enrollment in an ensemble in the lesson instrument or voice is required. Students are billed a course fee of $650. Admission by juried audition.

MUSC 163 - Early Music Band (2)

Performance of a variety of early Western traditions—so-called “baroque ’n roll”—culminating in at least one concert. A broad range of instruments for student use available, including lutes, early guitars, viols (bowed strings), early flutes, baroque violins, harpsichord, organ, and incorporation of folk and/or “modern” instruments. Admission is by audition with instructor prior to first class meeting. Contact instructor prior to first class meeting.

MUSC 164 - Jazz Combos (2)

Instruction in combo performance and techniques of the jazz idiom. The class forms several ensembles that prepare a specific repertory for public performance. Admission is by audition with instructor. Contact instructor prior to first day of classes to audition.

MUSC 165 - Chamber Music Workshop (2)

A study of selected works for various small combinations of instruments, culminating in one or more public concerts. Admission by audition with instructor prior to first class meeting.

MUSC 166 - Chamber Singers (2)

The study of selected works for small vocal ensemble from the 15th through 20th centuries, with performances on and off campus throughout the academic year. Students must have demonstrated vocal and music reading skills. Admission by audition with instructor prior to first class meeting.

MUSC 167 - Workshop in Electronic Music (2)

Continuing studio work in electronic music. Students carry out individual projects, meeting in weekly seminar to share problems and discoveries. Relevant advanced topics are covered, including new developments in the art.

Prerequisite: Prerequisite(s): MUSC 72, MUSC 123A, MUSC 123B, or MUSC 123C; or by permission of instructor.

MUSC 167R - Recording Workshop (2)

Seminar in modern studio recording. Students learn aspects of recording from pre-production through mastering and distribution. Weekly recording sessions give students hands-on experience in running recording sessions and working with musicians. Admission by interview with instructor prior to first class meeting. Enrollment is restricted to music majors.

MUSC 168 - Experimental Music Ensemble (2)

A study of selected works for various small combinations of instruments and voice, culminating in one or more public concerts. Admission by audition with instructor. Contact instructor prior to first class meeting.

MUSC 180D - Music of Insular Southeast Asia (5)

Comparative studies of selected music cultures focusing on the cosmology, music rituals, and organology of varied cultures in Malaysia, Indonesia, Papua New Guinea, and the Philippines. Introduction to ethnomusicology field research and transcription, and hands-on ensemble workshops.

Prerequisite: Prerequisite(s): MUSC 30A; concurrent enrollment in MUSC 5B, MUSC 5C, or MUSC 8. Enrollment is restricted to music majors. Anthropology majors may enroll with permission of instructor.

MUSC 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision. (See course 42.) Upper-division standing and a proposal supported by a music faculty member willing to supervise required.

MUSC 195A - Senior Thesis (5)

Preparation of senior thesis over one or two quarters. If taken as a multiple-term course, the grade and evaluation submitted for the final quarter applies to the previous quarter. Students submit petition to sponsoring agency.

MUSC 195B - Senior Thesis (5)

Preparation of senior thesis over one or two quarters. If taken as a multiple-term course, the grade and evaluation submitted for the final quarter applies to the previous quarter. Students submit petition to sponsoring agency.

MUSC 196A - Senior Recital Preparation (without individual lessons) (5)

Prerequisite(s): juried audition or approved composition portfolio. Students submit petition to sponsoring agency.

MUSC 196B - Senior Recital Preparation (with individual lessons) (5)

Students are billed a course fee of $650. Prerequisite(s): juried audition.

MUSC 199 - Tutorial (5)

A program of directed study arranged with a department faculty member. Students submit petition to sponsoring agency.

MUSC 199F - Tutorial (2)

A program of directed study arranged with a department faculty member. Class time is proportionally less than a five-credit course. Students submit petition to sponsoring agency.

Graduate

MUSC 200 - Introduction to Research Methods (5)

Practical introduction to graduate study in music focusing on research methods, music sources and bibliography, techniques of scholarly writing, and critical readings in the discipline. Culminates in a public oral presentation on the model of a professional conference paper.

Prerequisite: Enrollment is restricted to graduate students; undergraduate students may enroll with permission of instructor.

MUSC 201 - History of Music Theory from the Greeks Through Rameau (5)

Study and analysis of pre-tonal and tonal music from the Greeks through the 18th century. Course combines a history of theory with analyses that utilize contemporaneous theoretical concepts.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 202 - Tonal and Posttonal Analysis (5)

Encompasses various forms of linear analysis, set theory, and selected topics in current analytical practice.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203A - Performance Practice in the Middle Ages (5)

A study of performance practices in medieval music from Gregorian chant to the 14th century. History of instruments and notation. Rhythmic interpretations of chant and a study of improvised practices in organum. Editing and performance of representative works. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203B - Performance Practice in the Renaissance (5)

A study of performance practices in Renaissance music, including concepts of mode, musica ficta, ornamentation, text underlay, tempo, and articulation. Basic principles of white notation and a brief history of instruments. Transcription, editing, and performance of a Renaissance work. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203C - Performance Practice in the Baroque (5)

An examination of historically informed performance practice techniques in Baroque music, with attention to aspects of ornamentation, articulation, figured bass realization, dance choreography, rhythm and tempo, and organology. In-class performances and editing of source materials are included. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203D - Performance Practice in the Classic Period (5)

Issues in performance practice focusing on selected topics and styles from the time of C.P.E. Bach through Haydn. Development of selected genres and ensembles, sources and editing, and interpretation and improvisation. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203E - Performance Practice in the Romantic Period (5)

Interpretation of music from Beethoven to Scriabin through examinations of both the musical texts (form, genre, harmony, texture, orchestration, etc.) and the period performance practices. Topics range from interpretative analyses of selected compositions to critical assessments of modern as well as documented 19th- and early 20th-century performances. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203F - Performance Practice in the 20th Century (5)

Projects in analysis, notational studies, extended instrumental techniques, and the aesthetics and performance practices associated with composers from the 20th and 21st centuries. Reading and listening focuses on the writings and performances of the composers and performers themselves, and upon interpretive writings by informed performers of 20th/21st-century music. Specific topics dependent on instructor. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203G - Concepts, Issues, and the Practice of Ethnomusicology (5)

Ethnomusicological field methodology; vocal and instrumental performance practices as related to the ethnomusicological endeavor. Specific topics: philosophical paradigms, historical overview, and definitional issues of ethnomusicology; field research concepts and procedures; studies in instrumental and vocal performance practices of diverse cultures; selected writings of Charles Seeger; transcription and analysis issues; studies in micromusics. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203H - Area Studies in Performance Practice (5)

Intensive examination of the vocal and instrumental performance practices of living musical traditions of Indonesia, Latin America, or other regions. Topics may incorporate soloistic and ensemble traditions, secular and sacred traditions. Research rubrics include tuning, tone quality, performance posture and rhetoric, and improvisational and fixed patterns, as dictated by regional norms. May be repeated for credit in a different area. Offered on a rotational basis with other courses in the 203 series.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 203I - Musics of Central Asia (5)

In-depth, ethnomusicologically oriented seminar on select music cultures in Central Asia. Comparison of theoretical, historical, and cultural aspects of musical practices from

Kyrgyzstan, Uzbekistan, Tajikistan, Afghanistan, Turkmenistan, Kazakhstan, Mongolia, and the Xinjiang region of China, as well as from the Caucasus (Azerbaijan, Georgia, and Armenia). Students are expected to engage with the textbook and develop and evaluate a bibliography of academic sources on music and related practices from Central Asia. Students also expected to analyze sound and discourse from the region to make effective comparisons and to understand music and sound within their broader socio-cultural frameworks.

MUSC 204 - Pedagogy of Music (2)

Provides graduate students with an opportunity to reflect on and practice a wide variety of pedagogical skills necessary to teach post-secondary music in a number of settings, including rehearsals, lectures, sections, and labs. These skills may include lesson planning, inclusive teaching, active learning, assessment, evaluation, teaching with technology, syllabus design, teaching statement writing, and lesson facilitation. Pedagogical skills modeled through a series of facilitated activities.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 204W - Graduate Writing Workshop (2)

Focuses on the mechanics of academic writing (including grammar and syntax) with a focus on styles specific to writing about music. Topics covered will include writing music criticism, developing ethnographic descriptions of musical events (i.e., "thick description"), crafting written descriptions of musical sound, and academic writing for general audiences. Students also utilize the workshop to develop large-scale writing projects specific to their course of study (such as preparatory qualifying exam essays, composition program notes, dissertation and thesis chapters, conference papers, etc.).

Prerequisite: Enrollment is restricted to graduate students.

MUSC 205A - Conceptual Foundations in Western Music Analysis (2)

Focused analysis of selected works from the Western classical music repertoire, Emphasis is on aural and analytical skills, the modal and tonal foundations of Western music, and the evolution of form and expression.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 205B - Conceptual Foundations in Global Musics (2)

A broad survey of traditional and vernacular musical practices from around the world with an emphasis on aural analysis and critical listening skills. (Formerly Conceptual Foundations in World Music.)

Prerequisite: Enrollment is restricted to graduate students.

MUSC 206A - Global Music Composition (5)

Studies in the history, structure, and cultural function of music from cultures as diverse as Global African, central European, Korean, Latin American, Indonesian, and Indian traditions. Examines ways in which composers such as Bartok, Anthony Braxton, Chou Wen-Chung, Lou Harrison, and Takemitsu sought and integrated such influences. Students choose to write critical and analytic essays on musics exhibiting diverse cultural influences, or to compose music that takes a vernacular or non-European music as a model for a compositional/improvisational approach.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 206B - Computer-Assisted Composition (5)

Study of techniques of algorithmic and computer-assisted composition in a variety of contemporary idioms. Topics may include stochastic methods, generative grammars, search strategies, and the construction of abstract compositional designs and spaces. Final project for course involves students formulating and algorithmically implementing their own theoretical assumptions and compositional strategies.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of the instructor.

MUSC 206C - Composing for Instruments and Live Electronics (5)

Hands-on music technology composition seminar combining real-time computer music applications with instrumental writing or installation work. Students work closely with an accomplished instrumentalist, learning to compose for the instrument with live electronics technology and developing computer programs that accompany the live performance with computer-generated sound. Students examine significant works in this evolving canon, studying both the score and attendant computer programs as models for new compositions. Students may also engage in the creation of installation works, with or without user interaction, and involving a significant computer sound component. The course is designed for students with any level of familiarity with programming to succeed.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of the instructor.

MUSC 206D - Music Perception and Cognition (5)

Investigations in the psychology of musical listening and awareness. Topics include time and rhythm perception, auditory scene analysis, pattern recognition, and theories of linguistics applied to harmony, melody, and form in the music of diverse cultures. Explores applications of the cognitive sciences to music transcription, analysis, composition, interpretation, and performance practice. Students apply existing knowledge in the cognitive sciences to a developing creative or analytical project, or develop and conduct new experiments.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 206E - Experimental Sound Practices (5)

Examines different sonic practices, challenging culturally pre-formed definitions of music (and how music is experienced). Students familiarize themselves with critical theoretical writings on modern and postmodern theories and sound

studies and by studying closely the work of various sound artists and composers. Questions posed include: What were the conditions and attitudes that have sparked and shaped experimental attitudes? How has the development of audio technologies changed how we listen and create sound-based work? What propels someone to experimentation? What are the social and cultural implications of experimental work? How do you experiment in your work?

Prerequisite: Enrollment is restricted to graduate students.

MUSC 206I - Negotiating the Musical Work (5)

Explores the ontology of music and relevant topics. Weekly readings in addition to guest speaker(s) and workshops. Everyone is expected to read and digest as much as possible ALL of the assigned readings.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 219 - Techniques in Composition (5)

Short compositional exercises incorporating diverse contemporary techniques with emphasis on problem solving and development of compositional skills. Exercises focus on particular strategies for organizing and coordinating aspects of pitch, rhythm, timbre, and other musical dimensions, depending on interests of instructor and students.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 220 - Graduate Seminar in Music Composition (5)

Instruction in individual composition offered in the context of a group; composition in large forms of the 20th century with emphasis on techniques since 1950. May be taken by upper-division undergraduates for credit. Interview with instructor at first class meeting.

Prerequisite: Prerequisite(s): MUSC 219. Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 252 - Current Issues Colloquium (0)

An interactive colloquium featuring presentations by faculty, graduate students, and visiting scholars on research projects in composition, musicology / ethnomusicology, and performance practice, followed by focused discussion.

Prerequisite: Enrollment is restricted to graduate students. Undergraduate students may enroll with permission of instructor.

MUSC 253A - Historical Perspectives in Musicology and Ethnomusicology (5)

Explores trends in musical scholarship in the 20th and 21st centuries, focusing on broad questions and modes of inquiry within historical musicology and ethnomusicology.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 253B - Rhythm, Time, and Form (5)

Traditional and experimental rhythmic and temporal systems representing diverse cultures, with emphasis on unmeasured, divisive, additive, and multilayer practices in cultural context. Students examine rhythmic composition, improvisation, and rubato performance in selected cultures, including rhythmic notation and transcription systems.

Prerequisite: Prerequisite(s): MUSC 200 or the equivalent, or consent of instructor. Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 253C - Music and Discourse (5)

Addresses both song and musical performance as modes of discourse. For song: musical and textual phrase and verse structures and their interrelationships. For musical performances: musical performance as rhetoric and emblem.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 253D - Issues in the Ethnography of Music (5)

Explores ethnography—the description of culture—as it relates to musicology and ethnomusicology, particularly where culture and cultural production are historically dynamic and geographically porous. Examines music with sensitivity to such complexities of context, and the disciplinary points of reference from which cultural difference is calculated. Considers the ideological imprint of methodology on cultural analysis: how to study an unfamiliar music in a way that transcends the measure of difference from the familiar, and, conversely, how to conduct an objective study of a familiar music.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 253S - The Politics of Aesthetics and Spirituality (5)

Explores the relationship of music and the politics of aesthetics and spirituality of classical, folk, functional, and popular musics in a cross-cultural and cross-historical context. Attention is paid to both pre-modern and modern vernacular and cosmopolitan formations. Enrollment is restricted to juniors, seniors, and graduate students. (Formerly MUSC 228, Techniques of Modernity and Aesthetic Formations.) Students cannot receive credit for this course and MUSC 105S.

Prerequisite: Enrollment is restricted to graduate students; upper-division undergraduates may enroll with permission of instructor.

MUSC 254C - Performativity and Music (5)

Performance can describe activities in the arts, humanities, and social sciences. Recognizing the mappings of this concept, this course examines selected performances and performative behavior through theoretical and critical lenses. Emphasis is on investigating the act and practice of musical

performance in multicultural context, and on analyzing scholarly writing as performative discourse.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254D - Organology and Acoustics (5)

Comprehensive study of musical instruments including, but not limited to, physical and engineering concepts; theory and methods of description, analysis, systematic, and cultural classifications; physiology and performance techniques; cultural significance; anthropomorphic and zoomorphic symbolism; ritual usage; and more. Previous enrollment in introductory ethnomusicology course (e.g., MUSC 11D) helpful, but not required. Enrollment by interview only, except music M.A. and Ph.D. students. Enrollment restricted to junior and senior music majors, electronic music minors, anthropology majors, or physics majors,and graduate students.

MUSC 254E - Asian Resonances in 20th-Century American and European Music (5)

Explores the influence of Asian musics on Western composers from Debussy to Britten to American experimentalists such as Harrison, Cage, Riley, and Rudyard. Questions of cultural appropriation and originality are addressed through specific examples and critical readings.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254F - Beethoven (5)

Examines the life and work of composer Ludwig van Beethoven (1770-1827). In addition to a close study of his biography and musical compositions, course considers the role of historiography and reception history in the development of his "heroic" status and Romantic cultivation of the "cult of genius." Also critically examines issues having to do with canon construction, positivist research vs. "new musicology," and how Beethoven has been used for political purposes and in popular culture.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254G - Queen and British Popular Music of the 1970s and 80s (5)

Using primary and secondary literature and audiovisual sources, the seminar examines selected issues and topics related to 1970s/80s British popular music, with a specific focus on the rock group Queen. The seminar takes a multi-faceted approach to the group’s musical oeuvre with topics related to vocality, performativity, hybridity, and masculinity, as well as Queen’s contribution to the rock anthem and their appropriation of “grand” opera. Students undertake research relating to British popular music in the 1970s/80s, and present their work in scholarly presentations and research papers.

MUSC 254J - Jazz Historiography (5)

Introduces the ways jazz history has been conceptualized, evaluated, and transmitted. Examines the social, intellectual, and cultural formations that have influenced this historiography. Considers the interdisciplinary project of new jazz studies in relation to established and alternative historical narratives.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254K - Music, Gender, and Sexuality (5)

Seminar focuses on musicological and ethnomusicological work incorporating feminist and queer theories published since the late 1980s. Cross-cultural approach to the examination of music, gender, and sexuality, drawing examples from both Western and non-Western traditions.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254L - John Cage: Innovation, Collaboration, and Performance Technologies (5)

In-depth examination of John Cage's interdisciplinary work, his pioneering activity in live electronic technology, and his influence in current multimedia creativity. Approximately one-half of the seminary is devoted to student research and creative projects and reflect Cage's legacy.

Prerequisite: Enrollment is restricted to graduate students. Upper-division undergraduates may enroll with permission of instructor.

MUSC 254M - Music in San Francisco, 1850-1950 (5)

Explores San Francisco's musical life during the city's first century, including opera, symphony, Chinese music, musical theater, and other genres. Considerable emphasis on music and society, including issues of race.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254N - Cruising the Postcolony (5)

Drawing on Jose Esteban Munoz's suggestion that queer politics is most radical when it is looking to the possibilities of the future rather than the pragmatics of the present, this course interrogates the radical vision of postcolonial and queer music-making.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254O - Historiography of American Music (5)

Covers the period in United States history between the Revolutionary Era and the Civil War (approximately 1770-1865). Examines historical and contemporary writings about music in the United States, its composers, musicians, musical institutions, economics, and performance practices.

Prerequisite: Prerequisite(s): MUSC 200 or equivalent. Enrollment is restricted to graduate students.

MUSC 254R - Research Design and Grant Writing for Music Scholars (5)

Dissertation research grant applications and their attenuating dissertation proposals represent the first time most graduate students think through the theoretical issues and strategic planning of a major project and convince others within and outside their field of its academic validity. This seminar (primarily for Ph.D. and D.M.A. students in their 2nd, 3rd, or

4th year who are applying for grants to support doctoral research) provides guidance on topics about dissertation research, professional development, and grant applications.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254W - West-Coast Experimentalism in the Mid-20th Century United States (5)

Explores avant-garde experiments with new musical resources by composers centered on the West Coast around the period from 1920 to 1960. The objective is for students to learn about new compositional practices of the time including alternative tuning systems, interactions between music and dance, new instrumental resources (found and invented instruments as well as expanded techniques on traditional instruments), and new approaches to compositional processes. Composers to be studied include Lou Harrison, Henry Cowell, John Cage, Johanna Beyer, Lucia Dlugoszewski, and others. Weekly assignments include readings, listening, and analysis.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 254X - Minimalism (5)

Through a close study of both primary sources and secondary literature, this graduate seminar examines characteristics of minimalism in music across a broad range of historical eras, geographical settings, and stylistic contexts, as well as in related arts (visual art/sculpture; theater design and production; poetry and literature; dance, etc.). Students engage in original research, resulting in scholarly presentations and written papers.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 254Z - Issues in Contemporary and Experimental Music (5)

Through a close study of both primary sources and secondary literature, this graduate seminar examines a variety of topics and issues characteristic of global contemporary and experimental music across a broad range of historical contexts, geographical settings, and stylistic performance practices, as well as in related arts (visual art/sculpture; theater design and production; poetry and literature; dance, etc.). Students engage in original research, resulting in scholarly presentations and written papers.

Prerequisite: Enrollment is restricted to graduate students; advanced undergraduates may enroll with permission of the instructor.

MUSC 261 - Graduate Applied Instruction (3)

One hour of individual instrumental or vocal instruction for graduate students. Repertory, technique, and performance practice. A minimum of nine hours per week of individual practice is required. Students are billed a course fee of $650. Admission by audition with the instructor prior to first class meeting.

MUSC 265 - Graduate Ensemble Participation (2)

Participation by graduate students in ensembles. Enrollment limit appropriate to the size of each ensemble. Admission by audition with the instructor prior to first class meeting.

MUSC 267 - Workshop in Computer Music and Visualization (2)

Graduate-level techniques and procedures of computer music composition and visualization. Practical experience in the UCSC electronic music studio with computer composition systems and software, including visualization and interactive performance systems. Extensive exploration of music and interactive graphic programs such as Max/MSP/Jitter. Enrollment is by permission of instructor; appropriate graduate experience required. Enrollment is restricted to graduate students.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of the instructor.

MUSC 295 - Directed Reading (5)

Directed reading, which does not involve a term paper. May be repeated once for credit. Students submit petition to sponsoring agency.

MUSC 297 - Independent Study (5)

Independent study, creative work, or research for graduate students who have not yet begun work on their thesis. Students submit petition to sponsoring agency.

MUSC 297F - Independent Study (2)

Independent study or research for graduate students. Students submit petition to sponsoring agency.

MUSC 298 - Graduate Recital (5)

A public performance in the student's primary area of interest, related to the thesis or dissertation project, under the supervision of a faculty member. Students submit petition to sponsoring agency.

Prerequisite: Enrollment is restricted to graduate students.

MUSC 299 - Thesis Research (5)

A thesis consisting of a substantive and original creative or scholarly work, related to the graduate recital, under the supervision of a faculty member. Students submit petition to sponsoring agency.

NLP-NATURAL LANGUAGE PROCESSING

To view planned offerings for the current academic year, please visit this page.

Graduate

NLP 201 - Natural Language Processing I (5)

The first course in a series covering the core concepts and algorithms for the theory and practice of natural language processing (NLP), the creation of computer programs that can understand, generate, and learn natural language.

Prerequisite: Enrollment is restricted to natural language processing graduate students, and computer science and engineering doctoral students by permission of instructor.

NLP 202 - Natural Language Processing II (5)

This is the second course in a series covering the core concepts and algorithms for the theory and practice of natural language processing (NLP)—the creation of computer programs that can understand, generate, and learn natural language.

Prerequisite: Prerequisite(s): NLP 201. Enrollment is restricted to natural language processing graduate students.

NLP 203 - Natural Language Processing III (5)

Third and final course in a series covering the core concepts and algorithms for the theory and practice of natural language processing (NLP)—the creation of computer programs that can understand, generate, and learn natural language.

Prerequisite: Prerequisite(s): NLP 201 and NLP 202.

NLP 220 - Data Science and Machine Learning Fundamentals (5)

Covers a broad set of tools and core skills required for working with Natural Language Data. Covers core traditional machine learning methods such as classification methods using Naive Bayes, SVMs, Linear regression and Support Vector Regression, as well as the use of Pytorch and other programming frameworks commonly used in the field. Also includes methods used for collecting, merging, cleaning, structuring and analyzing the properties of large and heterogeneous datasets of natural language, in order to address questions and support applications relying on those data. Course covers working with existing corpora as well as the challenges in collecting new corpora. (Formerly Data Collection, Wrangling and Crowdsourcing.)

Prerequisite: Enrollment is restricted to natural language processing graduate students. .

NLP 243 - Deep Learning for Natural Language Processing (5)

Introduction to machine learning models and algorithms for natural language processing (NLP) including deep learning approaches. Targeted at professional master's degree students, course focuses on applications and current use of these methods in industry. Topics include: an introduction to standard neural network learning methods such as feed-forward neural networks; recurrent neural networks; convolutional neural networks; and encoder-decoder models with applications to natural language processing problems such as utterance classification and sequence tagging. (Formerly Machine Learning for Natural Language Processing.)

Prerequisite: Enrollment is restricted to natural language processing graduate students.

NLP 244 - Advanced Machine Learning for Natural Language Processing (5)

Covers advanced deep machine learning models and algorithms for Natural Language Processing, such as transformers, pre-trained large language models, contextual embeddings, multi-modal embeddings, mullti-task learning, and reinforcement learning. Provides both theoretical and intuitive understanding of NLP learning models.

Prerequisite: Prerequisite(s): NLP 243 or CSE 244B. Enrollment is restricted to natural language processing graduate students and computer science and engineering doctoral students, or by permission of instructor.

NLP 245 - Conversational Agents (5)

Reviews recent work on conversational AI systems for task-oriented, informational, and social conversations with machines. Students read and review theoretical and technical papers from journals and conference proceedings, present paper summaries, and engage in discussions. A research project is required.

Prerequisite: Prerequisite(s): NLP 201 and NLP 243 or CSE 244B. Enrollment is restricted to natural language processing graduate students and computer science and engineering doctoral students, or by permission of instructor.

NLP 255 - Topics in Applied Natural Language Processing (5)

Gives students a solid foundation in a specific application area of natural language processing, by learning about the theories, methods, tools, and techniques typically used in this area. The application area varies each quarter, with expected topics to include Information Extraction, Question Answering, Natural Language Generation, Sentiment Analysis, and others. Students learn about the state of the art and open challenges, and have the opportunity to explore and experiment with both standard algorithms and new emerging approaches.

Prerequisite: Prerequisite(s): NLP 201 and NLP 202 and NLP 220 and NLP 244 and either NLP 243 or CSE 244B. Enrollment is restricted to natural language processing graduate students and computer science and engineering Ph.D. students, or by permission of the instructor.

NLP 267 - Machine Translation (5)

Machine Translation systems can instantly translate between any pair of over eighty human languages such as German to English or French to Russian. Modern translation systems learn to translate by reading millions of words of already translated text. This course covers the models and algorithms used by such systems and explains how they are able to automatically translate one human language to another. The course covers fundamental building blocks using concepts from linguistics, statistical and deep machine learning, algorithms, and data structures. It provides insight into the

challenges associated with machine translation and introduces novel approaches that might lead to better machine translation systems.

Prerequisite: Prerequisite: NLP 201 and NLP 243 or CSE 244B. Concurrent or previous enrollment in NLP 202. Enrollment restricted to natural language processing graduate students and computer science and engineering Ph.D. students, or by permission of the instructor.

NLP 270 - Linguistic Models of Syntax and Semantics for Computer Scientists (5)

Provides an introduction to theoretical linguistics for natural language processing, focusing on morphology, syntax, semantics, and pragmatics, and on training students in linguistic description, representation, and argumentation. Students learn to describe common features underlying natural languages and to manipulate several syntactic and semantic representations.

Prerequisite: Enrollment is restricted to natural language processing graduate students and computer science and engineering Ph.D. students, or by permission of instructor.

NLP 271A - Capstone I: Recent Research in NLP (5)

The first in a sequence of two capstone courses providing hands-on practice of key NLP concepts and skills and experience working in a team project setting. Provides students with tools for project management and working in a team. Explores the research literature and investigates what makes a good project proposal. Allows students to prepare a Capstone project proposal and gather feedback for improvement. Class must be taken for letter grade.

Prerequisite: Prerequisite(s): NLP 201 and NLP 220. Enrollment is restricted to natural language processing graduate students.

NLP 271B - Capstone II: Natural Language Processing (10)

The second capstone course providing hands-on practice of key NLP concepts and skills and experience working in a team project setting. Provides students with tools for project management and working in a team. Allows students to refine and define several possible projects, present them for feedback, produce initial implementations of key modules and assess them, and complete the capstone project, which includes testing and assessing the quality of the final implementation, writing the final project report, poster creation, video and oral presentation of the project as a team. Course must be taken for letter grade.

Prerequisite: Prerequisite(s): NLP 202 and NLP 271A. Enrollment is restricted to natural language processing graduate students.

NLP 280 - Seminar in Natural Language Processing (2)

Weekly seminar course covering current research and advanced development in all areas of Natural Language Processing. The seminar is based on invited talks by guest speakers from industry research and advanced development working in the area of Natural Language Processing. Students attend talks given by speakers in a weekly seminar series and participate in discussions after the talks. This class can be taken for Satisfactory/Unsatisfactory credit only.

Prerequisite: Enrollment is restricted to natural language processing graduate students and computer science and engineering doctoral students. Others may enroll by permission of instructor.

OAKS - OAKES COLLEGE

Lower-Division

OAKS 1 - Academic Literacy and Ethos: Communicating Diversity for a Just Society (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. The Oakes core course considers the intersections between reading, personal and social identities, and social justice.

Prerequisite: Enrollment is restricted to college members.

OAKS 1A - Introduction to University Life and Learning (1)

Orientation to and exploration of the nature of the liberal arts, and of learning at research universities. Topics include: academic planning for upper-division coursework; enrollment processes; and understanding pathways to degree completion; UCSC resources that support health and well-being strategies for academic success; the cultivation of just communities; the prevention of sexual harassment and violence; campus conduct policies; awareness of risks associated with drug and/or alcohol use; and an introduction to traditions of community-engaged learning, ground-breaking research, and interdisciplinary thinking that define a UC Santa Cruz degree. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Oakes College students.

OAKS 3L - Precalculus Academy Lab (2)

Students use worksheets designed to help them solve problems by thinking critically, and participate in answering project-based questions relevant to the themes of their college core courses.

Prerequisite: Prerequisite(s): Mathematics 2 or placement (MP) score of 200 or higher. Corequisite: Concurrent enrollment in Mathematics 3 is required.

OAKS 10 - Academic Success (2)

Provides opportunity to assess and revise methods of and purposes in studying. Critical, effective approaches to reading, writing, participating in lectures and sections, taking exams, balancing competing responsibilities, and utilizing campus resources explored. Enrollment by permission of college adviser.

OAKS 11 - Foundation of Leadership (3)

Teaches leadership skills to create effective teams, and motivates individuals to communicate effectively with teammates with different styles. Enrollment is restricted to first-year and sophomore college members and by permission of instructor.

OAKS 20 - STEM Success (2)

Introduces students to critical, effective approaches to success in entry-level science, technology, engineering, and mathematics courses. Covers effective strategies for STEM prereqs, time management, goal setting, test-taking, and productive study habits. Builds community for underrepresented and first-gen. Oakes students in STEM fields. Students in other colleges may request a permission code from the instructor.

OAKS 26 - Navigating the University From a Black Critical Lens (2)

Explores critical engagement in education within the U.S. research university context. Introduces sociohistorical perspectives on how new students (frosh and transfer) can navigate the opportunities and challenges of the institution's academic life from a critical race and decolonial theoretical lens. Provides strategies to define goals, develop an action-oriented plan toward academic, career, and civic-oriented outcomes, and examine and build students' own social and cultural capital.

OAKS 30 - Thesis Writing and Editing (2)

Substantial writing and revision for a piece of writing relevant to a student's field. Focuses on academic research, documentation, editing, and revision. Enrollment restricted to junior and senior college members. Enrollment by permission of instructor.

OAKS 46 - Multiracial Visibility Project (5)

The purpose of the class is to bring visibility to multiracial and multicultural populations on college campuses. Students explore readings and other course content to understand the experiences of multiracial people. They explore different ways to advocate for multiracial people who may not have space or a voice in research or in popular cultural outlets (e.g., mainstream media). The goal is to raise awareness of multiracial people by elevating multiracial students' voices and experiences.

Prerequisite: Enrollment is restricted to Oakes College affiliates.

OAKS 47 - Building an Inner Sanctuary (2)

Through experiential methodologies of self-leadership and mind-body practices, this course encourages students to discover and flex those internal resources which enhance resilience, foster psycho-emotional and community-building skills, and affirm their cultural dignity. Enrollment is by application and permission of the instructor. First-pass enrollment is restricted to Oakes students. Second-pass enrollment open to all students.

Prerequisite: First-pass enrollment is restricted to Oakes students. Second-pass enrollment is open to all students.

OAKS 48 - Slugs Speak: Our Stories, Our Selves (2)

Students learn about the power of story to make change through this Storytelling for Justice project. Students practice developing personal life stories, learn to create and facilitate community space, and participate in a community storytelling event focused on intersectional identities.

Prerequisite: Enrollment is restricted to Oakes College affiliates or by instructor permission.

OAKS 60 - Oakes Literary Journal: Further Reflections on a Diverse Society (2)

For publication in an Oakes College literary journal, students significantly refine an essay from the fall quarter Oakes College core course. Course work includes consideration of a substantive text that engages core course themes and promotes the focus of the essay.

Prerequisite: Prerequisite(s): OAKS 80A or OAKS 80B. Enrollment is restricted to first-year students.

OAKS 67 - The Politics of Food: Labor and Social Justice (2)

Engages the themes of Oakes College (respect for diversity and social justice) and the interests of UCSC's Center for Agroecology and Sustainable Food Systems. Topics include the racial politics of food, farm labor, organic farming, and activism.

Prerequisite: Prerequisite(s): OAKS 1. Enrollment is restricted to Oakes College affiliates.

OAKS 70 - Diverse Voices in Contemporary American Women's Poetry (2)

Students examine issues in the work of contemporary American women poets representing a range of cultural, sexual, socioeconomic, and ideological identities. Discussion focuses on theories of poetics as well as poetry analysis and interpretation within the context of social and cultural identity. Students create a portfolio of their own poetry in response to weekly prompts.

Prerequisite: Enrollment restricted to Oakes College members.

OAKS 72 - Building the Strength to Love and Dream: Oakes Oral History Project (5)

Students study the founding and development of Oakes College through oral history. Students immerse themselves in thorough background research and build skills necessary to conduct oral histories with previous Oakes affiliates, revising pieces suitable for publication.

Prerequisite: Prerequisite(s):satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to College members; other students may contact the instructor for a permission code.

OAKS 73B - Oakes College Mentoring: Service Learning

Practicum (2)

Mentors introduce first-year students to campus resources, provide them with academic support, share academic successes and difficulties, and offer guidance on college adjustment. Enrollment is restricted to College members. Please apply to be a mentor or a mentee online on the Oakes College Mentoring website.

OAKS 74 - Oakes Core Assistant Seminar (2)

Oakes Core Assistants (CA) participate in a pedagogy course while embedded as assistants in Oakes Core classes. They gain an educator's perspective on key social justice concepts explored in the Core Course, reflect on this knowledge in seminar assignments, and apply what they have learned in the classroom to their mentorship of students. CAs gain leadership skills, learn strategies to mentor and support first-year students, and create a research project culminating in an essay evaluating and synthesizing their classroom observations, mentorship, and pedagogical research. CAs attend Core classes and plenaries; observe pedagogical practices; write reflective journals documenting their observations; and discuss, develop and explore a pedagogical lens of their choosing for their research. Enrollment is restricted to sophomore, junior, and senior Oakes students by permission of the instructor.

OAKS 75 - Oakes Student Development and Leadership Theory (2)

Overview of theories, methods, applications, skills, and special topics focusing on college student development and leadership. Uses a variety of learning modes including lecture, discussion, case studies, small group interaction, and presentations. Interview only: see Oakes coordinator for residential education during spring enrollment period. Enrollment restricted to Oakes College members.

OAKS 76 - Social Geography and Justice in Santa Cruz (5)

Explores how social identities, life practices, and power are reflected and shaped by the spaces and places we live in. Combines local history and contemporary research with placements in the community focusing on justice for children, youth, and families; topics vary by year and seek to build on the understanding and community relationships advanced through winter quarter research.

Prerequisite: Prerequisite(s): Oakes core course. Restricted to Oakes College members; others by permission of instructor.

OAKS 93 - Field Study (5)

Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. To be used primarily by lower-division students doing part-time off-campus study. Prerequisite(s): approval of student's adviser, certification of adequate preparation, approval of provost.

OAKS 94F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty instructor. Students submit petition to sponsoring agency.

OAKS 95 - Directed Reading (5)

Directed reading on selected topics in literature. Students submit petition to sponsoring agency.

OAKS 99 - Tutorial (5)

Individual study for lower-division students directed by a fellow of Oakes. Students submit petition to sponsoring agency.

OAKS 99F - Independent Study (2)

Independent study on various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

Upper-Division

OAKS 133 - Writing Resistance: Creative Writing Workshop (5)

Engages diasporic and people of color (POC) writers whose work inspires social justice. Through course materials and creative exercises, students examine and break down the roadblocks that create silence. Focuses on the craft of writing, and revision and performance to create socially relevant and powerful words through community engagement. (Formerly OAKS 130.)

OAKS 134 - Diasporic Central Americans (5)

Engages literature and culture from multiple generations of diasporic Central Americans in the U.S. whose work inspires conversations on politics and identity. Through course materials and oral history projects, examines the (in)visibility of this emergent Latinx group. Focus on oral history, aesthetics, poetics, and projects of representation.

OAKS 150 - Queer History and Theory in the United States (5)

Gives students a broad overview of the historical and social construction of queer identities in the United States. Through assigned readings and archival research, students contribute to the project of documenting queer history in the present. Students also examine how queer theory addresses the meanings that U.S. politics and culture have placed on sexual orientation over time.

Prerequisite: Enrollment is restricted to junior and senior Oakes College members.

OAKS 151A - Corre la Voz: Community Literacies and Power Seminar (2)

Required seminar for first-quarter students in the Corre la Voz program. Examines theories, curriculum design, and teaching methods that emphasize social connection, leadership, verbal enrichment, multi-modal literacies, and community empowerment. Taken concurrently with field study. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Co-requisite(s): course 151B. Enrollment is by interview only and successful application to the Corre la Voz program.

OAKS 151B - Community Literacies Field Study (3)

Field study for Corre la Voz interns. Intensive on-site training and participation in team teaching of dual-language (Spanish English) students (4th-5th grade). Literacies include social-emotional, expressive (artistic/dramatic), collaborative problem-solving, academic, and use of digital tools as well as traditional tools. Enrollment by interview only, and successful application to the Corre la Voz program. Concurrent enrollment in OAKS 151A is required during the first quarter after which OAKS 151B may be repeated by itself.

OAKS 152 - Transformative Literacies (5)

Combines a seminar on critical inquiry into different theories and practices of transformative literacy work with community-service placement or a creative project to assist a local organization in its mission communicating internally and externally.

Prerequisite: Prerequisite(s): Enrollment is restricted to Oakes College members. Other students may enroll by permission of the instructor.

OAKS 153 - Community Mapping (5)

Students study the theories and methods of community mapping, and work in research teams to design and conduct social-research projects. Emphasizes research questions that focus on assets and capacities, as well as on participatory-action research for justice.

Prerequisite: Prerequisite(s):satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to Oakes College members and community studies majors.

OAKS 155 - Research for Social Justice: Special Topics (5)

Examines how social science research informs advocacy and advances social justice issues. Students analyze quantitative and qualitative data and use evidence-based findings to create a final advocacy project. Students will strengthen skills for developing research questions, interpreting qualitative and quantitative data, articulating research findings, and effectively communicating research for advocacy and public outreach. Relevant for students interested in careers in advocacy, policy, and nonprofit work.

Prerequisite: Enrollment is restricted to Oakes College affiliates during first-pass enrollment; open to all students at the start of second-pass enrollment.

OAKS 160 - Cuir Américas (5)

Advanced seminar on the politics of knowledge production and translation in queer theory across the Américas, considering the meaning and construction of queer/cuir in three languages. Students develop bibliographies of academic and activist work addressing the lives of queer/trans people throughout the Spanish- and Portuguese-speaking Américas, including U.S. Latinx communities. Examines gaps in translation in this field, and students practice translation of work specific to sexual minority communities based on their language training and proficiency. Class works from the language and community expertise of students in the course inspired by bilingual poetics. Final projects produce a translation of a significant article or chapter-length work in queer theory from Spanish, Portuguese, or English to another one of these languages.

Prerequisite: Prerequisites: SPAN 6, SPHS 6, or PORT 65B; or submission of a writing sample in either Spanish or Portuguese for instructor approval. Course requires language and composition proficiency in Spanish or Portuguese.

OAKS 167 - Food Systems: Culture, Social Justice, Sustainability (5)

Examines the complexities of food systems with special attention to labor practices, food access, and food production. Students consider the nature of culture in advancing problematic notions of food options and sustainability. A service-learning project is required.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior Oakes students. Non-Oakes affiliated students may email instructor for a permission code.

OAKS 185 - Tracing Health (5)

Firsthand experience with the global pandemic of COVID-19. Students train as certified contact tracers in partnership with the Public Health Institute's Tracing Health Program and work as bilingual contact tracers as part of the field study. Teaches essential skills in helping members of marginalized communities stay safe and prevent further spread of SARS-COV-2. Trainings emphasize public health protocols and cultural/linguistic competency in promoting positive health behaviors related to COVID-19. Introduces students to theories of public health, health disparities, and effective strategies for community-based health interventions. Students must be bilingual and culturally competent in English and Spanish, Mandarin, Cantonese, Tagalog, or an indigenous language of Mexico or Central America. Interview required for acceptance in the class. Contact oakscara@ucsc.edu for instructions on applying.

OAKS 188B - Legal Field Practice: Professional Skills and Ethics (3)

Offers placement, standards, and support during on-site experiential training in professional skills and ethics for students working in the legal field or with legal information to empower under-served communities.

Prerequisite: Prerequisite(s): previous or concurrent enrollment in LGST 188A or OAKS 188A.

OAKS 189 - Websites for Social Movements (2)

In this fast-paced course, students learn a full framework for building digital campaigns and robust website designs for social movement organizations. The first half focuses on learning the framework, including communication strategy, working with stakeholders, and developing a proposal, In the second half, students apply the framework to a project with a community partner associated with the course. Final projects deliver a website, social media campaign, or email strategy to support the partner’s goals. Lab-based, hands-on course with

minimal homework requirements. (Formerly Building Websites for Social Change.)

Prerequisite: Prerequisite(s): Entry Level Writing and Composition requirements. Oakes College affiliates have preference; other students email instructor for permission.

OAKS 192 - Directed Student Teaching (5)

Teaching a lower-division seminar under faculty supervision. (See course 42.) Prerequisite(s): upper-division standing in Oakes; a proposal supported by a faculty member willing to supervise.

OAKS 193 - Field Study (5)

Supervised off-campus study conducted under the immediate and direct guidance of a faculty supervisor. To be used primarily by upper-division students doing part-time off-campus study. Prerequisite(s): approval of student's adviser, certification of adequate preparation, approval of provost. If taking two or more such courses in any one quarter, must obtain approval of academic adviser.

OAKS 195 - Senior Thesis (5)

Senior thesis related to college-sponsored individual majors. Students submit petition to sponsoring agency. Sponsoring faculty must be member of individual major committee.

OAKS 198 - Independent Field Study (5)

College-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Prerequisite(s): approval of the student's adviser, certification of adequate preparation, and approval by provost.

OAKS 199 - Tutorial (5)

Individual study for junior and senior members of Oakes College directed by a fellow of Oakes. Students submit petition to sponsoring agency.

OAKS 199F - Tutorial (2)

Independent study on various topics to be arranged between student and instructor. Students submit petition to sponsoring agency.

OCEA - OCEAN SCIENCES

Lower-Division

OCEA 1 - The Oceans (5)

An interdisciplinary introduction to oceanography focusing on biological, chemical, geological, and physical processes. Covers topics such as origins and structure of planet Earth and its oceans, co-evolution of Earth and life, plate tectonics, liquid water and the hydrologic and hydrothermal cycles, salinity and elemental cycles, ocean circulation, primary production and nutrient cycles, plankton and nekton, life on the sea floor, near shore and estuarine communities, future environmental problems our oceans face. Students may also enroll in and receive credit for EART 1.

OCEA 80A - Life in the Sea (5)

The ecology of plants and animals in oceans and coastal areas. Consideration of life in various marine habitats, including the open ocean, rocky shores, estuaries, and the sea. Includes field trips. High school biology and chemistry courses are recommended prior to taking this course.

OCEA 80B - Our Changing Planet (5)

Interdisciplinary scientific perspective on Earth system, focusing on human impacts on global environment. Introduces concepts of Earth system science and explores topics such as global warming, ozone depletion, pollution, deforestation, and future climate change. Prerequisite(s): high school chemistry course recommended.

OCEA 90 - Fundamentals of Climate (5)

Quantitative introduction to climate comprising five modules: atmosphere-ocean circulation, atmospheric teleconnections, El-Nino Southern Oscillation, the Pacific Decadal Oscillation, and global warming. Hands-on statistical methods are applied to real-world observations to develop a quantitative understanding of climate.

Upper-Division

OCEA 100 - Physical Oceanography (5)

Introduces physical aspects of the ocean including both descriptive representations of ocean properties and dynamical processes that govern ocean circulation. Topics include measurement methods, the equation of state, the equations of motion, geostrophy, atmospheric forcing, Ekman transport, gyre circulation, western boundary currents, the global circulation, and surface gravity waves.

Prerequisite: Prerequisite(s): MATH 11B or equivalent; and PHYS 6B; and ESCI 100A or EART 110A.

OCEA 101 - The Marine Environment (5)

An introduction to the marine environment stressing the interaction of physical, chemical, geological, and biological factors in the ocean. Provides the oceanographic background needed for studies in marine biology. Students taking the prerequisite math courses concurrently may enroll in the course with permission from instructor.

Prerequisite: Prerequisite(s): CHEM 3C, CHEM 4B, or CHEM 1C; and MATH 11B or MATH 19B. Students taking the prerequisite math courses concurrently may enroll in the course with permission from instructor.

OCEA 102 - Oceans and Climate: Past, Present, and Future (5)

An introduction to Earth's environment, particularly its oceanic and climatic components. Emphasizes interactions between chemical, physical, biological, and geological processes, and fundamentals of past, present, and future

global environmental change. Provides backgrounds for specialized courses in oceanic or climatic change.

Prerequisite: Prerequisite(s): CHEM 3C, or CHEM 4B, or CHEM 1C.

OCEA 111 - Climate Dynamics (5)

Applies fundamental physical principles to the atmosphere, cryosphere, and land surface to interpret their observed properties. Interactions between the different components of the climate system, and their role in shaping Earth's climate, are also examined.

Prerequisite: Prerequisite(s): MATH 11B or equivalent; PHYS 6B; and ESCI 100A or EART 110A.

OCEA 115 - Antarctic Ecology, Geology, History, and Policy (5)

Introduces Antarctica and the Southern Ocean. During the quarter students examine the natural, scientific, and anthropogenic complexities of these icy environments. Covers topics related to the geologic origins, fossil record, and climate, ecosystem, and anthropogenic dynamics of the frozen continent and its surrounding ocean. Students learn about Antarctica’s unique terrestrial and marine ecology, endemic wildlife, discovery and human history, anthropogenic impacts, and the continent’s international agreements on fisheries and environmental protection.

OCEA 118 - Marine Microbial Ecology (5)

The study of marine bacteria and their role in the marine ecosystem. Emphasis on biochemistry and physiology in relation to metabolic activity and elemental cycles, trophic interactions, and flows of material and energy in marine food webs. Students cannot receive credit for this course and Ocean Sciences 218.

Prerequisite: Prerequisite(s): BIOE 20C or BIOE 21C, and CHEM 3C, or CHEM 4B, or CHEM 1C.

OCEA 120 - Aquatic Chemistry: Principles and Applications (5)

An integrated study of the chemical behavior of natural waters with an emphasis on both principles and applications. Topics include chemical equilibrium, kinetics, acids/bases, oxidation/reduction, complexation, solid dissolution and precipitation, and reactions on solid surfaces.

Prerequisite: Prerequisite(s): CHEM 108B or CHEM 112C.

OCEA 121 - Aqueous Geochemistry (5)

Explores the geochemistry of the water-solid interface in the environment. Topics include: the composition of natural particles in the environment; the use of chemical equilibria and kinetics to assess the reactivity at the particle-water interface; and applications to environmental and oceanographic problems.

Prerequisite: Prerequisite(s): CHEM 3C, or CHEM 4B, or CHEM 1C, or previous or concurrent enrollment in EART 110A. Enrollment is restricted to juniors, seniors, and graduate students.

OCEA 122 - Chemical Oceanography (5)

Provides a chemical description of the sea. Emphasizes the chemical interactions of the ocean with the biosphere, atmosphere, and lithosphere. Topics include biochemical cycles and the use of chemical tracers to study oceanic and coastal processes. Students may not receive credit for this course and OCEA 220.

Prerequisite: Prerequisite(s): CHEM 3C, or CHEM 4B, or CHEM 1C; a previous course in ocean sciences is also recommended. Enrollment is restricted to juniors and seniors.

OCEA 124 - Aquatic Organic Geochemistry (5)

Introduction to organic geochemistry with emphasis on aquatic environments. Explores how non-living organic matter shapes biogeochemical cycles by carrying and sequestering reduced carbon and major nutrients and examines influence of chemical structure and environmental factors on transport and fate of organic molecules. Provides an introduction to organic biomarkers. Students cannot receive credit for this course and course 224.

Prerequisite: Prerequisite(s): CHEM 3C, or CHEM 4B, or CHEM 1C, and at least one quarter of CHEM 8A or CHEM 8B.

OCEA 130 - Biological Oceanography (5)

Biological description of the sea, with emphasis on processes and patterns. Topics include microbial dynamics, phytoplankton and zooplankton production, and ecology of marine food webs. Emphasis placed on understanding how physical, chemical, and geological environment shapes biology and ecology of oceans, including such topics as harmful algal blooms, global estimates of productivity, and effects of humans on environment. Students cannot receive credit for this course and Ocean Sciences 230.

Prerequisite: Prerequisite(s): previous course in ocean sciences recommended. Enrollment is restricted to juniors and seniors.

OCEA 141 - Dynamics of Marine Ecosystems (5)

Overview of physical-biogeochemical interactions in the ocean and their impact on marine ecosystems, with a special focus on the California Current and other important marine biomes. Lectures introduce the fundamental processes occurring at regional (e.g., upwelling dynamics) and basin (e.g., El Niño events) scales, and describe how their interplay shapes the seasonal, interannual, and long-term response of marine ecosystems worldwide.

Prerequisite: Prerequisite(s): ESCI 100A.

OCEA 158 - The Ecology and Conservation of Marine Megafauna (5)

The systematics, physiology, ecology, behavior, and conservation of marine birds and mammals, with emphasis on

the fauna and issues of the Monterey Bay area. Field trips enable students to observe unique local species in their native habitats and learn current research techniques. Formerly offered as The Ecology and Conservation of Marine Birds and Mammals.

Prerequisite: Prerequisite(s): OCEA 80A, BIOE 20C, or permission of instructor.

OCEA 165 - Marine Population Dynamics (5)

Examines classic ecological models of population dynamics and growth with case studies from the marine environment. Topics include exponential and logistic growth, density dependence, age and stage structure, discrete vs. continuous time, metapopulation models, coexistence, and the dynamics of interacting populations. Case studies are drawn from biological oceanography, fisheries stock assessments, endangered species management, and more. This course focuses on theory and mathematical underpinnings of these dynamical models; it does not go into detail on how to fit them to data.

Prerequisite: Prerequisite(s): MATH 11A and MATH 11B, or MATH 19A and MATH 19B, or by permission of instructor.

OCEA 199 - Tutorial (5)

Students submit petition to sponsoring agency.

OCEA 199F - Tutorial (2)

Introduction to research in laboratory, field, or theoretical subjects as an independent study. May not be counted toward upper-division major requirements. Students submit petition to sponsoring agency.

Graduate

OCEA 200 - Physical Oceanography (5)

Introduces the physics of the ocean. Topics include physical properties of seawater, atmospheric forcing, Ekman dynamics, Sverdrup dynamics, the wind-driven ocean circulation, ocean mixing, water masses, the meridional overturning circulation, surface gravity waves, Rossby waves, Kelvin waves, and ocean tides. Designed for beginning graduate students in ocean sciences and upper-division science majors. Calculus and physics recommended as preparation.

OCEA 201 - Advanced Physical Oceanography (5)

Covers advanced topics and physical principles as they relate to the ocean circulation. Designed as a follow-on class for OCEA 200, Physical Oceanography, and topics covered include: the dynamics of the subtropical gyres; potential vorticity dynamics; ventilated thermocline theory; the abyssal circulation; barotropic and baroclinic instability; and ocean eddies. Students use simple computer models to explore these important topics further, and review seminal papers.

Prerequisite: Prerequisite(s): OCEA 200, or a graduate geophysical fluid dynamics course or equivalent (e.g. EART 272/OCEA 272, AM 217, AM 227), or by instructor consent. Enrollment is restricted to graduate students.

OCEA 211 - Climate Dynamics (5)

Introduction to the dynamics of the Earth climate system. Topics: climate system components, the global energy balance, radiative transfer, the hydrological cycle, general circulations of the atmosphere and ocean, El Nino, the North Atlantic Oscillation, and the Pacific Decadal Oscillation.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates may enroll by permission of instructor. Previous courses in calculus and ocean sciences or earth sciences are recommended.

OCEA 213 - Biogeochemical Cycles (5)

Overview of biogeochemical cycles, present and past, and geochemical models. Topics include: marine, terrestrial, and global views of the carbon, nitrogen, phosphorus, silicon, sulfur, and oxygen cycles, and the evolution of these cycles and Earth's redox balance through geologic time.

Prerequisite: Enrollment is restricted to graduate students. Upper-division undergraduates may enroll with instructor approval. College-level chemistry and an upper-division course in at least one relevant discipline are recommended.

OCEA 215 - Predicting the Atmosphere, Ocean, and Climate (5)

Introduction to the theory and practice of operational prediction in meteorology, oceanography, and climate. Topics: observations and estimation theory, dynamic adjustment and initialization, estimation theory, data assimilation, forecast verification, predictability, ocean state estimation, seasonal forecasting.

Prerequisite: Enrollment is restricted to graduate students. Undergraduates may enroll with instructor approval. OCEA 200, OCEA 260, EART 272, or equivalents are recommended.

OCEA 218 - Marine Microbial Ecology (5)

Recent developments in the study of marine bacteria and their role in the marine ecosystem. Emphasis on biochemistry and physiology in relation to metabolic activity and elemental cycles, trophic interactions and flows of material and energy in marine food webs. Exams and research paper required. Students cannot receive credit for this course and OCEA 118 and BIOL 171. BIOL 20C and CHEM 1C recommended.

OCEA 220 - Chemical Oceanography (5)

A chemical description of the sea; emphasis on the chemical interactions of the oceans with the biosphere, atmosphere, and lithosphere. Topics include biogeochemical cycles and the use of chemical tracers to study oceanic and coastal processes. Course designed for graduate students. Students may not receive credit for this course and OCEA 122.

Prerequisite: Enrollment is restricted to graduate students; upper-division undergraduates may enroll with instructor approval.

OCEA 224 - Aquatic Organic Geochemistry (5)

Introduction to organic geochemistry with emphasis on aquatic environments. Explores how non-living organic matter shapes biogeochemical cycles by carrying and sequestering reduced carbon and major nutrients and examines influence of chemical structure and environmental factors on transport and fate of organic molecules. Provides an introduction to organic biomarkers. Students cannot receive credit for this course and OCEA 124.

OCEA 230 - Biological Oceanography (5)

Biological description of the sea, with emphasis on processes and patterns. Topics include microbial dynamics, phytoplankton and zooplankton production, and ecology of marine food webs. Emphasis placed on understanding how physical, chemical, and geological environment shapes biology and ecology of oceans, including such topics as harmful algal blooms, global estimates of productivity, and effects of humans on environment. Students cannot receive credit for this course and OCEA 130.

Prerequisite: Prerequisite(s): previous course in ocean sciences recommended. Enrollment is restricted to graduate students.

OCEA 241 - Dynamics of Marine Ecosystems (5)

Covers physical-biogeochemical interactions in the ocean on marine ecosystems, with a special focus on the California Current region. Lectures introduce fundamental processes occurring at local, regional, and basin scales, and describe their complex interplay.

Prerequisite: Enrollment is restricted to graduate students.

OCEA 250 - Field and Laboratory Methods in Coastal and Aquatic Science (5)

Students become familiar with core measurement and sampling techniques and multi-disciplinary nature of aquatic sciences routinely employed by working aquatic scientists in the fields of biology, geology, chemistry and physics. Overarching goal of class is having students become deeply familiar with a field site and observing it over an extended period of time while working collaboratively to accomplish all the measurements. The field component of the work is conducted at UCSC's Younger Lagoon Research Reserve, located adjacent to the Long Marine Lab on the coastal campus. Taught in conjunction with ESCI 150. Students cannot receive credit for this course and ESCI 150.

Prerequisite: Enrollment is restricted to graduate students.

OCEA 255 - Visualizing Ocean Data (5)

Ocean data collection has increased dramatically with much of this information available publicly for consumption and analysis by the scientific and broader community. Yet the format of available information differs often by platform, and useful visualization techniques depend on the type of data being considered. Class introduces different types of publicly available data, develops tools needed to access this information locally, and discusses broad methods for visualization appropriate for time-series, maps, sections, vector fields, and animations. Students develop their own capabilities through assignments using a scientific programming language of their choice (e.g., julia, python, matlab, or R), and lectures introduce necessary programming ideas and examples to support student-based tool development.

Prerequisite: Enrollment is restricted to graduate students.

OCEA 260 - Introductory Data Analysis in the Ocean and Earth Sciences (5)

Introduces data analysis methods regularly encountered within the ocean and earth sciences. Topics include: error propagation, least squares analysis, data interpolation methods, empirical orthogonal functions, and Monte Carlo methods applied to problems drawn from oceanographic and earth sciences datasets. Introduces and uses a high-level computing and visualization package of their choice (e.g., Matlab, python, R, Julia). Student project consists of analysis of the student's own dataset.

Prerequisite: Prerequisite(s): previous course in ocean or earth sciences is recommended. Enrollment is restricted to graduate students; undergraduates with permission of instructor.

OCEA 265 - Marine Population Dynamics (5)

Examines classic ecological models of population dynamics and growth with case studies from the marine environment. Topics include exponential and logistic growth, density dependence, age and stage structure, discrete vs. continuous time, metapopulation models, coexistence, and the dynamics of interacting populations. Case studies are drawn from biological oceanography, fisheries stock assessments, endangered species management, and more. This course focuses on theory and mathematical underpinnings of these dynamical models; it does not go into detail on how to fit them to data.

Prerequisite: Enrollment is restricted to graduate students.

OCEA 267 - Applied Environmental Time Series Analysis (5)

Course takes an empirical approach to quantify and explain changes in the Earth system over time. Students learn how to analyze time-series data and answer questions about environmental change and variability. Students acquire the theoretical basis of the statistical approaches, gain experience interpreting and discussing the results, and debate the methods chosen resulting in a critical understanding of the underlying assumptions and limitations of the methods discussed. This is a hands-on class and utilizes a suite of observational datasets and outputs from Earth system models. Students cannot receive credit for this course and ESCI 167.

Prerequisite: Prerequisite(s): Students are expected to know R, Matlab or Python and have statistics background. Please contact the instructor before enrolling if you are unsure.Enrollment is restricted to graduate students.

OCEA 280 - Marine Geology (5)

Geology of the marine environment. Topics include controls on the types, origin, and distribution of marine sediments; geology of oceanic crust; evolution of continental margins and plate boundaries; and introduction to paleoceanography. Students cannot receive credit for this course and EART102.

Prerequisite: Enrollment is restricted to graduate students.

OCEA 285 - Past Climate Change (5)

Reviews the fundamentals of climate dynamics and explores how Earth's environment is a product of the interaction of its components. Uses examples of climate change from historical and geologic records, and from predictions of the future. Recommended for junior, senior, and graduate students in the sciences.

OCEA 286 - Introduction to Ocean Modeling (5)

Fundamental concepts and ideas that underpin numerical modeling of the ocean. Topics include numerical methods and solutions of partial differential equations (PDEs), ocean circulation, wave dynamics, ocean ecosystem model, and MATLAB programming.

Prerequisite: Enrollment is restricted to graduate students, or seniors by permission of instructor.

OCEA 290A - Topics in Chemical Oceanography (5)

A weekly seminar series covering recent developments in chemical oceanography. Different topics and approaches will be stressed from year to year.

OCEA 290B - Topics in Biological Oceanography (5)

Explores different problems of special interest in biological oceanography. Different topics and approaches will be stressed from year to year.

OCEA 290C - Topics in Marine Geochemistry (5)

Selected topics in geochemistry. Discussion of theoretical models, different approaches, and recent research. Topics vary from year to year.

OCEA 290D - Topics in Marine Microbiology (5)

A weekly seminar series covering topics in environmental microbiology. Topics vary from year to year, and will include research in ecology, methodology, biochemistry and physiology of bacteria. Emphasis on the role of bacteria in biogeochemical cycling from microzone to global scales, with particular focus in marine systems.

OCEA 290E - Topics in Climatic and Oceanic Change (5)

Weekly seminar series covering recent developments in climatic and oceanic change. Different topics and approaches stressed from year to year. Prerequisite(s): interview with instructor prior to first class meeting.

OCEA 290G - Topics in Physical Oceanography (5)

Weekly seminar series covering topics in physical oceanography as well as biological-physical interactions in the oceans. Different topics and approaches stressed from year to year.

Prerequisite: Enrollment is restricted to graduate students; undergraduates may enroll with permission of instructor.

OCEA 290H - Topics in Ocean Optics (5)

Examines recent developments and application of bio-optics to the marine environment, including theory, instrumentation, and remote sensing. Different topics and approaches emphasized from year to year.

Prerequisite: Prerequisite(s): previous course in ocean sciences recommended. Enrollment is restricted to graduate students; senior undergraduates with permission of instructor.

OCEA 290J - Topics in Marine Organic Geochemistry (5)

Examines recent developments in uses of organic geochemistry to trace oceanographic and biogeochemical processes. Focuses on introduction to organic biomarkers, current literature, and evolving applications. Different topics and approaches emphasized from year to year.

Prerequisite: Prerequisite(s): previous course in ocean sciences and organic chemistry are recommended. Enrollment is restricted to graduate students; upper-division undergraduates with instructor's permission.

OCEA 292 - Seminar (0)

Weekly seminar on various topics attended by faculty, graduate, and upper-division undergraduate students.

OCEA 295 - How to Write a Scientific Article (5)

Designed as a project-oriented writing-intensive course, focused on Earth, ocean, and environmental sciences. Intended for advanced graduate students who have completed some research and are ready to write an article for submission to a journal or other venue. The student is expected to have a dataset in hand, to have already mapped out most of their interpretation, and to be ready to spend most of the quarter preparing a manuscript for submission. The course consists of writing assignments, lectures, class discussions, in-class exercises and peer-review. Enrollment is restricted to graduate students and is by permission of the instructor. Instructor will get information from prospective students to assess whether they are ready to take this class.

OCEA 296 - Teaching in Ocean Sciences (2)

For new and/or relatively inexperienced graduate students in pedagogy of ocean sciences. Role and responsibilities of teaching in ocean sciences described and developed. Includes discussions about effective teaching methods; hands-on issues for work in the laboratory; university expectations; and regulations regarding teaching, organizational strategies, time management, and working with instructors and staff.

Prerequisite: Prerequisite(s): graduate standing or permission of instructor. Enrollment is restricted to graduate students.

OCEA 297A - Independent Study (5)

Independent reading, research, and written reports not related to thesis research. Students submit petition to sponsoring agency.

OCEA 297B - Independent Study (10)

Independent reading, research, and written reports not related to thesis research. Students submit petition to sponsoring agency.

OCEA 297C - Independent Study (15)

Independent reading, research, and written reports not related to thesis research. Students submit petition to sponsoring agency.

OCEA 299A - Thesis Research (5)

Students submit petition to sponsoring agency.

OCEA 299B - Thesis Research (10)

Students submit petition to sponsoring agency.

OCEA 299C - Thesis Research (15)

Students submit petition to sponsoring agency.

PBS - PHYSICAL BIOLOGICAL SCIENCES

Upper-Division

PBS 101 - Cal Teach: Pedagogy for Learning Assistants (2)

Supports and prepares learning assistants (LAs) for success in active classrooms. Helps LAs integrate learning theory and effective practices to facilitate thinking and learning when students work in small groups on conceptual problems. Prerequisite(s): Successful completion of the course or equivalent in which the student will serve as an LA. Concurrent participation as an LA for a University STEM course is required. Enrollment is by application via the online form and a follow-up interview for selected applicants

PBS 102A - Cal Teach: Advanced Pedagogy for Learning Assistants (1)

Advanced learning assistants (LAs) continue to explore learning theory and practical strategies for engaging students in thinking and learning. Prerequisite(s): PBS 101. Enrollment is by application and by permission of instructor and is restricted to sophomores, juniors, and seniors.

PBS 102B - Cal Teach: Advanced Pedagogy for Learning Assistants (2)

Advanced learning assistants (LAs) explore learning theory and practical strategies for engaging students in thinking and learning. Returning LAs in this course take on an advanced project involving one or more of the following: mentoring of new LAs, data collecting, research into teaching/learning, and/or the development of learning activities. Prerequisite(s): PBS 101. Enrollment is by permission following application and is restricted to sophomores, juniors, and seniors.

PBS 182 - ACE Program Service Learning (2)

Students participate in training and development to co-facilitate collaborative learning in ACE active learning sessions and final exam review sessions. Students are role models for students pursuing science- and math-intensive majors. Prerequisite(s): Prior participation in ACE; good academic standing; no non-passing grades in prior quarter. Enrollment is restricted to sophomores, juniors, and seniors.

PBS 198 - Summer Undergraduate Research in Science and Technology (10)

Provides research experiences in STEM disciplines. Enrollment in the course requires students to be selected to the URST program or similar from PBSci. The course provides space for students to conduct research in STEM following a research proposal. Course is offered for Pass/No pass grading only. Enrollment is by permission of the instructor. Students must be selected to URST (Undergraduate Research in Science and Technology Award) or similar. Once these conditions are met, students should obtain final permission from the instructor.

PBS 199 - Summer Research Experience in Science (10)

Provides research experiences and mentorship in STEM disciplines. Enrollment in the course requires students to be participating in a research-oriented training program at UCSC such as MARC, CAMP, CAMINO, UC LEADS, and others. The course emphasizes research skills, scientific communication, and professional development, including presenting research findings and preparing for graduate school. Students either complete a research project in a mentor’s laboratory or participate in the PBSci Summer Research Institute. Students gain tools to advance their academic and professional goals. Course is offered for Pass/No pass grading only. Enrollment is by permission of the instructor. Students must have arrangements with a faculty mentor who will sponsor their summer research or be participating in the Summer Research Institute organized by the STEM Diversity Program team. Once these conditions are met, students should obtain final permission of the instructor.

PHIL - PHILOSOPHY

To view planned offerings for the current academic year, please visit this page.

Lower-Division

PHIL 7 - Elementary Logic (5)

Introduction to the critical tools and elementary formal methods for evaluating arguments with an emphasis on sentential logic and its applications. Students may not receive credit for this course and PHIL 9. PHIL 7 is intended for non-majors and does not fulfill a major requirement for philosophy

majors. PHIL 9 is the introductory course that fulfills the requirement for majors.

PHIL 8 - Information and Illusion (5)

Introduces critical tools for assessing and assimilating information. Topics include echo chambers, misleading statistics, the Bias Blind Spot, degrees of confidence, epistemic injustice, polarization; credibility and distrust; epistemic blame; base rates, relativism, p-values, and biased samples. Readings are drawn from philosophy, social psychology, behavioral economics, and statistics. (Formerly Reason, Logic, and the Idols of Thought.)

PHIL 9 - Introductory Symbolic Logic (5)

A first course in symbolic deductive logic. Major topics include (but are not limited to) the study of systems of sentential logic and predicate logic, including formal deduction, semantics, and translation from natural to symbolic languages. Formerly Introduction to Logic.

PHIL 11 - Introduction to Philosophy (5)

An introduction to the main areas of philosophy through critical reflection on and analysis of both classical and contemporary texts. Focuses on central and enduring problems in philosophy such as skepticism about the external world, the mind-body problem, and the nature of morality.

PHIL 12 - Philosophy and Film (2)

Explores the philosophy of film through the viewing and discussionof several philosophically interesting films. Examines both the aesthetics of film and a variety of philosophical issues that particular films raise.

PHIL 13 - Eastern Philosophy (5)

Covers perspectives of Eastern philosophy; specifically, Hinduism, Jainism, Buddhism, Daoism, and Confucianism. Includes views concerning the nature of ultimate reality, personal identity, morality, the afterlife, god(s), and the problem of evil.

PHIL 15 - Technology, Knowledge, and Human Life (2)

Provides a clearer understanding of what technology is how it relates to knowledge and human life. Students read and discuss texts by Plato, Aristotle, Husserl, and Heidegger.

PHIL 17 - Feminist Philosophy (5)

Introduction to feminist philosophy. The topics may include (but are not limited to) oppression, normalization, discrimination, objectification, misogyny, androcentrism, patriarchy, the sex-gender distinction, sexed embodiment, gendered labor, and the relationships between sexism, racism, homophobia, and transphobia.

PHIL 22 - Introduction to Ethical Theory (5)

A consideration of ethical issues and theories focusing on the foundation of moral value and the principles governing character and behavior. Designed to extend and develop the student's abilities in philosophical reasoning about ethics.

PHIL 23 - Philosophy of Cognitive Science (5)

Explores the philosophical issues that arise in cognitive science, particularly issues concerning the nature of minds. Students consider the idea that the mind is a digital computer, then analyze alternatives, such as connectionism and dynamics.

PHIL 24 - Introduction to Ethics: Contemporary Moral Issues (5)

An examination of the conceptual and moral issues that arise in connection with a variety of specific ethical issues. Topics vary according to the interests of the instructor, but among those commonly discussed are: abortion, war and violence, euthanasia, world hunger, human rights, and animal rights. The readings are typically drawn from recent philosophical articles on these topics, but earlier sources (important in the history of philosophy) can be considered as well.

PHIL 26 - Existentialism and After (5)

A survey of recent movements in European thought, such as phenomenology, existentialism, hermeneutics, critical theory, continental feminism, and poststructuralism, with some attention to their 19th-century precursors. Selections from major philosophical treatises are supplemented with literary works.

PHIL 27 - Business Ethics (5)

Examination of the ethical issues that arise in connection with a variety of specific business contexts. Common topics include: advertising, environmental harm, employee-employer relationships, finance, capitalism, market failure, government regulation, work-life balance, and consumer rights.

PHIL 28 - Environmental Ethics (5)

This course is an introduction to the moral issues raised by our interactions with nonhuman animals and with the rest of the natural environment. The course will relate traditional moral theories to contemporary literature on the ethics of nature conservation and environmental protection. The course is intended as a first course in philosophy as well as a first course in ethics; therefore, questions concerning the nature of philosophical inquiry and the ways in which philosophical inquiry is different from inquiries conducted within other disciplines will also be addressed.

PHIL 30S - Introductory Topics in Value Theory (5)

Examines some aspect of the nature of goodness or value. Topics vary each quarter and may include themes in aesthetics, ethics, and social and political philosophy.

PHIL 31S - Introductory Topics in Metaphysics and Epistemology (5)

Examines the nature of knowledge and the fundamental structure and nature of reality. Topics vary each quarter and may include nominalism, metaphysical realism, and the ontological analysis of concrete particulars, problems of modality and persistence through time, the problem of other minds, the nature of justification and knowledge, skepticism

of the external world, the nature and limits of human rationality, and the problem of induction.

PHIL 32S - Introductory Topics in the Philosophy of Mind (5)

Examines the nature of mind. Topics vary each quarter and may include the relation between mind and matter, the nature of consciousness, artificial intelligence, animal consciousness and intelligence, and the relation between thought and language.

PHIL 33S - Introductory Topics in the Philosophy of Science (5)

Examines the nature of science. Topics vary each quarter and may include realism, instrumentalism, confirmation, explanation, space and time, and rational decision making.

PHIL 34S - Introductory Topics in the Philosophy of Language (5)

Examines the nature of language. Topics vary each quarter and may include theories of meaning, representation, reference and truth.

PHIL 35S - Introductory Topics in the History of Philosophy (5)

Examines historical philosophical texts. Topics vary each quarter and focus on some major philosophical period, figure, or work in the history of philosophy.

PHIL 36S - Introductory Topics in Philosophy and Contemporary Culture (5)

Examines aesthetic, ethical, and/or political aspects of contemporary culture. Topics vary each quarter and may include the philosophy of film, music and other genres of popular culture and may consider issues such as authenticity, rebellion, identity, and politics.

PHIL 80C - Philosophy of Sex and Love (5)

What is the nature of love? Is marriage a means of social control? Does pornography empower or oppress women? How is gender constructed? This course provides a systematic investigation of the development of Western philosophical perspectives on gender and sexuality from Ancient Greece to the 21st century. Topics include love, marriage, sexual perversion, promiscuity and monogamy, pornography, feminism, and sexual morality. Aims to promote critical reflection with regard to the ethical, political,and social implications for contemporary society.

PHIL 80E - Latin American Philosophy (5)

Is there a general school of philosophy endemic to Latin America? Would it have to appeal to quintessential Western philosophical questions regarding knowledge, values, and reality? If not, why not, and would it then still count as philosophy? What difference do ethnic and national diversity, as well as strong political and social inequality, make to the development of philosophical questions and frameworks? Course explores a variety of historically situated Latin American thinkers who investigate ethnic identity, gender, and socio-political inequality and liberation, and historical memory, and who have also made important contributions to mainstream analytical and continental philosophy.

PHIL 80M - Science and Society (5)

Focuses on the urgent ethical and political issues raised by data science and society, building on consideration of foundational issues in moral philosophy and a technical understanding of advances in machine learning. Topics include: algorithmic bias and discrimination, predictive policing, self-driving cars, consent to data collection, surveillance and privacy rights, democracy and free speech online, attentional modification, technology and disability, and the singularity. Each unit pairs readings from philosophical and legal scholarship with case studies documented in scientific articles, news stories, and podcasts. (Formerly Philosophical Foundations of Science Studies.)

PHIL 80S - The Nature of Science (5)

A survey of what philosophers have said about the nature of science and scientific change. Emphasis is placed on whether science is best characterized as the gradual accumulation of truth or whether truth is irrelevant to scientific change.

PHIL 99 - Tutorial (5)

Upper-Division

PHIL 100A - Ancient Greek Philosophy (5)

Survey of ancient Greek philosophy of the Classical and Hellenistic periods. Begins with Socrates and the pre-Socratics, then undertakes an intensive study of Plato and Aristotle. Course then surveys the main developments that follow: Epicureanism, Stoicism, and Skepticism.

Prerequisite: Prerequisite(s): PHIL 8 or PHIL 9; one course from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and satisfaction of the Entry Level Writing and Composition requirements.

PHIL 100B - The Rationalists (5)

A study of the historical background and the present relevance of Descartes, Spinoza, and Leibniz.

Prerequisite: Prerequisite(s): PHIL 8 or PHIL 9; one course from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and satisfaction of the Entry Level Writing and Composition requirements.

PHIL 100C - The Empiricists (5)

A critical study (based on original texts) of Locke, Berkeley, and especially Hume on the nature of knowledge, perception, causation, morality, religion, and political society.

Prerequisite: Prerequisite(s): PHIL 8 or PHIL 9; one course from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or PHIL 80G or PHIL 80M or PHIL 80S; and satisfaction of the Entry Level Writing and Composition requirements.

PHIL 106 - Kant (5)

Intensive study of Kant's philosophy, particularly his epistemology and metaphysics developed in his Critique of Pure Reason.

Prerequisite: Prerequisite(s): PHIL 9; one course from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 107 - Nineteenth-Century Philosophy (5)

A study of some European philosophers of the 19th century, with particular attention to Hegel, Schopenhauer, and Nietzsche. (Formerly course 108.)

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 108 - Phenomenology (5)

Introduction to phenomenology, either through a survey of philosophical positions grouped under phenomenology or through a study of the writings of one or more philosophers of the phenomenological tradition. Topics may include the nature of consciousness, agency, subjectivity, and intersubjectivity.

Prerequisite: Prerequisite(s): PHIL 9; PHIL 11 or PHIL 22 or PHIL 24; PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 110 - Existentialism (5)

Introduction to the background and main themes of existentialist philosophy. Readings may include texts from authors such as Soren Kierkegaard, Friedrich Nietzsche, Jean-Paul Sartre, Simone de Beauvoir, Frantz Fanon, Albert Camus, Martin Heidegger, Emil Cioran, Gabriel Marcel, Laurie Paul, and so on. What these philosophers have had to say concerning the issue of selfhood, self-making and self-choosing, and its relation to the meaning or truth of human existence is the central topic of the course. Themes may include freedom, responsibility, anxiety, authenticity, bad faith, the meaning of life, absurdity.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 111 - Continental Philosophy (5)

Study of recent work in continental philosophy. Topics vary.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 112 - American Philosophy (5)

Study of classical American philosophers, specifically Emerson, Peirce, James, and Dewey, with emphasis on their views of metaphysics, epistemology, ethics, and philosophy of religion. Some attention is also paid to recent pragmatic tendencies in American philosophy.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 113 - The History of Analytic Philosophy (5)

Examination of the beginnings and development of analytic philosophy, with primary interest in the reformulation of traditional philosophical problems beginning with Frege. Other figures studied include, but are not limited to, Russell, Carnap, Wittgenstein, Quine, and Sellars.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 114 - Probability and Confirmation (5)

Studies the philosophical foundations of probability, induction, and confirmation. Different interpretations of probability studied, and solutions to various problems and paradoxes investigated. Students cannot receive credit for this course and course 214.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 116 - Logic, Sets, and Functions (5)

Introduction to basic set theory, recursive definitions, and mathematical induction. Provides a bridge between course 9 and courses 117 and 119. Strong emphasis on proving theorems and constructing proofs, both formal proofs and proofs in the customary, informal style used by mathematicians.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11, PHIL 22, PHIL 23, PHIL 24, PHIL 80E, BME 80G/PHIL 80G, PHIL 80M, PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 117 - Non-Classical Logic (5)

Investigations of non-classical logic. Studies several non-classical logics, such as various modal logics, multi-valued logics, and relevance logics. Investigates meta-theoretic results for each logic studied.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 118 - Stoic Ethics (5)

Surveys Stoic Ethics in the Hellenistic and Roman Periods, attending both to the theoretical writings of early Stoa (e.g., Zeno and Chrysippus) as well as to the therapeutic and

protreptic writings of later figures (e.g., Seneca and Epictetus).

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 119 - Intermediate Logic (5)

Detailed treatment of the semantics of first order logic and formal computability. Completeness, undecidability of first order logic and Lowenheim-Skolem results also proven. Nature and formal limits of computability and introduction to incompleteness also investigated. Students cannot receive credit for this course and course 219.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 121 - Epistemology (5)

A sustained look at central problems in epistemology. Topics might include the problem of other minds, the nature of justification and knowledge, skepticism of the external world, the nature and limits of human rationality, the problem of induction. (Formerly Knowledge and Rationality.)

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 122 - Metaphysics (5)

Survey of contemporary analytic metaphysics. Topics may include nominalism, metaphysical realism, and the ontological analysis of concrete particulars, including problems of modality and persistence through time.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 123 - Philosophy of Language (5)

Current theories of the nature and preconditions of language, the nature of meaning, and the nature of truth.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 124 - Other Minds (5)

An examination of the traditional philosophical problem of other minds and related contemporary scientific issues concerning what it is to encounter a mind that is not one's own and is relevantly unlike one's own.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 125 - Philosophy of Science (5)

An examination of various topics that arise in thinking about science. Different philosophical problems, such as realism, instrumentalism, confirmation, explanation, space and time, and rational decision making are extensively discussed and criticized.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 126 - Philosophy of Social Sciences (5)

Examines philosophical concerns regarding the methods and assumptions of the social sciences. For example, must the methods of the social sciences differ in some important ways from those used by the natural sciences? Another issue concerns problems arising from studying groups where the very notion of rationality appears to vary from culture to culture or over historical periods.

Prerequisite: Prerequisite(s): PHIL 9; one from course PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 127 - Philosophy of Biology (5)

Can developmental processes be reduced to gene expression? Does the history of life exhibit trends (e.g. increasing complexity)? How are we to understand key concepts such as fitness, species, adaptation, and gene? Is there such a thing as human nature? Course surveys these and other core philosophical topics in the biological sciences.

Prerequisite: Prerequisite(s): PHIL 9; PHIL 11 or PHIL 22 or PHIL 24; PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 133 - Philosophy of Mind (5)

Focuses on philosophical questions concerning the nature of mind. Central topics include the relation between mind and matter, and the nature of consciousness. Other topics typically explored include: artificial intelligence; animal consciousness and intelligence; and the relation between thought and language.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 135 - Philosophy of Psychology (5)

Looks at philosophical issues raised by current research on the nature of perception, cognition, and consciousness in psychology and cognitive science or neuroscience. Can there be a science of the mind? Could machines be conscious? Do animals have minds? How did the mind evolve? These and a

host of related questions form the subject matter of this course.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C. Enrollment is restricted to sophomores, juniors, and seniors.

PHIL 140 - History of Ethics (5)

A careful study of any one or a number of selected primary texts in the history of moral philosophy, with some emphasis on the relation to contemporary issues.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 142 - Advanced Ethics (5)

An examination of central issues in ethical theory including the nature of and justification for the moral point of view, the place of reason in ethics, the status of moral principles, and the nature of moral experience.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 143 - Applied Ethics: Ethics Bowl (5)

Intensive application of ethics through Ethics Bowl-style debate. Cases change annually. Students develop oral advocacy skills and are given the opportunity to compete for a position on the extracurricular Ethics Bowl team.

PHIL 144 - Topics in Social and Political Philosophy (5)

A study of selected classical and contemporary writings dealing with topics such as the nature and legitimacy of the liberal state, the limits of political obligation, and theories of distributive justice and rights. (Formerly Social and Political Philosophy.)

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 145 - Political Philosophy after 1968 (5)

Traces developments in philosophy and social theory after 1968, when the form of labor and capital's relation changed radically (through offshoring and automation) by reading widely in critical philosophy of race, feminist philosophy, and queer philosophy. It examines the variety of new, competing, liberationist accounts that foreground race, gender, and sexuality, investigating how these identitarian movements variously changed, enriched, or nullified the anti-capitalist impetus of classical Marxism. Prerequisite(s): PHIL 9; one course from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 147 - Topics in Feminist Philosophy (5)

Topics in feminist philosophy, which may include: the nature of feminist philosophy, feminist approaches to philosophical issues, social and political philosophy, theories of knowledge, ethics, aesthetics, and science, technology, and medicine studies. Presupposes some familiarity with philosophy or feminist scholarship.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 148 - The Holocaust and Philosophy (5)

By using the historiography of the Holocaust as a case study, examines the epistemology and ontology of historical knowledge, i.e., how the past is known, and what about it there is to know.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C. Enrollment is restricted to juniors and seniors.

PHIL 152 - Aesthetics (5)

Problems about form, meaning, and interpretation in art, as found in major aesthetic theories from the philosophical tradition, and also in a variety of encounters between recent philosophy and the arts.

Prerequisite: Prerequisite(s): PHIL 9; one from PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 153 - Philosophy of Race (5)

Topics include conceptual-analytical and political-social issues. Selected topics may include: the ontology of race; race as real or constructed; scientific understandings of race; race and identity; and color-blind versus color-sensitive theories of justice and political policy.

Prerequisite: Prerequisite(s): PHIL 9; one from course PHIL 11 or PHIL 22 or PHIL 23 or PHIL 24 or PHIL 80E or BME 80G/PHIL 80G or PHIL 80M or PHIL 80S; and PHIL 100A or PHIL 100B or PHIL 100C.

PHIL 190 - Senior Seminar (5)

Special topics. Format varies each quarter. Prerequisite(s): PHIL 9; and two from PHIL 100A, PHIL 100B, and PHIL 100C. Enrollment restricted to senior philosophy majors and by permission of the instructor.

PHIL 195A - Senior Essay (5)

Preparation of senior essay (approximately 25 pages) during one quarter. Students submit petition to sponsoring agency.

PHIL 195B - Senior Essay (5)

Under exceptional circumstances, a second senior essay continuing the work of the first essay is permitted but only when the first senior essay has been completed. Students submit petition to sponsoring agency.

PHIL 199 - Tutorial (5)

PHIL 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

PHIL 202 - Topics in Ancient Greek Philosophy (5)

Topics will vary each quarter and will focus on some major ancient Greek philosophical figure or work.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 203 - Autism (5)

Explores autism and its implications for various fields of inquiry, especially philosophy. Previous familiarity with autism is not presupposed. Some background in philosophy of mind, cognitive science, and psychology recommended.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 213 - Origins of Analytic Philosophy (5)

Analytic philosophy remains the dominant philosophical style worldwide. As a style of philosophy, analytic philosophy places emphasis on logical form and on the use of logical structure as the key element for evaluating the normative status (the logical merits) of a specific position. The history of analytic philosophy remains key since core debates turn on the status of logic as a supposedly value-neutral tool. This impacts philosophical understanding regarding logic, mathematics, and the relation of these areas to the natural and social sciences.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 214 - Probability and Confirmation (5)

Studies the philosophical foundations of probability, induction, and confirmation. Different interpretations of probability studied, and solutions to various problems and paradoxes investigated. Students cannot receive credit for this course and PHIL 114.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 222 - Metaphysics (5)

Advanced introduction to topics in 20th century and contemporary analytic metaphysics. Divided into five main parts dealing, respectively, with issues about the nature of existence, properties, time, change and persistence, and material constitution.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 224 - Philosophy of Language (5)

Advanced introduction to issues in the philosophy of language—primarily concerning the nature of reference, meaning, and truth. Works from such 20th-century figures as Russell, Wittgenstein, Kripke, Lewis, and Putnam discussed. Topics include what it is for a sign or a bit of language to be meaningful, or for it to identify or represent something; what it is for a statement to be truthful; what it is to be a language; and how reference works when attributed to beliefs.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 225 - The Pittsburgh School (5)

Surveys representative works by three iconic "Pittsburgh School" thinkers, Wilfrid Sellars, Robert Brandom, and John McDowell, and how the issues they pursue, and the way they approach them, forms a unique and important line of thought in contemporary philosophy. These constitute an important counterexample to any claim that the problems and approaches of continental and analytic philosophy cannot be fruitfully integrated, or that analytic philosophy remains fated to be ahistorical. Course examines how Kant and Hegel, and Heideggar as well, powerfully inform the philosophical writings of all three. Also investigates how Sellars articulates an original philosophical vision that his younger colleagues and intellectual heirs at Pittsburgh further develop and yet make their own.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 231 - Epistemology (5)

May focus on topics such as naturalized epistemology, probabilistic epistemology, theories of justification, a priori knowledge, memory, and virtue epistemology.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 232 - Advanced Topics in Value Theory (5)

Considers topics central to philosophical questions about value: ethics, normativity, practical reason, relativism, skepticism, responsibility, motivation, emotion, and so forth. In some instances, the investigation will proceed through influential historical figures, ancient to modern.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 233 - Seminar in Philosophy of Mind (5)

A study of one or more topics in contemporary philosophy of mind.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 235 - Philosophy of Psychology (5)

Looks at philosophical issues raised by current research on the nature of perception, cognition, and consciousness in psychology and cognitive science or neuroscience. Can there be a science of the mind? Could machines be conscious? Do

animals have minds? How did the mind evolve? These and a host of related questions form the subject matter of this course.

Prerequisite: Prerequisite(s): One course in philosophy, psychology, or linguistics. Enrollment is restricted to graduate students.

PHIL 237 - Making Up the Mind (5)

How does the mind come to be a thing which science can study? Readings focus on how diagnostic categories, for example, multiple personality disorder, attain scientific cachet and what issues surround the medicalization of the mind.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 239 - Philosophy of Religion (5)

Investigation of various topics in philosophy of religion.

Prerequisite: Enrollment is restricted to philosophy graduate students or by permission of instructor.

PHIL 246 - Ethics, Nature, and Natural Selection (5)

Explores the role, if any, that Darwinian theory and evolutionary biology should have on ethical theory. Topics range from classic work, including Darwin and classic expositors, to influential contemporary work on natural selection, in light of the best philosophical literature.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 270 - Research Seminar (5)

A research seminar to develop the skills of the profession with special focus on critical reading, constructing feedback, and philosophical research and writing. Enrollment is restricted to third-year Ph.D. students, and students must complete it by the end of their third year.

Prerequisite: Enrollment is restricted to philosophy graduate students. Other students may enroll with instructor permission.

PHIL 280 - Graduate Colloquia Course (2)

This colloquia series sponsors speakers each quarter. Students must attend all colloquia and are encouraged to form discussion groups after each lecture.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 281 - The Pedagogy of Philosophy (2)

Provides training for graduate students in university-level pedagogy in general and in the pedagogy of philosophy specially, under the supervision of a faculty member.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290A - Philosophy of History (5)

Examines issues that arise with respect to constructing histories. Inter alia, these include: the traditional philosophy of history (e.g., Hegel and Marx); modes of explanation (including narrative); the reality of the past; and underdetermination in history.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290C - Advanced Topics in Ethics (5)

Topics vary but the course focuses on major questions in contemporary ethical theory, or figures influential on contemporary moral philosophy. Examines different foundational ethical principles and arguments for those principles, contrasting accounts of moral action and moral motivation, as well as the epistemological and motivational role of emotions in ethical theory.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 290F - Topics in Philosophy of Biology (5)

Philosophy of biology is one of the fastest-growing areas of philosophy of science. Course is designed to give seniors and graduate students an overview of many of the diverse topics currently under discussion in modern philosophy of biology and provide a foundation for further research, regardless of previous experience with the biological sciences.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290H - Environmental Ethics (5)

What is our proper moral stance toward the natural environment? This question encompasses our ethical relations to individual non-human animals, to other species of living beings, and toward the biotic community as a whole. It leads us to consider the broader question: What makes anything at all worthy of our moral respect or even our moral consideration? How are we to understand the very idea of the environment, the distinction between the human world, and the natural world, and the relationships between them.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290J - Advanced Topics in the History of Ethics (5)

Careful study of any one of the main moral theories in the history of philosophy, with some emphasis on the relation to contemporary moral philosophy.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290K - Philosophical Matters of Scientific Practice (5)

Considers the relevance of philosophical matters to the practice of science. Using quantum physics as a case study, explores historical and contemporary perspectives on issues such as those raised by the Schrodinger cat paradox, Bell's inequalities, and quantum erasers.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290O - Majors Figures in the History of Philosophy (5)

Focuses on philosophical writings and significance of a single major figure in the history of philosophy, ancient, medieval, or modern.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 290P - Major Figures in Contemporary Philosophy (5)

Focuses on philosophical writings and significance of a single figure in contemporary (20th- and 21st-century) philosophy. May include, but not be limited to, Russell, Whitehead, Wittgenstein, Husserl, Carnap, Murdoch, Quine, Irigaray, Derrida, and Davidson.

Prerequisite: Enrollment is restricted to philosophy graduate students.

PHIL 290Q - Philosophy of Mathematics (5)

Introduction to the problems of contemporary analytic philosophy of mathematics. Do mathematical objects exist? Are mathematical statements true? How can we know? We will examine the historical background to contemporary debates and the positions which have been taken within them.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290S - Topics in the Philosophy of Science (5)

An examination of a topic in current philosophy of science. The material for the course is chosen from topics such as realism and instrumentalism, scientific explanation, space and time, the confirmation of theories, laws of nature, and scientific abstraction.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 290W - History of Consciousness (5)

Historical study of philosophical theories of consciousness and self-consciousness. Problems include the relation of self and other, consciousness and body, and self-consciousness and ethical agency. Readings are from Kant, Hegel, Nietzsche, and Heidegger, followed by phenomenologists, poststructuralists, and analytic philosophy.

Prerequisite: Enrollment is restricted to graduate students.

PHIL 294 - Teaching-Related Independent Study (5)

Directed graduate research and writing coordinated with the teaching of undergraduates.

PHIL 295 - Directed Reading (5)

Directed reading which does not involve a term paper.

PHIL 295F - Readings in Philosophy (2)

Focuses on selected philosophical areas and/or specific philosophers. Students meet with the instructor to discuss readings and deepen their knowledge on a particular subject. Enrollment restricted to graduate students.

PHIL 296 - Special Student Seminar (5)

A seminar for graduate students arranged between students and a faculty member. Students submit petition to sponsoring agency.

PHIL 297 - Independent Study (5)

Students submit petition to sponsoring agency.

PHIL 297F - Independent Study (2)

Students submit petition to course sponsoring agency. Enrollment restricted to graduate students.

PHIL 299 - Thesis Research (5)

Students submit petition to sponsoring agency.

PHYE - PHYSICAL EDUCATION

Lower-Division

PHYE 5A - Aquatics: Non-Swimmer Swimming Level I (0)

Coeducational. Water exploration and primary skills development. Course is designed to teach only non-swimmers how to swim. The following is taught: Red Cross swimming instruction in overcoming fears, water adjustment, floating, breath holding, and rhythmic breathing. Skills to be learned are: water entries, sculling, treading, elementary backstroke, freestyle, methods of water safety, and survival techniques. Prerequisite(s): instructor determines skill level at first class meeting.

PHYE 5B - Aquatics: Swimming Level I (0)

Coeducational. Primary skills development. Course is designed to teach "non-swimmers" how to swim better. The following is taught: Red Cross swimming instruction in overcoming fears, water adjustment, floating, breath holding, and rhythmic breathing. Skills to be learned are: water entries, sculling, treading, elementary backstroke, freestyle, methods of water safety, and survival techniques. Prerequisite(s): instructor determines skill level at first class meeting.

PHYE 5C - Aquatics: Swimming Level II (0)

Coeducational. Stroke readiness and development. Course is for those who have completed Swimming Level I or who can swim freestyle and demonstrate elementary backstroke. Skills to be learned are underwater swimming, turns, improvement of freestyle and elementary backstroke, beginning side stroke, backstroke, breaststroke, diving, personal safety skills, and basic rescue techniques. Prerequisite(s): instructor determines skill level at first class meeting, which involves passing Swimming Level I course or demonstrating equivalent skills.

PHYE 5E - Aquatics: Lifeguard Training (LT) (0)

Red Cross certified lifeguard training. Provides the necessary minimum skills training to qualify as a non-surf lifeguard. Certification includes CPR Pro, AED, PDT, D2, ADMIN, and Title 22 First Aid. Candidates must successfully pass final skill tests and a written final exam with 80 percent score. Prerequisite(s): must have ability to swim 500 yards in ten minutes, tread water for one minute, strong swimming skills in free, back, breast, side, and elementary backstroke; must purchase Red Cross LT textbook.

PHYE 5G - Aquatics: Swimming/Conditioning (0)

Open to all students who wish to explore swimming as a conditioning and fitness exercise. Students should know three competitive strokes, and should be able to swim fifteen minutes without stopping. Short health and fitness lectures precede some classes. Prerequisite(s): instructor determination at first class meeting.

PHYE 5R - Aquatics: Basic Scuba Diving (0)

Coeducational. Sections geared toward the successful completion of NAUI Scuba Diver Certification. The course is divided into three parts: lecture, pool lab, and open water experience. Four open water training dives are offered. Emphasis is on training for open water scuba diving, using the beach as a base of operation. Prerequisite(s): pass swimming skills tests and medical clearance. It is strongly recommended that students enroll in PHYE 5S.

PHYE 5S - Aquatics: Advanced Scuba Diving (0)

Coeducational. Sections are offered to facilitate the development of the basic scuba diver's open water techniques. A minimum of six open water experiences is offered. Course is geared toward successful completion of NAUI Advanced Scuba Diver Certification. Prerequisite(s): PHYE 5R or pass swimming skills test and medical clearance.

PHYE 5T - Scuba Rescue Diving (0)

Coeducational. Course geared toward the successful completion of NAUI Rescue Diver Certification. Course consists of lectures, pool laboratory, and open-water experience. Emphasis is on training divers to manage risks and effectively handle limited in-water problems. Prerequisite(s): Scuba certification and medical clearance.

PHYE 9B - Boating: Beginning Dinghy Sailing (0)

Coeducational. Introductory course in practical boating safety using 15-foot sailboats. Includes introduction to rigging, nomenclature, seamanship, proper boat-handling techniques, and general boating and aquatic safety. Satisfactory completion meets prerequisites for intermediate-level dinghy course. Prerequisite(s): swimming ability.

PHYE 9C - Boating: Intermediate Dinghy Sailing (0)

Coeducational. Course includes a review of basic sailing with an emphasis on the further development and refinement of small-boat sailing techniques. Fifteen-foot sailboats are used with two students per boat.

Prerequisite: Prerequisite(s): PHYE 9B or equivalent skills.

PHYE 9D - Boating: Advanced Dinghy Sailing (0)

Coeducational. For students interested in high-performance dinghy sailing. Learn to sail solo in the Olympic-class Laser or fly the spinnaker on the RS Vision. Includes special techniques used in racing conditions. Wetsuits are required.

Prerequisite: Prerequisite(s): PHYE 9C or equivalent skills.

PHYE 9H - Boating: Basic Rowing (0)

Coeducational. Course designed to cover types of rowing boats, nomenclature, fundamental skills, and specific safety and rescue aspects related to the activity. Students will row singly as well as in groups using 15-foot to 22-foot rowing dories. Prerequisite(s): swimming ability.

PHYE 9J - Boating: Intermediate Rowing (0)

Coeducational intermediate course designed to cover more advanced rowing techniques and the skills needed for safe open water rowing. Prerequisite(s): basic rowing or permission of instructor.

Prerequisite: Prerequisite(s): successful completion of PHYE 9H or equivalent skills.

PHYE 9K - Boating: Ocean Kayaking (0)

Co-educational course that teaches novice kayakers the skills to safely use UCSC kayaks in Monterey Bay. Topics include: basic paddling strokes and maneuvers; self and assisted deep-water rescues; beach launching; landing through surf; and marine hazards and navigation.

PHYE 9S - Boating: Beginning Keelboat Sailing (0)

Coeducational. Combines hands-on rigging and docking practice in the harbor and sailing practice on Monterey Bay with instruction in sail-trimming, de-powering, powering-up, person-overboard recovery techniques, boating safety, weather, ocean conditions, sailing theory, rigging, navigation, and the maritime rules of the road. Twenty-seven foot, ultralight, displacement keelboats are used.

Prerequisite: Prerequisite(s): PHYE 9C or equivalent skills.

PHYE 9T - Boating: Intermediate Keelboat Sailing (0)

Coeducational. Further development and refinement of boat-handling techniques, including advanced maneuvering, anchoring, and racing with an introduction to the use of spinnakers.

Prerequisite: Prerequisite(s): PHYE 9S.

PHYE 9X - Boating: Advanced Keelboat Sailing (0)

Coeducational. Designed for the experienced sailor who desires to bareboat larger vessels in the future. Focus is on managing boat systems, navigation, anchoring and passage-making on a 34-foot sailboat. Prerequisite(s): successful completion of PHYE 9T and 40 or more hours of keelboat usage. Enrollment is by instructor approval only.

PHYE 15B - Court Sports: Basketball (0)

Coeducational. Introductory course providing instruction in fundamentals, offensive and defensive strategies, rules, and conditioning designed primarily for beginning and intermediate level players.

PHYE 15N - Court Sports: Tennis (0)

Coeducational. Introductory course introducing the basics of forehand, backhand, and serve and introduces the volley, overhead, and lob.

PHYE 15S - Court Sports: Sand Volleyball (0)

Coeducational. Introductory course offered for students who desire to learn and improve the basic skills, as well as to understand the rules.

PHYE 15T - Court Sports: Volleyball (0)

Coeducational. Introductory course for students who desire to learn and improve the basic skills, as well as to understand the rules.

PHYE 20A - Dance: Ballet (0)

Coeducational. Introductory course with emphasis on principles of movement, style, and execution of ballet technique.

PHYE 20C - Dance: Jazz (0)

Coeducational. Introductory course of jazz dance emphasizing basic technique, styling, rhythm, and isolations.

PHYE 20D - Dance: Modern (0)

Coeducational. Introductory course with an emphasis on basic techniques and building phrases of movement.

PHYE 25A - Fencing: Epee (0)

Coeducational. Basic instruction in the techniques, strategy, and general methodology of modern fencing. Emphasis on épée fencing as a development from the traditional French and Italian dueling sword styles as they have evolved to form the modern electrical game.

PHYE 28K - Field Sports: Soccer (0)

Coeducational. Sections are offered in field soccer and indoor soccer. Instruction in the basic techniques, tactics, laws of the game, and injury prevention for players of all levels. Prerequisite(s): determination at first class meeting.

PHYE 30J - Fitness Activities: Strength Training (0)

Coeducational. Introduction to safe and effective methods of weight training and other personal conditioning activities. Topics covered include proper weight-training techniques, care of body and equipment, and elementary exercise physiology.

PHYE 30L - Fitness Activities: Yoga Exercises (0)

Coeducational. Offered at beginning levels of a variety of yoga exercises.

PHYE 43A - Martial Arts: Aikido I (0)

Coeducational. Introductory-level course in nonviolent, noncompetitive Japanese martial art emphasizing mind-body harmony, balance, relaxation, and the understanding of vital energy. Aikido self-defense techniques aim toward the creative resolution of conflict and the growth of the individual.

PHYE 43B - Martial Arts: Aikido II (0)

Coeducational. Intermediate-level course in nonviolent, noncompetitive Japanese martial art emphasizing mind-body harmony, balance, relaxation, and the understanding of vital energy. Aikido self-defense techniques aim toward the creative resolution of conflict and the growth of the individual.

Graduate

PHYE 209B - Boating: Graduate Beginning Dinghy Sailing (0)

Coeducational. Introductory course in practical boating safety using 15-foot sailboats. Includes introduction to rigging, nomenclature, seamanship, proper boat-handling techniques, and general boating and aquatic safety. Satisfactory completion meets prerequisites for intermediate-level dinghy course.

Prerequisite: Prerequisites(s): swimming ability. Enrollment is restricted to graduate students.

PHYE 209C - Boating: Graduate Intermediate Dinghy Sailing (0)

Coeducational. Course includes a review of basic sailing with an emphasis on the further development and refinement of small-boat sailing techniques. Fifteen-foot sailboats are used with two students per boat.

Prerequisite: Prerequisite(s): PHYE 9B or PHYE 209B, or equivalent skills; and swimming ability. Enrollment is restricted to graduate students.

PHYE 209S - Boating: Grad Student Beginning Keelboat Sailing (0)

Coeducational. Combines hands-on rigging and docking practice in the harbor and sailing practice on Monterey Bay with instruction in sail-trimming, de-powering, powering-up, person-overboard recovery techniques, boating safety, weather, ocean conditions, sailing theory, rigging, navigation, and the maritime rules of the road. Twenty-seven foot, ultralight, displacement keelboats are used.

Prerequisite: Prerequisite(s): PHYE 9C or PHYE 209C. Enrollment is restricted to graduate students.

PHYS - PHYSICS

Lower-Division

PHYS 1A - Physics for Everyone (5)

Explores some of the great topics in classical and modern physics, including relativity, and the connections to a broad range of inquiry, from daily life to cosmology. Math, mainly algebra, is used in a way that is completely accessible to everyone. No previous knowledge of physics is necessary.

PHYS 1B - Physics for Everyone (5)

Explores some of the great topics in classical and modern physics, including thermal physics, quantum mechanics, and the constituents of matter, and their connections to a broad range of inquiry, from daily life to particle physics and cosmology. Probabilistic evidence, backgrounds, statistical fluctuations and systematic uncertainties, discovery significance, what we infer, and what can go wrong, are illustrated in some depth. Math is used in a way that is completely accessible to everyone. No previous knowledge of physics or statistics is necessary.

PHYS 2 - The Physicist's Toolbox (2)

Prepares students for success in subsequent classes in physics and astrophysics. Course is designed for students majoring or considering majoring in physics, applied physics, or astrophysics. Includes overview of physics and astrophysics, and their major tools: experiment, theory, observation, and computation. Provides conceptual overview of the top-level theoretical approaches including classical mechanics, quantum mechanics, and statistical mechanics. Also reviews problem-solving skills for work in subsequent classes, including the physicist's approach to calculus, working intuitively with graphs, solving simultaneous equations, and understanding equations conceptually. Examines the educational path to different physics careers, physics as a collaborative discipline, and effective methods for group work as well as individual study.

Prerequisite: Enrollment is restricted to first-year and second-year students.

PHYS 5A - Introduction to Physics I (5)

Elementary mechanics. Vectors, Newton's laws, inverse square force laws, work and energy, conservation of momentum and energy, and oscillations.

Prerequisite: Prerequisite(s): MATH 19A or MATH 20A. Concurrent enrollment in PHYS 5L, and either MATH 19B or MATH 20B, is required.

PHYS 5B - Introduction to Physics II (5)

A continuation of PHYS 5A. Wave motion in matter, including sound waves. Geometrical optics, interference and polarization, statics and dynamics of fluids.

Prerequisite: Prerequisite(s): PHYS 5A and PHYS 5L and MATH 19A or MATH 20A; concurrent enrollment in PHYS 5M is required. Corequisite: MATH 19B or MATH 20B.

PHYS 5C - Introduction to Physics III (5)

Introduction to electricity and magnetism. Electromagnetic radiation, Maxwell's equations.

Prerequisite: Prerequisite(s): PHYS 5A and MATH 19B or MATH 20B. Concurrent enrollment in PHYS 5N is required.

PHYS 5D - Introduction to Physics IV (5)

Introduces temperature, heat, thermal conductivity, diffusion, ideal gases, laws of thermodynamics, heat engines, and kinetic theory. Introduces the special theory of relativity and the equivalence principle. Includes the photoelectric effect, the Compton effect, matter waves, atomic spectra, and the Bohr model.

Prerequisite: Prerequisite(s): PHYS 5A and PHYS 5L, or PHYS 6A and PHYS 6L; and PHYS 5B or PHYS 6B; and MATH 19B or MATH 20B.

PHYS 5L - Introduction to Physics I Laboratory (1)

Laboratory sequence illustrating topics covered in PHYS 5A and PHYS 15A. One three-hour laboratory session per week.

Prerequisite: Prerequisite(s): concurrent enrollment in PHYS 5A or PHYS 15A is required.

PHYS 5M - Introduction to Physics II Laboratory (1)

Laboratory sequence illustrating topics covered in PHYS 5B. One three-hour laboratory session per week.

Prerequisite: Prerequisite(s): PHYS 5A and PHYS 5L; concurrent enrollment in PHYS 5B is required.

PHYS 5N - Introduction to Physics Laboratory III (1)

Laboratory sequence illustrating topics covered in PHYS 5C and PHYS 15C. One three-hour laboratory session per week.

Prerequisite: Prerequisite(s): PHYS 5L. Concurrent enrollment in PHYS 5C or PHYS 15C is required.

PHYS 6A - Introductory Physics I (5)

Elementary mechanics. Vectors, Newton's laws, inverse square force laws, work and energy, conservation of momentum and energy, and oscillations.

Prerequisite: Prerequisite(s): MATH 11B or 16B or 19B or 20B or AM 15B.

PHYS 6B - Introductory Physics II (5)

A continuation of PHYS 6A. Geometric optics; statics and dynamics of fluids; introduction to thermodynamics, including temperature, heat, thermal conductivity, and molecular motion; wave motion in matter, including sound waves.

Prerequisite: Prerequisite(s): PHYS 5A or PHYS 6A or PHYS 7A; and MATH 11B or MATH 16B or MATH 19B or MATH 20B or AM 15B.

PHYS 6C - Introductory Physics III (5)

Introduction to electricity and magnetism. Elementary circuits; Maxwell's equations; electromagnetic radiation; interference and polarization of light.

Prerequisite: Prerequisite(s): PHYS 5A or PHYS 6A or PHYS 7A; and MATH 11B or MATH 16B or MATH 19B or MATH 20B or AM 15B.

PHYS 6L - Introductory Physics I Laboratory (1)

Laboratory sequence illustrating topics covered in PHYS 6A. One two-hour laboratory session per week.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in PHYS 6A or PHYS 7A is required.

PHYS 6M - Introductory Physics II Laboratory (1)

Laboratory sequence illustrating topics covered in PHYS 6B. One two-hour laboratory session per week.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in Phys 6B.

PHYS 6N - Introductory Physics III Laboratory (1)

Laboratory sequence illustrating topics covered in PHYS 6C. One two-hour laboratory session per week.

Prerequisite: Prerequisite(s): Previous or concurrent enrollment in PHYS 6C.

PHYS 7A - Elementary Physics I (5)

Examines elementary mechanics, including vectors, kinematics, Newton's laws, work and energy, conservation of momentum and energy, fluid motion, and temperature and heat.

Prerequisite: Prerequisite(s): MATH 11A or MATH 19A or MATH 20A or AM 15A. Concurrent enrollment in PHYS 6L or PHYS 7L is required.

PHYS 7B - Elementary Physics II (5)

Examines elementary wave motion, light polarization, reflection and refraction; elementary electricity, including electric charge, Coulomb's Law,and electric field and potential; electrostatic energy, currents, conductors, resistance, and Ohm's Law; and magnetic fields, inductors, and circuits.

Prerequisite: Prerequisite(s): PHYS 7A, and MATH 11B, or MATH 19B, or MATH 20B, or AM 15B.

PHYS 7L - Elementary Physics Laboratory (1)

Laboratory sequence illustrating topics covered in PHYS 7A. One three-hour laboratory session per week.

Prerequisite: Prerequisite(s): Concurrent enrollment in PHYS 7A is required.

PHYS 11 - The Physicist in Industry (2)

One two-hour meeting per week. Subjects include roles of the physicist in industry, the business environment in a technical company, economic considerations, job hunting, and discussions with physicists with industrial experience.

Prerequisite: Enrollment is restricted to applied physics, physics, and physics (astrophysics) majors or by permission of the instructor.

PHYS 15A - Honors Introduction to Physics I (5)

Covers similar material to PHYS 5A (Mechanics, vectors, Newton’s laws, inverse square force laws, work and energy, conservation of momentum and energy, oscillations, and rotational motion), but in greater depth and with more sophisticated techniques. These include kinematics in polar coordinates, and associated descriptions of motion in rotating coordinate systems; information encoded in potential energy functions; the use and importance of symmetry; handling of complications due to real-world effects; and connections between position and momentum in simple harmonic oscillators. Students are expected to be fluent with precalculus and to be familiar with integration, and are encouraged to contact the instructor if they are uncertain about their preparation.

Prerequisite: Prerequisite(s): MATH 19A or MATH 20A. Concurrent enrollment in MATH 19B or MATH 20B, and PHYS 5L is required.

PHYS 15C - Honors Introduction to Physics - III (5)

Covers similar material to PHYS 5C (electricity and magnetism, electromagnetism and Maxwell’s equations, electromagnetic radiation), but in greater depth and with more sophisticated techniques. These include the development and frequent use of Maxwell’s equations in both integral and differential form, the use of electric and magnetic potentials, gauge invariance and connection to modern electrodynamics, generalized impedance in ac circuits, and how accelerating charges produce electromagnetic radiation. Students who are uncertain about their preparation are encouraged to contact the instructor.

Prerequisite: Prerequisite(s): PHYS 5A or PHYS 15A, and MATH 19B or MATH 20B. Concurrent enrollment in PHYS 5N is required.

PHYS 80A - Elementary Physics of Energy (5)

The physics of energy developed in a course accessible to non-science majors as well as science majors. Fundamental principles and elementary calculations, at the level of basic algebra, developed and applied to the understanding of the physics of energy. Topics include fossil fuels, renewable energy, solar cells and waste energy, waste-energy recovery, nuclear power, and global greenhouse effects. (Formerly offered as PHYS 2.)

PHYS 80U - Physics and Psychophysics of Music (5)

Fundamental theory of vibration, sound waves, sound propagation, diffraction, and interference. Free, coupled, and driven oscillations. Resonance phenomena and modes of oscillation. Fourier's theorem. Anatomy and psychophysics of the ear. Musical scales and intervals. Nature of plucked and bowed strings; guitar, violin, piano. Woodwind and brass instruments. Architectural acoustics. High school algebra and basic knowledge of musical notation recommended.

PHYS 99 - Tutorial (5)

Students submit petition to sponsoring agency.

Upper-Division

PHYS 102 - Modern Physics (5)

Topics in quantum physics including the Schrodinger equation; angular momentum and spin; the Pauli exclusion principle; and quantum statistics. Applications in multi-electron atoms and molecules, and in solid-state, nuclear, and particle physics.

Prerequisite: Prerequisite(s): PHYS 5A, PHYS 5L, PHYS 5B, PHYS 5M, PHYS 5C, PHYS 5N and PHYS 5D; or PHYS 6A, PHYS 6L, PHYS 6B, PHYS 6M, PHYS 6C, PHYS 6N, and PHYS 5D; or equivalent.

PHYS 105 - Mechanics (5)

Particle dynamics in one, two, and three dimensions. Conservation laws. Small oscillations, Fourier series and Fourier integral solutions. Phase diagrams and nonlinear motions, Lagrange's equations, and Hamiltonian dynamics.

Prerequisite: Prerequisite(s): PHYS 5A and PHYS 5L; and PHYS 116A or MATH 21 plus MATH 24. Concurrent enrollment in PHYS 116C or MATH 107 is required.

PHYS 110A - Electricity, Magnetism, and Optics (5)

Examines electrostatics, including the electric field, potential, solutions to Laplace's and Poisson's equations, and work and energy; electricity in matter (conductors, dielectrics); magnetostatics, including the magnetic field and vector potential, Ampere's and Faraday's laws; magnetism in matter; and Maxwell's equations.

Prerequisite: Prerequisite(s): PHYS 5C; and PHYS 116A or MATH 21 and MATH 24; and PHYS 116C or MATH 107.

PHYS 110B - Electricity, Magnetism, and Optics (5)

Examines electromagnetic waves, including absorption and dispersion, reflection and transmission, and wave guides; conservation laws and gauge invariance; time-dependent vector and scalar potentials and application to radiation of charges and antennae; and electrodynamics and relativity.

Prerequisite: Prerequisite(s): PHYS 110A; and PHYS 116C or MATH 107.

PHYS 112 - Thermodynamics and Statistical Mechanics (5)

Consequences of the first and second laws of thermodynamics, elementary statistical mechanics, thermodynamics of irreversible processes.

Prerequisite: Prerequisite(s): PHYS 5D and MATH 23B. Concurrent enrollment in PHYS 102 is required.

PHYS 116A - Mathematical Methods in Physics (5)

Infinite series. Topics in linear algebra including vector spaces, matrices and determinants, systems of linear equations, eigenvalue problems and matrix diagonalization. Ordinary differential equations and Laplace transforms.

Prerequisite: Prerequisite(s): MATH 23A.

PHYS 116C - Mathematical Methods in Physics (5)

Fourier series and transforms, Dirac-delta function, Green's functions, series solutions of ordinary equations, Legendre polynomials, Bessel functions, sets of orthogonal functions, and partial differential equations.

Prerequisite: Prerequisite(s): PHYS 116A or MATH 21 and MATH 24; and MATH 23A and MATH 23B.

PHYS 116D - Mathematical Methods in Physics (5)

Complex functions, complex analysis, asymptotic series and expansions, special functions defined by integrals, and probability and statistics. (Formerly offered as PHYS 116B.)

Prerequisite: Prerequisite(s): PHYS 116A or MATH 21 and MATH 24; and PHYS 116C.

PHYS 120 - Polymer Physics (5)

Statistical properties polymers; scaling behavior, fractal dimensions; random walks, self avoidance; single chains and concentrated solutions; dynamics and topological effects in melts; polymer networks; sol-gel transitions; polymer blends; application to biological systems; computer simulations will demonstrate much of the above. Students cannot receive credit for this course and PHYS 240.

Prerequisite: Prerequisite(s): PHYS 112.

PHYS 129 - Particle Physics and Astrophysics (5)

The standard model of particle physics; physics beyond the standard model; neutrino physics; the early universe; dark matter and dark energy; selected topics in general relativistic cosmology and high-energy astrophysics. (Formerly Nuclear and Particle Astrophysics.)

Prerequisite: Prerequisite(s): PHYS 5D, PHYS 102, and MATH 23B; and PHYS 116A or MATH 21. Students with equivalent coursework may contact instructor for permission to enroll.

PHYS 130 - Multiwavelength Astronomical Techniques (5)

Survey of observational astronomy across the electromagnetic spectrum and including multi-messenger probes. Covers the physics of light detection and instrumentation in different wavelength bands as well as astrophysical sources of emission and the relevant radiative processes associated to them. Aspects of statistics and statistical inference relevant for astronomical data analysis are also covered.

Prerequisite: Prerequisite(s): PHYS 102; and PHYS 133; and either ASTR 19 or ASTR 119 or CSE 20.

PHYS 133 - Intermediate Laboratory (5)

Demonstration of phenomena of classical and modern physics. Development of a familiarity with experimental methods. Special experimental projects may be undertaken by students in this laboratory.

Prerequisite: Prerequisite(s): PHYS 5C and PHYS 5D and one from CSE 5J, or CSE 14, or CSE 20, or ASTR 119, or by

permission of the instructor. Enrollment is restricted to physics, applied physics, physics (astrophysics), and science education majors and physics minors.

PHYS 135 - Astrophysics Advanced Laboratory (5)

Introduction to the techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Offered in some academic years as a multiple-term course: PHYS 135A in fall and PHYS 135B in winter, depending on astronomical conditions.

Prerequisite: Prerequisite(s): PHYS 133 and at least one astronomy course. Enrollment is restricted to physics (astrophysics) majors. Intended primarily for juniors and seniors majoring or minoring in astrophysics.

PHYS 135A - Astrophysics Advanced Laboratory (3)

Introduction to techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Intended primarily for juniors and seniors majoring or minoring in astrophysics. Offered in some academic years as single-term course PHYS 135 in fall, depending on astronomical conditions.

Prerequisite: Prerequisite(s): PHYS 133 and at least one astronomy course. Enrollment is restricted to physics (astrophysics) majors and minors.

PHYS 135B - Astrophysics Advanced Laboratory (2)

Introduction to techniques of modern observational astrophysics at optical and radio wavelengths through hands-on experiments. Intended primarily for juniors and seniors majoring or minoring in astrophysics. Offered in some academic years as single-term PHYS 135 in fall, depending on astronomical conditions.

Prerequisite: Prerequisite(s): PHYS 135A. Enrollment is restricted to physics (astrophysics) majors and minors.

PHYS 137 - Advanced Optics Laboratory (5)

Application of advanced optical techniques to the study of problems in astrophysics, physics, chemistry, biology, and engineering. Techniques include interferometry, Fourier optics, adaptive optics, optical tweezers, photon correlation spectroscopy, optical pumping, laser spectroscopy, and more.

Prerequisite: Prerequisite(s): PHYS 102 or ECE 102; and PHYS 133 or by permission of instructor.

PHYS 138 - Quantum Information Science Laboratory (5)

Application of advanced laboratory techniques to the emerging field of quantum information science. Techniques include laser physics, quantum entanglement, quantum correlations, electron spin resonance, ion trapping; Josephson junctions, and more.

Prerequisite: Prerequisite(s): PHYS 102 and PHYS 133, or permission of the instructor. Enrollment is restricted to physics B.S. majors.

PHYS 139A - Quantum Mechanics I (5)

Basic principles and mathematical techniques of nonrelativistic quantum mechanics: Schrodinger equation and Dirac notation; one-dimensional systems, including the free particle and harmonic oscillator; three-dimensional problems with spherical symmetry; angular momentum; hydrogen atom; spin; identical particles and degenerate gases.

Prerequisite: Prerequisite(s): PHYS 102; and PHYS 116A or MATH 21 and MATH 24; and PHYS 116C or MATH 107.

PHYS 139B - Quantum Mechanics II (5)

Approximation methods in nonrelativistic quantum mechanics: time-independent perturbation theory (non-degenerate and degenerate) and addition of angular momenta; variational methods; the WKB approximation; time-dependent perturbation theory and radiation theory; scattering theory.

Prerequisite: Prerequisite(s): PHYS 102; and PHYS 116A or MATH 21 and MATH 24; and PHYS 116C or MATH 107; and PHYS 139A.

PHYS 150 - Quantum Computing (5)

Review of linear algebra. Includes basic concepts in quantum mechanics including quantum states, measurements, operators, entanglement, entanglement entropy, "no cloning" theorem, and density matrices; classical gates, reversible computing, and quantum gates; several quantum algorithms including Deutsch's algorithm, Simon's algorithm, Shor's algorithm, and the Grover algorithm; quantum error correction; and quantum key distribution and teleportation.

Prerequisite: Prerequisite(s): PHYS 116A or MATH 21 or AM 10. Enrollment is restricted to juniors and seniors.

PHYS 152 - Physics and Machine Learning (5)

Review of select topics in statistical physics including information theory, entropy, coupled systems, phase transitions, and symmetry breaking. Introduction to multivariate algorithms, with an emphasis on their foundations in statistical physics and classical mechanics. Notebooks, data preparation, cross-validation, supervised and unsupervised learning. Practical considerations for training and optimizing neural networks and related tools. (Formerly offered as Neural Networks, Statistical Physics and Computing.)

Prerequisite: Prerequisite(s): PHYS 105 and PHYS 112; and CSE 20 or ASTR 119 or PHYS 115 or prior programming experience with permission of instructor.

PHYS 156 - Applications of Quantum Materials (5)

Quantum mechanics in solid-state materials plays a fundamental role in the development of quantum computation and sustainable technologies, as well as the search for fundamental physics beyond the Standard Model. This course introduces the quantum physics of semiconductors and low-dimensional materials (such as graphene), with emphasis on applications to transistors for logic operations, p-n junctions

for photovoltaic cells and particle detection, as well as quantum dots for qubits. (Formerly Applications of Solid State Physics.)

Prerequisite: Prerequisite(s): PHYS 102 or CHEM 163A.

PHYS 157 - Frontier of Quantum Materials (5)

The fundamentals of quantum materials are revamped by incorporating the geometric Berry phase and the topology of quantum wave functions. The traditional solid-state phenomena of superconductivity and magnetism are taught from a cutting-edge topological perspective, to understand phenomena such as the quantum Hall effect and emergent Majorana fermions. Applications of topological quantum materials range from spintronics to quantum information and computation. (Formerly offered as PHYS 155, Solid State Physics.)

Prerequisite: Prerequisite(s): PHYS 112 and PHYS 139A; students with equivalent coursework may contact instructor for permission to enroll.

PHYS 160 - Practical Electronics (5)

Provides a practical knowledge of analog electronics that experimentalists generally need in research, including basic circuits with bipolar and field-effect transistors, op-amps, comparators, oscillators, and voltage regulators. It assumes no previous knowledge of electronics but includes twice-weekly lectures with some homework assignments, including small circuit simulations done using PSpice. However, with the aid of the instructor and teaching assistant, the students are expected to learn mainly through the construction, debugging, and analysis of small electronics projects.

Prerequisite: Prerequisite(s): PHYS 5C and PHYS 5N or PHYS 6C and PHYS 6N.

PHYS 171 - General Relativity, Black Holes, and Cosmology (5)

Special relativity is reviewed. Curved space-time, including the metric and geodesics, are illustrated with simple examples. The Einstein equations are solved for cases of high symmetry. Black-hole physics and cosmology are discussed, including recent developments.

Prerequisite: Prerequisite(s): PHYS 105, PHYS 110A, and PHYS 110B; and PHYS 116A or MATH 21 and MATH 24.

PHYS 180 - Biophysics (5)

Physical principles and techniques used in biology: X-ray diffraction; nuclear magnetic resonance; statistics, kinetics, and thermodynamics of macromolecules; viscosity and diffusion; DNA/RNA pairing; electrophoresis; physics of enzymes; biological energy conversion; optical tweezers.

Prerequisite: Prerequisite(s): PHYS 112; students who have a biochemistry background may contact instructor for permission. Restricted to juniors and seniors.

PHYS 182 - Scientific Communication for Physicists (5)

Develops the writing skills necessary to prepare professional publications: how to structure a physics article; write for a specific audience with clarity, precision, and concision; and deliver a short informal presentation. Additionally, students become familiar with the peer review process and the ethics of the publication process.

Prerequisite: Prerequisite(s): PHYS 133 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to junior and senior majors in physics, astrophysics, applied physics, or physics education.

PHYS 191 - Teaching Practicum (5)

Designed to provide upper-division undergraduates with an opportunity to work with students in lower division courses, leading discussions, reading and marking submissions, and assisting in the planning and teaching of a course. Prerequisite(s): excellent performance in major courses; instructor approval required; enrollment restricted to senior physics majors.

PHYS 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision. (See PHYS 42.) Prerequisite(s): upper-division standing; submission of a proposal supported by a faculty member willing to supervise.

PHYS 195A - Senior Thesis I (5)

Independent research for seniors conducted under the supervision of a faculty mentor. Students develop a written research proposal, thesis outline, and introductory material. Prerequisite(s): Entry Level Writing and Composition requirements. Enrollment is restricted to senior applied physics, physics, and physics (astrophysics) majors.

PHYS 195B - Senior Thesis II (5)

Independent research for seniors conducted under the supervision of a faculty mentor. Students prepare an oral presentation of their results, and they submit a written senior thesis on their research topic. Prerequisite(s): Entry Level Writing and Composition requirements. Enrollment is restricted to senior applied physics, physics, and physics (astrophysics) majors.

Prerequisite: Prerequisite(s): PHYS 195A.

PHYS 199 - Tutorial (5)

Students submit petition to sponsoring agency.

PHYS 199F - Tutorial (2)

Tutorial

Graduate

PHYS 202 - Introduction to Teaching in Physics (1)

A practical introduction to working as a teaching assistant for undergraduate classes in physics, including both teaching

laboratories and running discussion sections. The training includes topics in classroom climate and inclusivity, active learning, motivating students, office hours, information technology, grading, communication with the instructor, and handling difficult situations. Students engaged in teaching in the same quarter are encouraged to apply the lessons in their classes and return with feedback to be discussed.
Required course for first year graduate students.

Prerequisite: Enrollment is restricted to graduate students.

PHYS 205 - Introduction to Research in Physics (2)

Introduction to current research opportunities at UCSC for graduate students. Topics include: elementary particle physics, condensed matter and solid state physics, high energy astrophysics, biophysics, and cosmology. Selected topics related to career development may also be included.

Prerequisite: Enrollment is restricted to graduate students or by permission of instructor.

PHYS 210 - Classical Mechanics and Thermal Physics (5)

Generalized coordinates, Lagrange and Hamiltonian mechanics, Poisson Brackets, Classical field theory, other advanced topics in classical dynamics. Introduction to thermodynamics, thermodynamic potentials and Legendre transforms, entropy, distribution functions.
(Formerly Classical Mechanics.)

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 212 - Electromagnetism I (5)

Examines electrostatics and magnetostatics, boundary value problems, multipole expansion, dielectric and magnetic materials, time-varying electromagnetic fields, Maxwell's equations, conservation laws, and plane electromagnetic waves and wave propagation.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 214 - Electromagnetism II (5)

Electromagnetic waves; waves in dispersive media; waveguides and cavities; complete development of special relativity with applications; Lorentz covariant formulation of Maxwell's equations; radiating systems; scattering and diffraction; advanced topics in radiation theory and optics.

Prerequisite: Prerequisite(s): PHYS 212. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 215 - Introduction to Non-Relativistic Quantum Mechanics (5)

Mathematic introduction; fundamental postulates; time evolution operator, including the Heisenberg and Schrodinger pictures; simple harmonic oscillator and coherent states; one-dimensional scattering theory, including S-matrix resonant phenomena; two-state systems, including magnetic resonance; symmetries, including rotation group, spin, and the Wigner-Eckart theorem; rotationally invariant problems, including the hydrogen atom; gauge invariance, including Landau levels; introduction to path integral.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 216 - Advanced Topics in Non-Relativistic Quantum Mechanics (5)

Approximate methods: time-independent perturbation theory, variational principle, time-dependent perturbation theory; three-dimensional scattering theory; identical particles; permutation symmetry and exchange degeneracy, anti-symmetric and symmetric states; many-body systems and self-consistent fields: variational calculations; second quantized formalism, including Fock spaces/number representation, field operators and Green functions; applications: electron gas; quantization of the electromagnetic field and interaction of radiation with matter: absorption, emission, scattering, photoelectric effect, and lifetimes.

Prerequisite: Prerequisite(s): PHYS 215. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 217 - Quantum Field Theory I (5)

Lorentz invariance in quantum theory, Dirac and Klein-Gordon equations, the relativistic hydrogen atom, Green functions and canonical approach to field theory, quantum electrodynamics, Feynman diagrams for scattering processes, symmetries and Ward identities. Students learn to perform calculations of scattering and decay of particles in field theory.

Prerequisite: Prerequisite(s): PHYS 216 or exception by permission of the instructor. Enrollment is restricted to graduate students or by permission of the instructor.

PHYS 218 - Quantum Field Theory II (5)

Path integral approach to quantum field theory. Theory of renormalization and the renormalization group, introduction to gauge theories and spontaneously broken field theories. Applications to the standard model of strong, weak, and electromagnetic interactions.

Prerequisite: Prerequisite(s): PHYS 217. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 219 - Statistical Physics (5)

The basic laws of thermodynamics, entropy, thermodynamic potentials, kinetic theory of gases, quantum and classical statistical mechanics, virial expansion, linear response theory. Applications in condensed matter physics.

Prerequisite: Prerequisites: PHYS 210. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 220 - Theory of Many-Body Physics (5)

Finite temperature Green functions, Feynman diagrams, Dyson equation, linked cluster theorem, Kubo formula for electrical conductivity, electron gas, random phase approximation, Fermi surfaces, Landau fermi liquid theory, electron phonon coupling, Migdal's theorem, superconductivity.

Prerequisite: Prerequisite(s): PHYS 216 and PHYS 219. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 221A - Introduction to Particle Physics I (5)

First quarter of a two-quarter graduate level introduction to particle physics, including the following topics: discrete symmetries, quark model, particle classification, masses and magnetic moments, passage of radiation through matter, detector technology, accelerator physics, Feynman calculus, and electron-positron annihilation.

Prerequisite: Prerequisite(s): PHYS 217 or concurrent enrollment. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 221B - Introduction to Particle Physics II (5)

Second quarter of a two-quarter graduate level introduction to particle physics, including the following topics: nucleon structure, weak interactions and the Standard Model, neutrino oscillation, quantum chromodynamics, CP violation, and a tour of the Stanford Linear Accelerator Center.

Prerequisite: Prerequisite(s): PHYS 221A; PHYS 217 or concurrent enrollment. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 222 - Quantum Field Theory III (5)

Focuses on the theoretical underpinnings of the standard model, including the spontaneous symmetry breaking, the renormalization group, the operator product expansion, and precision tests of the Standard Model.

Prerequisite: Prerequisite(s): PHYS 218 and PHYS 221B. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 224 - Particle Astrophysics and Cosmology (5)

Particle physics and cosmology of the very early universe: thermodynamics and thermal history; out-of-equilibrium phenomena (e.g., WIMPs freeze-out, neutrino cosmology, Big Bang nucleosynthesis, recombination); baryogenesis; inflation; topological defects. High-energy astrophysical processes: overview of cosmic ray and gamma ray astrophysics; radiative and inelastic processes; astroparticle acceleration mechanisms; magnetic fields and cosmic ray transport; radiation-energy density of the universe; ultrahigh-energy cosmic rays; dark-matter models; and detection techniques.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 226 - General Relativity (5)

Develops the formalism of Einstein's general relativity, including solar system tests, gravitational waves, cosmology, and black holes.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 231 - Introduction to Condensed Matter Physics (5)

Crystal structures, reciprocal lattice, crystal bonding, phonons (including specific heat), band theory of electrons, free electron model, electron-electron and electron-phonon interactions, transport theory.

Prerequisite: Prerequisite(s): PHYS 216 or equivalent course or by permission of the instructor. Enrollment is restricted to graduate students only, or by permission of instructor.

PHYS 232 - Condensed Matter Physics (5)

Magnetism (para, ferro, anti-ferro, ferri), spin waves, superconductivity, introduction to semiconductors.

Prerequisite: Prerequisite(s): PHYS 231. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 233 - Advanced Condensed Matter Physics (5)

A special topics course which includes areas of current interest in condensed matter physics. Possible topics include superconductivity, phase transitions, renormalization group, disordered systems, surface phenomena, magnetic resonance, and spectroscopy.

Prerequisite: Prerequisite(s): PHYS 231. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 234 - Soft Condensed Matter Physics (5)

A selection of topics from: liquid crystals, biological systems, renormalization group and critical phenomena, stochastic processes, Langevin and Fokker Planck equations, hydrodynamic theories, granular materials, glasses, quasicrystals.

Prerequisite: Prerequisite(s): PHYS 219 and PHYS 232. Enrollment is restricted to graduate students.

PHYS 240 - Polymer Physics (5)

Statistical properties polymers. Scaling behavior, fractal dimensions. Random walks, self avoidance. Single chains and concentrated solutions. Dynamics and topological effects in melts. Polymer networks. Sol-gel transitions. Polymer blends. Application to biological systems. Computer simulations demonstrating much of the above. Students cannot receive credit for this course and PHYS 120.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 242 - Computational Physics (5)

This course will apply efficient numerical methods to the solution of problems in the physical sciences which are otherwise intractable. Examples will be drawn from classical mechanics, quantum mechanics, statistical mechanics, and electrodynamics. Students will apply a high-level programming language such as Mathematica to the solution of physical problems and will develop appropriate error and stability estimates.

Prerequisite: Prerequisite(s): basic programming experience in C or Fortran. No previous experience with Mathematica is required. Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 251 - Group Theory and Modern Physics (5)

Finite and continuous groups, group representation theory, the symmetric group and Young tableaux, Lie groups and Lie algebras, irreducible representations of Lie algebras by tensor methods, unitary groups in particle physics, Dynkin diagrams, Lorentz and Poincaré groups.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 261 - Fundamentals of Mesoscopic Systems (5)

Introduction to the physics of electrons and particles on length scales between micro and macro worlds, at which the laws of quantum mechanics govern macroscopic behavior. Covered topics include, but are not limited to, quantum effects in electron transport in solids, Anderson localization, quantum Hall effect, physics of topological insulators, and an introduction to superconductivity. Connections with electronic devices and their properties when they are miniaturized as a result of their quantum mechanical properties is discussed.

Prerequisite: Prerequisite(s): PHYS 210, PHYS 215, PHYS 216, PHYS 219 or equivalents; exceptions are possible by permission of instructor. Enrollment is restricted to graduate students.

PHYS 262 - Phase Transformations in Materials (5)

Teaches basic concepts of thermodynamics and kinetics of phase transformations in materials. Students develop an understanding of binary and ternary phase diagrams and learn theories on nucleation and growth, diffusion, and solidification in materials.

Prerequisite: Enrollment is restricted to graduate students in physics, materials science and engineering, and chemistry and biochemistry programs.

PHYS 290 - Special Topics (5)

A series of lectures on various topics of current interest in physics at UC Santa Cruz.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 291A - Cosmology (2)

Intensive research seminar on cosmology and related topics in astrophysics: nature of dark matter; origin of cosmological inhomogeneities and other initial conditions of the big bang; origin and evolution of galaxies and large scale structure in the universe.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 291B - X-rays and Magnetism (2)

Research seminar on x-ray studies of the properties and behavior of magnetic materials. Topics include: the underlying physical interactions, experimental techniques, and selected examples from current research. This course includes a visit to the Advanced Light Source in Berkeley.

Prerequisite: Enrollment is restricted to graduate students.

PHYS 291C - Developments in Theoretical Particle Physics (2)

Seminar on the current literature of elementary particle physics, ranging from strong and weak interaction phenomenology to Higgs physics, supersymmetry, and superstring theory. Students may present their own research results.

Prerequisite: Prerequisite(s): PHYS 218. Enrollment is restricted to graduate students.

PHYS 291D - Experimental High-Energy Collider Physics (2)

Seminar on current results in experimental high-energy particle physics. Topics follow recently published results, including design of experiments, development of particle detector technology, and experimental results from new particle searches, quantum chromodynamics, and properties of heavy flavor quarks.

Prerequisite: Enrollment is restricted to graduate students.

PHYS 291E - Applied Physics (2)

Intensive research seminar on applied physics and related topics in materials science, including semiconductor devices, optoelectronics, molecular electronics, magnetic materials, nanotechnology, biosensors, and medical physics. Students may present their own research results.

Prerequisite: Enrollment is restricted to graduate students.

PHYS 291F - Experimental High-Energy and Particle Astrophysics Seminar (2)

Survey of current research in experimental high-energy and particle astrophysics. Recent observations and development in instrumentation for x-rays, gamma rays, and neutrinos, and evidence for dark matter and other new particles. Students lead discussion of recent papers.

Prerequisite: Enrollment is restricted to graduate students.

PHYS 291G - Condensed Matter Physics Research Seminar (2)

Weekly seminar series covering topics of current interest in condensed matter physics. Local and external speakers discuss their work.

Prerequisite: Enrollment is restricted to graduate students.

PHYS 291H - Physics Education and Communication Seminar (2)

Seminar on communicating physics both in the classroom and in the research setting. Topics include a review of current research in physics education research, as well as methods and techniques for effective communication of research results in standard conference presentation modes. Recently published results are covered.

PHYS 292 - Seminar (0)

Weekly seminar attended by faculty and graduate students. Directed at all physics graduate students who have not taken and passed the qualifying examination for the Ph.D. program.

Prerequisite: Enrollment is restricted to graduate students only, except by permission of instructor.

PHYS 292F - Seminar (2)

Seminar

PHYS 297A - Independent Study (5)

Enrollment restricted to graduate students only, except by permission of instructor.

PHYS 297B - Independent Study (10)

Enrollment restricted to graduate students only, except by permission of instructor.

PHYS 297C - Independent Study (15)

Enrollment restricted to graduate students only, except by permission of instructor.

PHYS 298 - Theoretical and Experimental Research Project (5)

Enrollment restricted to graduate students only, except by permission of instructor.

PHYS 299A - Thesis Research (5)

Enrollment restricted to graduate students only, except by permission of instructor.

PHYS 299B - Thesis Research (10)

Enrollment restricted to graduate students only, except by permission of instructor.

PHYS 299C - Thesis Research (15)

Enrollment restricted to graduate students only, except by permission of instructor.

POLI - POLITICS

To view planned offerings for the current academic year, please visit this page.

Lower-Division

POLI 1 - Politics: Power, Principle, Process, and Policy (5)

Systematic introduction to the nature of politics and government, organized around the dynamic relationship between power, principle, and process in democratic politics. Provides historic and contemporary overview; explores the interactions among government, laws, and societies at the national and international levels.

POLI 3 - Keywords: Concepts in Politics (5)

Introduces key concepts in political discourse and key debates generated by contested terms such as powers, ideology, and multiculturalism. Students read from canonical texts, feminist scholarship, historical materials, and contemporary cultural and postmodernist writings.

POLI 4 - Citizenship and Action (5)

What does a citizen do? What kind of citizen activity is appropriate to democratic aspirations? Course uses political theory to answer these questions as they relate to current and historical events, primarily in the North American context. Draws on texts ranging from Aristotle, Locke, Thoreau, Ellizon, and Ranciere, as well as present-day debates, to bear on the relationship of citizen action and identity.

POLI 17 - U.S. and the World Economy (5)

Explores intellectual and empirical trends shaping the U.S. relationship with the global economy. Traces debates about liberalism and interventionism, surveys post-war American foreign economic policy and discusses varieties of capitalism emerging around the world.

POLI 20 - American Politics (5)

Introduces the study of politics through an analysis of the United States political system and processes. Topics vary, but may include political institutions, public policies, parties and electoral politics, and social forces.

POLI 21 - Governing the Golden State (5)

Introduces key principles for understanding state politics in California and how power is mobilized for transformative change. Analyzes distinctive features of California's political development and culture in the governance of enduring social problems and policy dilemmas.

POLI 31 - Introduction to Latina/o/x Politics (5)

Uses the tools of political science to understand the Latina/o/x community and politics within the United States. Five main themes are addressed: the politics of identity, voting, immigration, social movements, and legitimacy/trust. Within these broad categories, questions include gender, citizenship,

class, sexuality, and most importantly, the complexities of power as it relates to political behavior.

POLI 60 - Comparative Politics (5)

Introduces the study of politics through the analysis of national political systems within or across regions from the developing world to post-industrial nations. Typical topics include: authoritarian and democratic regimes; state institutions and capacity; parties and electoral systems; public policies; social movements; ethnic conflict; and globalization.

POLI 61 - Politics of Social Policy (5)

Introduces social policy around the world. Some countries provide free and good-quality health and education, as well as a minimum income to all citizens. Others, instead, provide meager benefits to few citizens.

POLI 65 - Introduction to International Relations (5)

Introduces students to the study of international relations (IR) as a discipline and as a way of thinking and knowing about the world. Course takes a thematic approach to engage with key concepts that are relevant to the study of international relations today, looking at issues such as economy, security, international institutions, and empire. Students survey the various theories of international relations and think critically about what these perspectives offer us in the contemporary political moment.

POLI 70 - Global Politics (5)

Can common global interest prevail against particular sovereign desires? Surveys selected contemporary issues in global politics such as wars of intervention, ethnic conflict, globalization, global environmental protection, and some of the different ways in which they are understood and explained.

Upper-Division

POLI 100 - Politics Writing-Intensive Seminar (5)

Focuses on methods and approaches to writing effective and persuasive argumentative essays as a core component of the study of politics. Topics vary by instructor, and consider central concepts and issues in political life. The course material is explored as a means through which to develop basic and advanced skills in writing, as well as in argumentation, analysis, and critical engagement with readings through seminar-style discussions.

POLI 101 - Analyzing Political Data (5)

Focuses upon quantitative data analysis and research methods used in the study of politics. Through a series of hands-on assignments students learn to describe data and statistical relationships, measure complex variables, assess statistical significance and construct multivariate models with both indirect relationships and interactions. (Formerly Introduction to Research Methods.)

POLI 102 - Doing Political Research (5)

Introduction to conceptualizing and executing qualitative research in the social sciences. Qualitative methods are non-statistical modes of social inquiry, including case studies, interviews, and archival research. Research methods cannot be done in a passive way. Really understanding methodology requires Doing Political Research. (Formerly Doing Research.)

POLI 103 - Feminist Interventions (5)

Situates ongoing debates around feminist theory and practice within the context of political theory, the role of the state, and the position of women in contemporary (predominantly Western) society. Engages with classical political theory, second wave feminism, and the role of the state on matters pertaining to pornography and prostitution.

POLI 105A - Ancient Political Thought (5)

Explores tensions between reason and revelation, justice and democracy, and freedom and empire through close readings of ancient texts. Emphasis on Athens, with Hebrew, Roman, and Christian departures and interventions. Includes Sophocles, Thucydides, Socrates, Plato, Aristotle, Stoics, the Bible, and Augustine.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 105B - Early Modern Political Thought (5)

Studies republican and liberal traditions of political thought and politics. Authors studied include Hobbes, Locke, and Rousseau. Examination of issues such as authorship, individuality, gender, state, and cultural difference.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 105C - Modern Political Thought (5)

Studies in 19th- and early 20th-century theory, centering on the themes of capitalism, labor, alienation, culture, freedom, and morality. Authors studied include J. S. Mill, Marx, Nietzsche, Foucault, Hegel, Fanon, and Weber.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 105D - Contemporary Political Theory: Modernity and its Discontents (5)

Examines the condition of modernity as it is understood, dwelled upon, and critiqued by political theorists since the second half of the 20th century. Explores how the modern condition was viewed by Euro-American thinkers, who saw themselves as its originators and heirs, as well as Chinese, Indian, Arab, and African thinkers for whom European modernity was an inescapable, if not an insurmountable, imposition to be engaged, transformed, and critiqued. (Formerly Late-20th Century Political Thought.)

POLI 106 - Advanced Topics in Politics (5)

Introduces students to some of the core topics in the discipline of politics. Politics is often understood in terms of institutions and voting, and that is certainly an important part of what constitutes the political. But politics also informs the way we imagine and inhabit the world, how we think, the categories we use, the ways we live our lives. This course seeks to engage the broad subject matter that constitutes the political.

POLI 107 - Politics of Aesthetics (5)

Addresses questions such as: "How do popular conceptions of beauty serve state power or resist it?" “Is art always political?” “Does politics always involve an aesthetic dimension?” Course considers a range of material including texts, images, statues, architecture, and music (e.g., Pyramids, Great Wall, Mount Rushmore). Prior coursework in political theory recommended.

POLI 108 - Revolt, Rebellion, Revolution (5)

Examines revolt, rebellion, and revolution as ideas in political theory, and as prisms through which we can analyze historical events. Introduces works of political theory (historical and contemporary), and looks at historical events considered to be revolts and/or revolutions.

Prerequisite: Enrollment is restricted to politics and Latin American and Latino studies/politics combined majors during first and second pass enrollment.

POLI 110 - Law and Social Issues (5)

Examines current problems in law as it intersects with politics and society. Readings are drawn from legal and political philosophy, social science, and judicial opinions.

POLI 111A - Constitutional Law (5)

An introduction to constitutional law, emphasizing equal protection and fundamental rights as defined by common law decisions interpreting the 14th Amendment, and also exploring issues of federalism and separation of powers. Readings are primarily court decisions; special attention given to teaching how to interpret, understand, and write about common law.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 115 - Foundations of Political Economy (5)

Studies the development of political-economic philosophy from the 17th Century through the end of WWII, with attention to colonialism, Indigenous critiques, and intersectional feminist interventions. Topics include money, property, the commons, luxury, class struggle, and inequality. Students engage these topics through reading, class discussion, and writing original persuasive theoretical essays based on textual evidence.

Prerequisite: Prerequisite(s): One of POLI 105A, POLI 105B, POLI 105C, POLI 105D, or POLI 120C.

POLI 118 - Critical Political Thought and Critical Theory (5)

Course uses a multidisciplinary approach to the study of politics through significant contemporary authors and approaches in critical theory. Topics include: democracy action, violence, subjectivity, identity, power and resistance, the body, political economy, and post-colonialism. (Formerly Topics in Contemporary Political and Critical Theory.)

POLI 120A - Congress, President, and the Court in American Politics (5)

Study of political development, behavior, performance, and significance of central governmental institutions of the U.S. Emphasizes the historical development of each branch and their relationship to each other, including changes in relative power and constitutional responsibilities.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 120B - Society and Democracy in American Political Development (5)

Examines the role of social forces in the development of the American democratic processes and in the changing relationship between citizen and state. Course materials address the ideas, the social tensions, and the economic pressures bearing on social movements, interest groups, and political parties.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 120C - State and Capitalism in American Political Development (5)

Examines the relationship between state and economy in the U.S. from the 1880s to the present, and provides a theoretical and historical introduction to the study of politics and markets. Focus is on moments of crisis and choice in U.S. political economy, with an emphasis on the rise of regulation, the development of the welfare state, and changes in employment policies.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 121 - Racism & Justice in America (5)

Examines racism as a logic of governance in American politics and traces racial reasoning in transcendent notions of "justice" in the U.S. from the nation's founding into the 21st century. (Formerly offered as Race & Justice in America.)

Prerequisite: Enrollment is restricted to politics majors during first and second pass enrollment.

POLI 122 - Politics, Labor, and Markets (5)

Examines political and social dimensions of recent transformations in the U.S. labor market. Includes classical and contemporary theoretical debates over the nature and functions of work under capitalism. Focuses on shifts in the organization and character of work in a globalizing economy. Addresses recent trends in low-wage and contingent work, job

mobility and security, and work/family relations. Includes attention to the roles and responses of business, labor, and government.

POLI 124 - Economic Inequality in America (5)

Examines the sources and implications of economic inequality in the United States. Explores theories of social class and its intersections with race and gender inequalities. Focuses on the role of politics and public policies in diminishing and/or exacerbating income and wealth inequalities.

POLI 125 - Political Organizations in American Politics (5)

Introduces the literature on interest groups and attempts to answer the question: Do such groups promote or hinder American democracy? Class readings and lectures review and assess the participation of interest groups in the electoral process and in Congress, the executive branch, and the courts.

POLI 127 - Parties and Partisanship in American Politics (5)

Explores several important topics in the study of parties and partisanship in American politics; for example, the development of the party system, parties as organizations, parties in government, parties in the electorate, polarization, partisan identification, and state-level variation.

POLI 128 - American Elections and Voting Behavior (5)

Introduces key concepts pertaining to voting, elections, and political behavior in the United States. Several topics are covered, such as campaigns, electoral institutions, reform, political participation (including but not limited to voting), presidential and congressional elections, partisan identification, and polling.

POLI 129 - Policies and Politics of American Defense (5)

Examines the evolution of the policy and politics of American national security, from the Cold War to the present. Content of military policy explored with analytic focus on formation of policy and interactions between military policies and domestic policies.

Prerequisite: Enrollment is restricted to politics and Latin American and Latino studies/politics combined majors during first and second pass enrollment.

POLI 132 - California Water Law and Policy (5)

Explores the rich history and fundamental legal concepts surrounding water in California. Students identify, evaluate, and debate some critical water policy questions faced by Californians today and in the future.

POLI 134 - Congress: Representation and Legislation (5)

Examines the United States Congress and the nature of the representative and legislative processes. Topics include: districting and elections; bicameralism; party organization; institutional and behavioral influences on legislative action; and the efficacy of Congress as a legislative body. Focuses on the contemporary Congress with comparisons to other legislative and representative institutions.

POLI 140A - European Politics (5)

Explores the political and economic systems of advanced industrialized societies. In addition to specific comparisons between the countries of western Europe and the United States, covers important themes and challenges, including immigration, globalization, and the crisis of the welfare state.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 140C - Latin American Politics (5)

Overview of major approaches to the study of Latin American politics. Introductory survey of historical and contemporary democratic populist, authoritarian, and revolutionary regimes. Special attention is given to region's recent transitions toward democratic rule, market-based economic models, and decentralized governance. Evaluates institutional arrangements (including presidentialism, electoral rules and party systems), as well as a variety of social movements and strategies of resistance among subaltern social groups and classes.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 140D - Politics of East Asia (5)

Explores the political development of East Asia's primary democracies: Japan, South Korea, and Taiwan. Examines the historical origins of these states, the process through which they emerged from authoritarian roots, and topics such as protest, corruption, and women's political roles.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 140E - Middle East Politics (5)

Covers different aspects of the evolution of the contemporary Arab nationalist state. The Arab world has weathered a series of revolutions, military coups, civil wars and liberalization attempts during the past six decades. Before the 2010-2011 uprisings, the region was mistakenly labeled as the home of "failed" and "rogue" states and understood to be the only region in which genuine democratic change was absent. Course shows that popular legitimacy and political ambitions have not always been lacking in the region, focusing primarily on Egypt, Syria, Tunisia and Algeria to emphasize the changes and continuities in the multiple constructions of state power in the Arab world since decolonization. Students cannot receive credit for this course and POLI 152.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level and Composition requirements.

POLI 141 - Politics of China (5)

Introduces themes of Chinese politics from 1949 to present, including: the establishment and substantial dismantling of socialism; movements and upheavals, such as the Cultural Revolution and 1989; and issues, such as Hong Kong and Tibet. Surveys current institutions, leaders, and policies.

POLI 142 - Comparative Federalism (5)

Introduces students to the promise and perils of federalism, an institution that countries around the world have adopted to solve a range of different political problems. In recent decades, federalism has emerged as a salient issue in comparative politics, and one that serves as an excellent window onto the most significant questions that we ask in this subfield, including how to consolidate democracy, how to promote economic development, and how to provide security in ethnically-divided societies. The course includes three weeks on conceptual issues; six weeks on the impact of federalism on democracy, development, and security; and a final week of student presentations on country cases.

POLI 143 - Comparative Post-Communist Politics (5)

Comparative study of revolutionary transformations of East European, Soviet, and former Soviet nations to post-Communist political orders. Focus on reemergence of political society, social and economic problems of transition, and maintenance of many cultural norms and authority patterns associated with previous regime.

POLI 144 - Andean Politics (5)

Examines similar political trends in four Andean countries: Bolivia, Colombia, Ecuador, and Peru. Trends include mobilization of indigenous populations, breakdown of traditional party systems, and reconstruction efforts in post-conflict environments. Students who have taken prior courses in Latin American politics, including POLI 140C, will be best prepared for this course.

POLI 145 - Palestinian Citizens of Israel: Politics, Society, and Culture (5)

Introduces the Israeli-Palestinian conflict, focusing on the case of the Palestinian citizens of Israel. After the 1948 war, many Palestinians were dispossessed of their lands and deported to Arab countries, and the Palestinians who remained within what became the State of Israel were granted citizenship. Palestinians in Israel make up roughly one-fifth of Israel's population, but are somewhat excluded from the Jewish majority society and are discriminated against by the state formally and informally. The relationship between the Jewish and the Palestinian citizens of Israel is fragile and constantly changing due to Israel's and the Palestinian Authority's political fluctuation, as well as Israel's definition of a Jewish and democratic state. This course highlights the Palestinians' political, social, and cultural aspects and sheds light on how they experience everyday life as a minority in Israel. Students learn how to apply an interdisciplinary approach to better understand the long-lasting regional conflict known for its high impact on world politics.

POLI 146 - The Politics of Sub-Saharan Africa (5)

Comparative study of contemporary sub-Saharan African states. Selected issues and countries. Internal and external political institutions and processes are studied in order to learn about politics in contemporary Black Africa and to learn more about the nature of politics through the focus on the particular issues and questions raised by the African context. (Formerly The Politics of Africa.)

POLI 147 - The Politics of Territorial Conflict (5)

Examines the phenomenon of territorial conflict within countries. Focuses on territorial cleavages that occur when minority groups are geographically concentrated within particular territories, and emphasizes attempts to accommodate these cleavages through measure like autonomy, federalism, and decentralization.

POLI 151 - Politics of Law (5)

Uncovers the important debates in politics and law around the functions of courts, litigation, and rights--and the political nature of law itself. Course is interdisciplinary, and draws from literature in political science, law, and sociology.

POLI 153 - Urban Politics (5)

Provides an introduction to issues and challenges facing cities in the U.S. and abroad, as well as the policy remedies available to government and the private sector. The first part of the course provides the foundations to the study of urban politics by examining core questions in local government institutions and urban coalitions. The second part of the course examines urban policies in a variety of areas, such as growth, redevelopment, housing, and poverty.

POLI 154 - The Philippines and the World (5)

Introduces students to the histories, societies, and politics of the Philippines. Surveys major historical eras, and treats topics such as the state, revolts and revolution, labor, religion, the environment, martial law.

POLI 155 - Politics of Urban Health (5)

Introduces issues and challenges facing local governments in the U.S. and abroad as pertains to health policies that are designed and or delivered at the local level. This includes homelessness, housing, behavioral health policies, and disaster responses.

POLI 160A - Theories of International and World Politics (5)

Examination of analytical perspectives on international and world politics, international and global political economy, war and conflict, corporations and civil society. Explores theoretical tools and applications, recurring patterns of global conflict and cooperation, the nexus between domestic politics, foreign policy and international and world politics. This is not a current events course.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 160B - International Law (5)

Origins and development of international law: international law is examined both as a reflection of the present world order and as a basis for transformation. Topics include state and non-state actors and sovereignty, treaties, the use of force, and human rights.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 160C - Security, Conflict, Violence, War (5)

Genesis and theories of conflict and war and their avoidance (past, present, future). Relationship between foreign policy and intra- and interstate conflict and violence. National security and the security dilemma. Non-violent conflict as a normal part of politics; violent conflict as anti-political; transformation of conflict into social and interstate violence. Interrelationships among conduct of war, attainment of political objectives, and the end of hostilities. Civil and ethnic wars. Political economy of violence and war.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 160D - The Politics of Global Capitalism (5)

Explores the power dynamics, institutions, and ideas that shape the global capitalist system. Examines how states, markets, and transnational actors interact to structure trade, finance, development and globalization—and who wins or loses in the process. The course combines classic theoretical approaches with contemporary debates on globalization, inequality, economic crises, and strategic competition. Topics include the history of global capitalism, the rise of neoliberalism, trade wars, and the politics of financial instability. While no background in economics is required, students unfamiliar with basic economic concepts may need to suppleInternational Political Economy.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

POLI 161 - The Rise of China (5)

Explores China's rising international power and the implications thereof. Special emphasis on China's interactions with the United States and related issues (Korea, Taiwan, the South China Sea). Also addresses China's dealings with South Asia, Southeast Asia, Africa, Japan, international organizations, and more. (Formerly Foreign Relations of China.)

POLI 165 - Global Organization (5)

Addresses whether and how global organizations are changing the international system. Examines multilateral institutions, regional organizations, and nonstate actors. Overriding aim is to discern whether these global organizations are affecting the purported primacy of the state.

POLI 166 - Politics of Migration (5)

Examines the magnitude and the political, economic, cultural, environmental, and social impact of today's movement of millions of people within and amongst states.

POLI 167 - Politics of International Trade (5)

Examines key issues in international trade, including the distribution of gains, fair trading practices, and preferential trade agreements. Focuses on the political dimensions of trade, the rules of the international trade system, and conflicts within countries that international trade generates.

POLI 168 - Topics in International Relations and Global Politics (5)

Examines contemporary issues in international relations, global politics, and global political economy through theoretical and applied frameworks, program assessment, sectoral and structure analysis, and across levels of analysis. Prior enrollment in POLI 160A, Theories of International and World Politics, is recommended, but not required.

POLI 169 - Politics of Development (5)

Introduces the politics of development. Examines the theories, history, and economics of development. Analyzes several contemporary issues. Readings include contemporary writings in the field and classical works on theoretical approaches.

POLI 172 - Liberalism, the State, and the War on Terror (5)

Examines the relation between the liberal State and perceived challenges to State sovereignty posed by transnational terrorism. How does terrorism as both a symbol and empirical phenomenon fit within the horizon of liberal ideology? What claim to sovereignty does the State make in the face of acts of terror? What political logic is required in/for a War on Terror? Students may not take both course 72 and this course for credit in the major.

POLI 174 - Global Political Ecology (5)

Explores the global dimensions of complex environmental issues such as climate change, biodiversity, deforestation, and fisheries: how they are produced, how they manifest, and how they are governed in response.

POLI 175 - Human Rights (5)

Embraces an interdisciplinary approach to the study of human rights. Captures the malleable nature of human rights and the contours of its dual role as both law and discourse. Prior coursework in International Law (POLI 160B /LGST 160B) is recommended.

POLI 176 - Power and Politics in Southeast Asia (5)

Explores the issues and challenges facing the five Southeast Asian countries that line the shores of the Mekong River: Laos, Cambodia, Myanmar, Thailand, and Vietnam. Examines the importance of the health of the Mekong to the lives of 70 million who depend on its flowing waters and how exploitation of the river and how its tributaries pose real and tangible opportunities as well as threats across a broad and diverse geography. (Formerly Politics, Security, Energy the Environment Along the Mighty Mekong.)

POLI 182 - The Power to Punish (5)

Interrogates the presuppositions of punishment as legitimate state power. Decentering crime as punishment's conceptual predicate, wider analysis of the penal state's social-scientific, jurisprudential, and philosophical foundations force us to ask:

What is punishment? Why punish? How, and whom, to punish?

POLI 184 - Shariah and Political Thinking: Law and Politics in Modern Islamic Thought (5)

What defines just political rule in Islam? How do modern Muslim thinkers conceive the role of Islamic normative guidelines (Shariah) in the context of secular modern nation-states? Course surveys how major trends in modern Islamic thought try to answer this question.

POLI 185 - Political Psychology (5)

Provides a broad introduction to the growing interdisciplinary field of political psychology. Focuses on and critically analyzes classic and contemporary psychological perspectives, primarily through original sources. Draws upon theoretical ideas and experimental results to understand political actors, events, and processes.

POLI 187 - Decolonial Global Health: A View from the Middle East and Africa (5)

Examines global heath from a decolonial perspective. Investigates the health challenges and related policies and programs that have emerged in the wake of colonization, state building, economic dependency, western-centered knowledge production, and postcolonial nationalism. Focused on case studies from Africa and the Middle East, the course decenters western models of healthcare, enabling students to think critically about the diverse contexts and transnational dynamics that have shaped both global health emergencies and the emergence of global health as a field.

POLI 189 - Pandemics, Politics, and Global and Community Health (5)

Examines the lessons for global and community health that are emerging from our experiences of COVID. These experiences have been characterized by vast variations in exposure and vulnerability as well as wide variations in response and resilience. All these variations teach us much about inequalities in global and community health, but they also highlight new opportunities for addressing injustice and restoring health as a shared human right. By treating the pandemic this way as portal for the re-imagination and remaking of global and community health, the course focuses on moving systematically from evidence about disease, its inequalities, and policy responses to ideas about improving health outcomes both locally and globally.

POLI 190A - The Manufacture of Consent (5)

Explores diverse strategies to generate popular consent developed by actors and groups aiming to promote their understanding of the world and acquire political power since the beginning of the 20th century. Traces a genealogy of political communication from the birth of marketing and propaganda to the advent of a public sphere shaped by infotainment and big data. In so doing, it reflects on the impact of increasingly sophisticated forms of political communication and advertising on the public's trust. Course also introduces different notions that serve to explain the current state of public debates in liberal representative regimes (manufacture of consent, cultural hegemony, public sphere, simulacrum, etc.).

POLI 190C - Postcolonial Visions of Liberation (5)

How do postcolonial thinkers conceive of freedom and equality in the wake of a colonialism that irreversibly reshaped their modes of life? Course closely reads central works of postcolonial theory to examine how they address this question. (Formerly Humanitarian Action in World Politics.)

Prerequisite: Enrollment is restricted to senior politics and politics/Latin American and Latino studies combined majors.

POLI 190D - Early Anarchist and Socialist Thought (5)

Studies in 19th- and early 20th-century anarchist and socialist thought. Themes covered include property, labor, marriage, and the state. Readings drawn from Bakunin, Goldman, Fourier, Kropotkin, Perkins-Gilman, Proudhon, and Stirner.

Prerequisite: Prerequisite(s): two of the following: POLI 103, POLI 105A, POLI 105B, POLI 105C, POLI 105D, POLI 109, or POLI 115; or by permission of instructor. Enrollment is restricted to senior politics majors.

POLI 190E - Transitions (5)

Explores the role of new media in political protest; whether and how new media technologies such as social networking, text messaging, Twitter, and YouTube have changed the way opposition movements develop.

Prerequisite: Enrollment is restricted to senior politics and Latin America and Latino studies/politics combined majors.

POLI 190F - Topics in Urban Governance (5)

Cities are at the frontlines of complex global issues including climate change, international terrorism, and transnational migration. Course situates cities in the dynamics of world politics, and explores the possibilities and prospects of global urban/urban global governance in the 21st Century.

Prerequisite: Enrollment is restricted to senior politics and Latin American and Latino studies/politics combined majors.

POLI 190H - The Substance of Democracy (5)

What is democracy? How can we identify it? How do we understand and identify political participation? What are the factors behind it? What role does protest have in democratic politics? These and similar questions are addressed in this course that focuses on topics of democratic politics in the United States and abroad.

Prerequisite: Enrollment is restricted to senior politics and combined politics/Latin American and Latino studies majors.

POLI 190L - Poverty Politics (5)

Examines theoretical, historical, and contemporary sources of poverty policies in the United States. Explores competing theories of the causes of poverty and the consequences of social provision. Focuses on successive historical reform

efforts and contemporary dilemmas of race and urban poverty, gender and family poverty, work, and the politics of welfare reform.

Prerequisite: Enrollment is restricted to senior politics and Latin American and Latino studies/politics combined majors.

POLI 190M - Politics in American States (5)

State governments affect the lives of Americans every day. This course examines an array of issues pertaining to state politics, such as the foundations of American federalism, institutional organization, elections, political parties, direct democracy, and policy-making.

Prerequisite: Prerequisite(s): One of the following: POLI 20, POLI 21, POLI 120A, POLI 120B, POLI 120C, POLI 122, POLI 124, POLI 127, POLI 128, or POLI 132; or by permission of instructor. Enrollment is restricted to senior politics and combined politics/Latin America and Latino studies majors.

POLI 190N - Problems and Solutions in U.S. Politics (5)

Examines problems and potential solutions to issues in U.S. politics, such as presidential power, partisan polarization, money in elections, foreign and security policy, civil rights and liberties, and taxation and spending.

Prerequisite: Enrollment is restricted to senior politics and Latin American and Latino studies/politics combined majors.

POLI 190O - Constitutional Meanings and Movements (5)

Explores how civic groups and social movements have confronted and shaped constitutional rights, equality, and power. Examines a range of U.S. movements from the 18th Century to the 21st Century-era of Marriage Equality, Tea Party, and Dreamer movements. (Formerly Constitutional Meanings and Movements: Exploring the Ideas, Laws, and Politics in Social Change.)

POLI 190P - Race: History of a Concept (5)

Examines how we came, by the late 19th century, to classify humanity into racial categories. In an effort to trace emergence of this very modern phenomenon, explores historical shifts that informed Europe's representation of cultural difference from the writings of ancient Greeks to the social Darwinism of 19th-century Britain.

Prerequisite: Enrollment is restricted to senior politics and Latin American and Latino studies/politics combined majors.

POLI 190R - Comparative Law and Society (5)

Interdisciplinary investigation into functions of law across political, historical, and cultural contexts. Examines the international and comparative turn in public law scholarship and the role of law-based strategies in state building. Reviews literature in law, political science and legal anthropology.

Prerequisite: Prerequisite(s): POLI 160B. Enrollment is restricted to senior politics and Latin American and Latino studies/politics combined majors.

POLI 190S - Policies and Practices of Health Systems Strengthening (5)

Examines how to strengthen health systems locally and globally by developing and practicing lessons from global health policy studies to compare, contrast, and communicate opportunities for community health worker integration and intervention. The key politics questions running through the course concern whether and how community health work can be integrated with the policies and practices of global health agencies, national health programs, public health administration, and public health systems more generally.

POLI 190T - Governance and Conflict in East Asia (5)

Students read recent books on East Asian countries that engage the long-standing themes of state power and societal resistance.

Prerequisite: Prerequisite(s): POLI 141 or POLI 161 or POLI 109, or by permission of instructor. Enrollment is restricted to senior politics majors.

POLI 190V - States in the Global South (5)

Focuses on the causes and consequences of state capacity in the global south, asking why states are much stronger in some countries than others and how their relative strength affects important substantive outcomes, including democracy, development, and security. (Formerly Problems in Latin American Politics.)

Prerequisite: Enrollment is restricted to juniors and seniors politics majors.

POLI 190W - Topics in Latin American Politics (5)

Examines how Latin American governments function and what major challenges countries in the region are facing. Focuses on democracy, economic development, gender and indigenous politics, social policies, poverty, and inequality.

Prerequisite: Enrollment is restricted to senior politics majors.

POLI 190X - American Empire (5)

Examines the U.S. as a political empire, an imperial project, rather than—or in addition to being—a constitutional republic. Analyzes selected episodes in national and global expansion from the founding to the present, with an emphasis on the politics of empire and its relationship to American democracy and constitutionalism.

POLI 190Y - African American Political Thought (5)

Research seminar explores contributions of major African American political theorists to study of power and democracy through reading, discussion, and writing. Students conduct individual research projects culminating in a scholarly seminar paper.

Prerequisite: Prerequisite(s): one from POLI 3, POLI 4, POLI 105A, POLI 103, POLI 105B, POLI 105C, POLI 105D, POLI 107, POLI 108, POLI 115, POLI 118, POLI 121, POLI 182, POLI 184.

POLI 190Z - International Security (5)

Examination of selected issues, controversies, and theories relevant to security between and among nations. Topics vary, but may include: war, peace, nuclear proliferation, arms control, military and foreign policies, alternative conceptions of security.

Prerequisite: Enrollment is restricted to senior politics and Latin American and Latino studies/politics combined majors .

POLI 193 - Field Study in Politics (5)

Individual studies undertaken off campus with direct faculty supervision. Students submit petition to sponsoring agency.

POLI 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Various topics to be announced before each quarter. Students submit petition to sponsoring agency.

POLI 194F - Group Tutorial (2)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Various topics to be announced before each quarter. Students submit petition to sponsoring agency.

POLI 195A - Senior Thesis (5)

Preparation of a senior thesis over two or three quarters, beginning in any quarter. The grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency.

POLI 195B - Senior Thesis (5)

Preparation of a senior thesis over two or three quarters, beginning in any quarter. The grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency.

POLI 195C - Senior Thesis (5)

Preparation of a senior thesis over two or three quarters, beginning in any quarter. The grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students submit petition to sponsoring agency.

POLI 198 - Independent Field Study (5)

Individual studies undertaken off-campus for which faculty supervision is not in person (e.g. supervision is by correspondence). Students submit petition to sponsoring agency.

POLI 198F - Independent Field Study (2)

Individual studies undertaken off-campus for which faculty supervision is not in person, but by correspondence. Students submit petition to sponsoring agency.

POLI 199 - Tutorial (5)

A student normally approaches a member of the staff and proposes to take a POLI 199 on a subject he or she has chosen which is not offered in other politics courses. Students submit petition to sponsoring agency.

POLI 199F - Tutorial (2)

A student normally approaches a member of the faculty and proposes to take a POLI 199 on a subject he or she has chosen which is not offered in other politics courses. Students submit petition to sponsoring agency.

Graduate

POLI 200A - Political and Social Thought Core Seminar (5)

Draws on history of political thought, contemporary social and critical theory, and the contributions of legal and institutional analysis of various kinds to engage in critical study of political practices that are experienced or understood as in some way limiting, oppressive, or wrong; to transform our understanding of these practices; to see their contingent conditions; and to articulate possibilities of governing ourselves differently.

Prerequisite: Enrollment is restricted to graduate students.

POLI 200B - Social Forces and Political Change Core Seminar (5)

Concerns transformation of social forces into political ones. Focuses on formation, articulation, mobilization, and organization of political interests and identities, their mutual interaction, and their effects on state structures and practices and vice versa. Major themes are 1) social bases of political action: class, gender, race, and other determinants of social division and political identity and 2) relevant forms of political agency and action, including development of political consciousness and representation of interests and identities in the public sphere.

Prerequisite: Enrollment is restricted to graduate students.

POLI 200C - States and Political Institutions Core Seminar (5)

Introduces study of political institutions as instruments of collective decision making and action. Explores alternative theoretical approaches to development of political institutions, state and political economy, and security dilemmas.

Prerequisite: Enrollment is restricted to graduate students.

POLI 200D - Political Economy Core Seminar (5)

Introduction to the theories and methodologies of political economy. Focuses on the relationship between states and markets and considers the politics of economic choices and institutions germane to both national and global political institutions. Addresses origins and development of markets and capitalism; historical evolution of states and their economies; relationship between labor, capital, production, and consumption; regulation of production; macroeconomics

and management of economies; and issues of national and global social welfare.

Prerequisite: Enrollment is restricted to graduate students.

POLI 201 - Logics of Inquiry (5)

Investigates approaches to study of politics and to enterprise of social science in general. Works from positivist, interpretive, historical, and critical approaches provide examples held up to critical and epistemological reflection.

Prerequisite: Enrollment is restricted to graduate students.

POLI 202 - Fundamentals of Political Research (5)

Gives students practical tools to transform research questions into viable and well-crafted research designs. Introduces conceptual development, various forms of data, and rules for case selection. The goal is to train students in a range of specific methods, including interviewing, ethnography, and archival work.

Prerequisite: Enrollment is restricted to graduate students.

POLI 203 - Making of the Modern (5)

Introduces, at the graduate level, some of the central conceptual categories and material implications that underwrite the world of the modern. Explores concepts including the individual, historicism, contract, and objectivity.

Prerequisite: Enrollment is restricted to graduate students.

POLI 204 - Bodies in History (5)

The human body has been productive of a wide range of varied and competing discourses. Among the themes covered are sexuality, hygiene, the grotesque, and criminality.

Prerequisite: Enrollment is restricted to graduate students.

POLI 205 - Critical Perspectives on Classical Political Economy (5)

Explores seminal works in classical political economy, particularly its consolidation at the moment that industrial society emerged from commercial society, as demonstrated in the writings of Bernard Mandeville, Adam Smith, and Thomas Malthus.

Prerequisite: Enrollment is restricted to graduate students.

POLI 206 - Power and Pleasure (5)

Graduate seminar exploring connections between the body politic and human bodies, particularly as they relate to the sensory dimension of political and personal experience. The myriad ways these connections have been drawn, from antiquity to the present, belie the aspiration of philosophy to organize political life around reason. These connections also offer us ways in to consider the materiality of social life, and commercial life in particular, generating perspectives on capitalism and late modernity. Engagements with these materials also provide opportunities to explore the relationship between sensual materialism and affect theory.

Prerequisite: Enrollment is restricted to graduate students.

POLI 207 - Political Economies of Affect (5)

Explores the potential in philosophical precursors to recent affect theory, alongside classical political economy and its critics, to develop an alternative epistemology for political economy. Readings include: Aristotle, Spinoza, Deleuze, Hume, Negri, Hardt, Smith, Bergson, and Marx.

Prerequisite: Enrollment is restricted to graduate students.

POLI 208 - Race (5)

Considers the subject of race and racism from a political and historical perspective appealing to literatures from history, anthropology, science, and literary studies.

Prerequisite: Enrollment is restricted to graduate students.

POLI 209 - Radical Political Thought (5)

Focuses on early 19th- through early 20th-century socialist and anarchist thought, excluding Marx. Theorists studied include Saint-Simon, Fourier, Proudhon, Stirner, Bakunin, Kropotkin, Perkins Gilman, and Goldman. Some secondary literature and related contemporary theory is also treated.

Prerequisite: Enrollment is restricted to graduate students.

POLI 210 - Problems of Democracy in Comparative Perspective (5)

Democracy is an essential political concept, and a fundamentally contested one. Since the 1980s, scholars of comparative politics have attempted to explain why and when countries transition from authoritarianism to democratic institutions. However, regime change at the national level only sets the stage, leaving deeper questions about what democracy means in practice--how it plays out (or is undermined) throughout the state and at subnational levels; whom it includes and excludes; what options it opens; and what possibilities it forecloses. Such questions relate debates about the potential and the limitations of democracy in general.

Prerequisite: Enrollment is restricted to graduate students.

POLI 211 - Making and Unmaking Sovereignty (5)

Focuses on questions of sovereignty. Of what does sovereignty consist? How is it secured, proclaimed, and perpetuated? How is it insecure, contingent, and subject to contestation? How is the idea of individual sovereignty related to the idea of the sovereignty of the state? Our aim is less to answer these questions definitively than to explore them and understand how theorists (historical and contemporary) have explored them, and how different historical episodes illuminate them.

Prerequisite: Enrollment is restricted to graduate students.

POLI 213 - Who Governs the Globe? Exploring Agency and

Authority in Contemporary World Politics (5)

Addresses the role of non- and sub-state actors in global governance. Explores the concept of agency in world politics, and the conditions under which these actors acquire global agency in contemporary world politics. Introduces various theoretical perspectives with which to identify and evaluate agency, with a focus on alternative sources of authority, identity, and power.

Prerequisite: Enrollment is restricted to graduate students.

POLI 214 - Thinking Green: Politics, Ethics, Political Economy (5)

Green political thought, philosophy, debates, and practices; history of ecological thought and comparative study of competing ideas and proposals. Critical examination of neo-liberal environmentalism.

Prerequisite: Enrollment is restricted to graduate students.

POLI 216 - Theorizing Politics Beyond the State (5)

Explores some of the major ways the modern nation-state has been theorized by political theorists, political scientists, and sociologists before moving on to examine some alternate modalities of organizing collective life from Anglophone and Francophone Africa, the Caribbean, India, China, Indigenous Hawaii and North America, and the Muslim world.

Prerequisite: Enrollment is restricted to graduate students.

POLI 217 - Besieged Polities... (5)

Introduction to the study of transnational security apparatuses and politically sensitive forms of mobility, with a focus on borders, their political significance, and those who monitor, cross and challenge them. Discussion includes recent monographs published in the fields of critical security studies, critical border studies, and new mobilities. Also studies these works in conversation with more traditional approaches in the field (notably realist, constructivist and neo-functionalist) that they aim to problematize. In addition, students reflect on the tools provided by different disciplinary approaches (international relations, cultural anthropology, critical theory, history) to think about these issues.

Prerequisite: Enrollment is restricted to graduate studies.

POLI 218 - Law and/Vs. Justice: The Rule of Law and Problems of (In)Justice (5)

Explores major debates on the role and rule of law in society, with attention to efforts to use law to seek justice or respond to injustice. This includes engaging in three overlapping sets of conversations: What is law—its sources and functions—and how, where, and on whom does it operate? What is the "rule of law"—what is it for and whom does/can it serve and how? What are different ways that people and groups grapple with or respond to the role of law in injustice—including "the Nazi problem," "the slavery problem," the colonialism/imperialism problem, the Jim Crow/apartheid problem, etc—and what are the possibilities, challenges, and limits? Theoretical perspectives on the sources/origins and role of law in society will be considered as well as case studies and concrete examples that show how this tool is applied to particular challenges.

Prerequisite: Enrollment is restricted to graduate students.

POLI 220 - Un(Doing) History (5)

Engages the politics of history through multiple frames: subject matter, interpretation, and the epistemological precepts that underwrite history as a discipline. Introduces students to a wide range of interdisciplinary literatures that include different historical methodologies, feminist theory, political theory, queer studies, postcolonial theory, and critical race studies.

Prerequisite: Enrollment is restricted to graduate students.

POLI 222 - Conflict and Change in American Politics and Policy (5)

Explores the dynamic and contested interaction between politics and policy in the U.S. context, through examining the historical development of key contemporary policy debates and political conflicts. Introduces recent scholarship, drawing on history, sociology, and political economy that has challenged traditional behavioralist approaches to understanding American politics and policy development.

Prerequisite: Enrollment is restricted to graduate students.

POLI 223 - Topics in American Political Development (5)

Explores several important topics that have emerged from the renewed interest in political development, and are visible within its scholarship in American Political Development; for example, state-building, institutional change, representation, culture, participation, political identity, and economic and social transformations.

Prerequisite: Enrollment is restricted to graduate students.

POLI 232 - United States Political History (5)

Covers several important themes and sets of readings from the literature on American political development. Topics include the origins and development of American political institutions, the evolution of democratic mechanisms, the rise and fall of social movements, and debates about the sources of policy regimes and political change.

Prerequisite: Enrollment is restricted to graduate students.

POLI 241 - Foundations and Frontiers in Comparative Politics (5)

Overview of the major theoretical approaches to the study of comparative politics. This includes diverse literatures such as institutions and political economy, authoritarianism and democracy, and civil society and social movements. Case material is drawn from Latin America, Africa, Europe, North America, Asia and the Pacific.

Prerequisite: Enrollment is restricted to graduate students.

POLI 243 - Comparative Methods (5)

Introduces the comparative method in social science. Trains students in the use of this method by examining how scholars have used it to compare across national governments, subnational units, public policies, organizations, social movements, and transnational collective action.

Prerequisite: Enrollment is restricted to graduate students.

POLI 245 - Latin American Politics (5)

Surveys the Latin American political literature by studying: 1) critical moments in political development (e.g., state formation, democratization); 2) important political institutions (e.g., presidentialism, party, and electoral systems); and 3) influential political actors (e.g., unions, business associations, social movements).

Prerequisite: Enrollment is restricted to graduate students.

POLI 247 - Comparative Urban Politics (5)

Focuses on local government structures and the relationships with other levels of government. Examines institutions and administration; urban political economy (fiscal strain, poverty, inequality, and the efforts to attract economic investment); political machines; race and ethnicity.

Prerequisite: Enrollment is restricted to graduate students.

POLI 248 - On Property (5)

Reviews the literatures on property connected to the state, personhood, gender, and legal systems. These conversations take place at the intersection of sociology, jurisprudence, history, economics, and politics in comparative perspective. Course starts with a birds-eye view and progressively hones in on the relation between political economy and family law. Students explore in class discussions and in their research papers closely related issues, including but not limited to intersectionality with race and ethnicity, sexual orientations, different family/household types, in these and other cultural contexts and legal traditions.

Prerequisite: Enrollment is restricted to graduate students.

POLI 249 - Politics of Protest (5)

Explores topics related to protest and political participation from theoretical and empirical perspectives.

Prerequisite: Enrollment is restricted to graduate students.

POLI 255 - Comparative Anti-Colonialisms (5)

Political thought of anti-colonial movements in comparative, historical perspective, including 18th- to 20th-Century European colonies of America and Asia. Focuses both on the contemporary political thought of these movements as well as on historiographical approaches of secondary literature.

Prerequisite: Enrollment is restricted to graduate students.

POLI 257 - Women Interpret Islam (5)

Examines how prominent female Muslim thinkers have interpreted the Islamic tradition since the early 20th century. It surveys how thinkers who belonged to different intellectual traditions (liberal, Marxist, Islamist, feminist, etc.) engaged Islamic exegetical, legal, philosophical, theological and mystical traditions to find answers to the questions raised by their historical and sociopolitical contexts. These questions included: What is/are the Islamic understanding(s) of the purpose of individual and collective lives? What does freewill mean in Islam, and what is its relationship to responsibility towards oneself and one's community? Is there an Islamic notion of justice, and how does it relate to the way justice is defined by other intellectual traditions? What are the legitimate ways of exercising social and political authority to establish the Islamic vision(s) of the good life? How is establishing that vision related to the notion of jihad (striving in the path of God)? What implications does that vision, and its concomitant notions of justice and freewill, have on developing an Islamic understanding of the relationship between different genders, classes, and human groups?

Prerequisite: Enrollment is restricted to graduate students.

POLI 261 - Key Issues in Contemporary Chinese Politics (5)

Addresses topics ranging from the core institutions of the party-state to local politics, economic governance, and state-society interactions in multiple realms. Considers China in its own terms while evaluating the relevance of theoretical concepts from various fields in the social sciences. Aims to identify opportunities for new research projects.

Prerequisite: Enrollment is restricted to graduate students.

POLI 270 - Advanced Topics in Global Environmental Governance: Agency Beyond the State (5)

Explores if, how, and under what conditions agency and power are diffusing away from the state to non-state actors such as, NGOs/civil society, corporations, and international organizations.

Prerequisite: Enrollment is restricted to graduate students.

POLI 271 - Global Politics and Geo-Politics (5)

Explores global politics in relation to geo-political formations that are developing in concert with contemporary crises in capitalist globalization, but which are also shaped by a wide range of intersecting racial, sexual, environmental, national, and neocolonial politics as well.

Prerequisite: Enrollment is restricted to graduate students.

POLI 272 - Critical Interventions in IR Theory and Global Political Economy (5)

Seminar examines selections from the canonical literature in international relations theory and global political economy through a number of critical lenses, including constructivist, feminist, historical materialist, and subaltern approaches.

Prerequisite: Enrollment is restricted to graduate students.

POLI 275 - Contemporary Capitalism (5)

Examines genesis of new institutions within the force of social ties and networks. Studies how social and organizational relationships achieve individual or group goals in political and economic life, and influence institutional design. Considers when and what ties contribute to governance and economic performance, and when informal and formal organizations constitute an obstacle.

Prerequisite: Enrollment is restricted to graduate students.

POLI 291 - Teaching Assistant Seminar (2)

Two-hour weekly seminar required of teaching assistants in which pedagogic and substantive issues will be considered. The experience of performing teaching assistant duties constitutes subject matter for discussion. Students submit petition to sponsoring agency.

POLI 292 - Professional Development (2)

Primarily for first- and second-year graduate students. Students learn the norms and expectations of graduate school and a variety of professional roles. Students develop a plan for their graduate career and for establishing a professional network of mentors and peer audiences for their work.

Prerequisite: Enrollment is restricted to graduate students.

POLI 293 - Field Study (5)

Individual study undertaken off campus with direct faculty supervision. Students submit petition to sponsoring agency.

POLI 295A - Research Colloquium (2)

Weekly venue for Ph.D. students to present current research, exchange information on sources and resources, discuss and critique epistemologies and methods, and to formulate topics for QE field statements and the dissertation. There are no assigned readings. May be repeated for credit twice.

Prerequisite: Enrollment is restricted to graduate students.

POLI 295B - Advanced Research Seminar (5)

Weekly seminar for Ph.D. students in which to develop and write extended research papers on selected topics, to present current work, to discuss methods, data sources, and fieldwork, and to receive critiques and assessments from fellow students. May be repeated for credit twice.

Prerequisite: Enrollment is restricted to graduate students.

POLI 297A - Indep Study (5)

A student approaches a member of the staff and proposes to take POLI 297 on a subject he or she has chosen that is not covered in other politics graduate courses or plans a graduate independent study that includes an undergraduate course. Students submit petition to sponsoring agency.

POLI 297B - Indep Study (10)

A student approaches a member of the staff and proposes to take POLI 297 on a subject he or she has chosen that is not covered in other politics graduate courses or plans a graduate independent study that includes an undergraduate course. Students submit petition to sponsoring agency.

POLI 297C - Indep Study (15)

A student approaches a member of the staff and proposes to take POLI 297 on a subject he or she has chosen that is not covered in other politics graduate courses or plans a graduate independent study that includes an undergraduate course. Students submit petition to sponsoring agency.

POLI 299A - Thesis Research (5)

Enrollment restricted to graduate students and permission of instructor. Students submit petition to sponsoring agency.

POLI 299B - Thesis Research (10)

Enrollment restricted to graduate students and permission of instructor. Students submit petition to sponsoring agency.

POLI 299C - Thesis Research (15)

Enrollment restricted to gradaute students and permission of instructor. Students submit petition to sponsoring agency.

PRTR - PORTER COLLEGE

Lower-Division

PRTR 1 - Academic Literacy and Ethos: Arts of Reading (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Engages Porter's intellectual tradition of investigating the contribution the arts and humanities make to a good life, a just society, and a flourishing world.

Prerequisite: Enrollment is restricted to college members.

PRTR 1A - Introduction to University Life and Learning (1)

PRTR 1A explores opportunities, expectations, and responsibilities in university life. Topics include: academic planning; general education requirements; majors and minors; campus policy; and preparation for Porter's core course: Re/reading Race. Students gain familiarity with resources for health, well-being, time management, academic success, cultivating just communities, sexual harassment and violence prevention, reflection on UCSC's principles of community, and an introduction to the living and learning tradition of Porter College. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Porter College students.

PRTR 2 - Reading Films for Truth (5)

Building on the foundational skills, habits of mind, and interpretive proficiencies developed in Academic Literacy and Ethos: Arts of Reading (PRTR 1), students will explore the

ways in which feature-length narrative and documentary films have approached the representation of truth.

PRTR 20 - Deciding: A Partnership for Your Path to Major and Meaning (2)

Designed to empower students in making informed decisions about their academic and career paths. In this dynamic class, students delve into a structured process of self-discovery, gaining insights into their interests, values, skills, and aspirations. Through a combination of interactive workshops, engaging discussions, structured panels and practical exercises, students build the lifelong skills necessary for ongoing exploration and discovery.

PRTR 26 - Navigating the Research University (2)

Explores critical engagement in education in the context of a research university. Introduces first-year issues and success strategies and ways to participate in the institution's academic life. Investigates strategies for clarifying education goals and devising a plan for success. Students cannot receive credit for this course and KRSG 26 or STEV 26.

Prerequisite: Enrollment is restricted to first-year Porter and Kresge College members.

PRTR 35M - The Mockumentary Film (5)

Mockumentaries such as Waiting for Guffman, This is Spinal Tap, and Woody Allen's Zelig grow out of the documentary tradition; but instead of claiming to represent real-world phenomena, they blatantly distort. Ten mockumentaries and their documentary correlates are studied. (Formerly course 80J.)

PRTR 37L - Introduction to Laser Cutting, 3D Prinitng, and Vacuum Forming (2)

Design functional objects, sculpture, and other digitally inspired forms in a variety of 2D (Illustrator) and 3D applications (Cinema 4D, Ketch UP, or AutoCAD), then produce those models as physical objects with a variety of rapid-prototyping methods including laser cutting, 3D printing, and vacuum forming.

PRTR 41I - Improvisation (5)

Theory and practice of improvisation in the performing arts with an emphasis on acting improvisation techniques. Readings and films develop a theoretical and historical understanding of spontaneous invention on stage. Students attend area theater improvisational performances.

PRTR 41S - Solo Performance Works in the Theater (2)

Explores solo performance works made for the theater. While all course texts fall within the narrative tradition, some center on performers' lives, others on socio-political issues. Course participants screen video recordings of live performances in class., ultimately creating their own brief solo performances.

PRTR 41W - Playwriting Workshop (2)

Explores different aspects of written drama: scene and character development, plot, dialogue, monologues, soliloquies, stage direction, setting, and structure. Excerpts of late 20th-century plays serve as the basis for class discussion.

PRTR 45 - Archives In Place: The Radical University Across Time (5)

This interdisciplinary course combines archival research methods and creative practice to create a collaborative research space where, together, we explore our own distinctive institutional history through a deep dive into UCSC’s special collections library holdings. Through sharing and discussing our research findings- including historic photographs, films, syllabi, student publications, flyers, oral histories/audio recordings and more- and through screenings, readings, and conversation, we develop creative projects in dialogue with our research process.

PRTR 47K - Korean Music and Culture (2)

Introduction to the farmers band tradition. Theory and practice of drumming are emphasized, resulting in a group performance.

PRTR 47S - Sound Art (2)

Several composers and performers of contemporary art music discuss the processes by which works are conceived in imagination, transcribed in notation, and realized in sound. After a brief introduction to contemporary music aesthetics, students attend a series of related presentations, seminars, and concerts.

PRTR 51A - The Artist's Novel (2)

A cross-cultural survey of the kunstlerroman, or artist's novel, from its origins in late 18th-century Germany to contemporary Latin America and the United States, this course explores how this genre understands artistic development and the role of artists in society.

PRTR 61 - Seminar in Arts (2)

Theoretical and historical aspects of the arts from one culture or world area are explored through seminar discussion, library research, and film/video presentations.

Prerequisite: Priority given to college members. Others by permission of instructor.

PRTR 61B - Handmade Books (2)

This workshop teaches the history and construction of handmade books as a mode of personal and/or political expression leading to an exhibition of student work.

Prerequisite: Enrollment is restricted to college members or by permission of the instructor.

PRTR 61J - Jewish Personal Narratives on Film (2)

Considers Jewish-American filmmakers as they come to terms with their identity in autobiographical works. Students write responses to texts and create their own brief personal narratives.

PRTR 61N - Personal Narratives in Theater and Film (2)

Considers filmmakers and monologue performers as they come to terms with their identity in autobiographical works. Students write responses to texts and create their own brief personal narratives.

Prerequisite: Priority given to college members. Others by permission of instructor.

PRTR 61O - Documenting Oral History (5)

Students learn basic techniques of interview and camera work to document on film oral histories collected from community elders. Students develop their skills in writing, theater, visual art, music, or film to reinterpret oral histories as artwork.

PRTR 63W - Ways of Knowing (5)

Creativity in different disciplines is developed via different ways of knowing. Musical, visual, scientific, and spatial literacy demand understanding which is not primarily logocentric. Explores how practitioners of arts and science develop their work and conceptualize its execution.

Prerequisite: Enrollment is restricted to college members.

PRTR 71A - Awakening Compassion: Transforming Our Relationship to Self and the World (2)

Develops the qualities of compassion and kindness toward oneself and others. Combining contemporary scientific research, mindfulness training, and traditional contemplative practices, this course supports students in the cultivation of a more discerning, thoughtful, and compassionate life.

PRTR 90B - Art and Politics After Google (5)

Addresses questions of aesthetics and politics through a critical and practical examination of some artistic, literary, and broadly cultural developments proper to the history of the Internet (1990s to the present).

Prerequisite: Enrollment is restricted to participants in the first-year scholars program.

PRTR 93 - Field Study (5)

Field Study

PRTR 95A - Arts Education in the Community (5)

Students explore social justice topics in Shakespeare and deliver a performance or creative project that engages with the local community. Students are guided by instructor's models of teaching techniques, designed to stimulate the imagination, and by diverse readings.

PRTR 99 - Tutorial (5)

Various topics to be arranged. Students submit petition to sponsoring agency.

PRTR 99F - Tutorial (2)

Various topics to be arranged. Students submit petition to sponsoring agency.

Upper-Division

PRTR 131C - Curatorial Practice (2)

Offers the opportunity to participate in programming interdisciplinary curatorial praxis, arts events, exhibitions, performances, lectures, and film screenings. Students are exposed to UCSC alumni and faculty members' research through visiting class lectures. Students learn basic protocol for arts programming and critical arts writing, and are required to create their own participatory curatorial project at Porter College.

PRTR 131P - What is Photography? History, Politics, and Critique of Photographic Representation (5)

We live in a world permeated with photographic images, but do we really notice photographs? Do we understand how they work and what they mean? Do we know how to read them? Now that our phones and cameras have merged, we might also say that we live in a world that is forever inviting, imploring us to take photos; we might say we live in a world in which it is almost impossible not to take photos. Are we all photographers now? Do we choose to take photographs or has photography, in a sense, chosen us?

PRTR 132 - Writing the Future: Science Fiction (5)

Investigates how science fiction's utopic and/or dystopic projections give insights about equality, democracy, justice, and difference at the same time they register contemporary anxieties about community, kinship, war, viruses, genetic engineering, robotics, surveillance, and environmental degradation. (Formerly PRTR 151F.)

PRTR 141L - Long Form Improvisation (5)

Focuses on long-form (acting) improvisation, building participants' knowledge and skills through practical and theoretical readings, by viewing relevant performances, and by improvising in class and in small groups outside class. Participants perform in a final public showing.

Prerequisite: PRTR 41I or equivalent college-level experience or coursework.

PRTR 141W - Improvisation Workshop (5)

For practitioners of acting improvisation, this course deepens participants' knowledge and skills through practical and theoretical readings, by viewing performances, and by improvising in class and in small groups outside class. Participants perform in a final public showing.

PRTR 147O - Opera Workshop/Music Practicum (2)

Rehearsal of the principal vocal parts of an opera in preparation for a full production. Consideration of the dramatic aspects of each role and the interrelationships of the characters.

PRTR 147P - Advanced Music Practicum (2)

The practice of music in a particular area of the world at an advanced level. Students learn the music of one world area or

culture over the quarter and study the associated cultural background. Enrollment limited.

PRTR 151 - The Deep Read: Special Topics (5)

Small, discussion-based seminar held in conjunction with The Humanities Institute's community reading initiative, The Deep Read. The Deep Read aims to bring together UCSC undergraduates, faculty, and alumni to discuss and think deeply about a text and its key themes and issues. Course is a comprehensive study of The Deep Read book, the author's work, and its relevant contexts. While the textual analysis framework remains consistent every year, the topic, author, and key text changes each year.

PRTR 151P - Building the Poem: Process, Form, and the Embodied Text (5)

Investigates form as it guides poetic utterance. Students complete texts to fit forms including broadsides, pamphlets, and books. Composition is guided by production methods, from holographic texts to letterpress and digital composition.

PRTR 161B - Handmade Books (5)

Teaches the construction and history of handmade books as artistic expression. Coursework covers a variety of structures, the analysis of book content, and the integration of design and concept. Covers the generation of content; explorations in typography; and folded, glued, and stitched structures.

PRTR 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar by an upper-division student under faculty supervision. (See course 42.)

PRTR 193 - Field Study (5)

Field Study

PRTR 194 - Group Tutorial (5)

A program of independent study arranged between a group of students and a faculty instructor.

PRTR 198 - Ind Field Study (5)

Ind Field Study

PRTR 199 - Tutorial (5)

Tutorial

PRTR 199F - Tutorial (2)

Individual projects carried out under the supervision of a Porter faculty member. Students submit petition to sponsoring agency.

PSYC - PSYCHOLOGY

To view planned offerings for the current academic year, please visit https://psychology.ucsc.edu/courses/tentative-courses.pdf.

Lower-Division

PSYC 1 - Introduction to Psychology (5)

Introduces prospective majors to the scientific study of behavior and mental processes and also provides an overview for non-majors. Emphasizes social, cognitive, developmental, and personality psychology and their interrelations.

PSYC 2 - Introduction to Psychological Statistics (5)

An introduction to elementary statistical principles and techniques relevant to psychological research. Topics covered include basic parametric and nonparametric statistics, analysis of variance, and simple factorial designs. This course is prerequisite to PSYC 181.

Prerequisite: Prerequisite(s): PSYC 1 or PSYC 20; and AM 3 or AM 6 or MATH 3 or MATH 4 or MATH 11A or satisfactory placement score on math placement exam or CEEB Advanced Placement Calculus AB exam.

PSYC 10 - Introduction to Developmental Psychology (5)

Addresses psychological development from conception through adolescence. Provides an overview of developmental psychology.

Prerequisite: Prerequisite(s): PSYC 1; and AM 3, or AM 6, or MATH 3 or a higher level Mathematics course (MATH 4, MATH 11A, or MATH 19A), or mathematics placement (MP) score of 300 or higher, or AP Calculus AB exam score of 3 or higher; and PSYC 2 or STAT 5 or STAT 7 and STAT 7L.

PSYC 20 - Cognition: Fundamental Theories (5)

Introduces basic concepts in cognitive psychology with a focus on theoretical explanations of cognitive functioning. Topics include perception, attention, memory, concepts, language, visual cognition, executive functions, and reasoning processes. (Formerly course 20A.)

PSYC 40 - Introduction to Social Psychology (5)

An analysis of contemporary research in social psychology and of what that research can teach us about the world we live in. Problems of conformity, propaganda, prejudice, attraction, and aggression. Focuses on a person's relationship with other people, how he or she influences them and is influenced by them.

PSYC 60 - Introduction to Personality Psychology (5)

An overview of major personality theories from Freud to the modern day, and an introduction to contemporary research on personality development and assessment.

Prerequisite: Prerequisite(s): PSYC 1.

Upper-Division

PSYC 100 - Research Methods in Psychology (7)

An introduction to research methods used to investigate human psychology. Course emphasizes critical thinking,

designing and conducting research, analyzing and interpreting data, and writing a professional research report.

Prerequisite: Prerequisite(s): Entry Level Writing and Composition requirements; AM 3 or AM 6, or MATH 3 or higher level Mathematics course (MATH 4, MATH 11A, or AM 11A/ECON 11A), or mathematics placement (MP) score of 300 or higher, or AP Calculus AB exam score of 3 or higher; and PSYC 2, or STAT 5, or STAT 7 and STAT 7L.

PSYC 101 - Topics in Developmental Psychology (5)

These topics, offered at different times by different instructors, examine selected topics in developmental psychology.

PSYC 102 - Adolescent Development: Adolescence into Young Adulthood (5)

Focuses on individual and relational development from early adolescence into emergin adulthood. Emphasis on the mutual influences of family relationships and adolescent development, and on the interface of family, peer group, and school experience in cultural contexts.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 103 - Adult Development and Aging (5)

Overview of the cultural, societal, biological, interpersonal, and cognitive processes of adult development and aging. Class discusses how each of these contexts and processes promotes stability and change as adults experience adulthood, reflect on their lives, and prepare for death.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 104 - Development in Infancy (5)

Focuses on psychological development in infancy. Presents research on perceptual, cognitive, and social-emotional development during the first two years of life.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100. Enrollment is restricted to psychology and cognitive science majors.

PSYC 105 - Children's Thinking (5)

Cognition in children from infancy through adolescence. Basic and current research on children's understanding of the social and physical world. Focus on major theoretical perspectives: especially Piaget's constructivist approach and sociocultural approach.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 106 - Social and Emotional Development (5)

An examination of contemporary theory and research on social and emotional development from infancy through childhood.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 107 - Gender and Development (5)

Examines the developmental psychology of gender from infancy to adolescence.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100. Enrollment is restricted to psychology majors.

PSYC 108 - Educational Psychology (5)

An overview of psychological theories and principles applied to formal and informal educational settings. Topics include: learning, motivation, cultural diversity, individual differences, and assessment. Students complete a research project.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 109 - Psychobiology of Stress and Well-being across the Lifespan (5)

Emphasizes bi-directional relationships between psychobiological systems, stress, and well-being throughout the lifespan. Major topics include biological stress response systems (HPA-axis, autonomic nervous system, immune system, neural threat response), means of measuring stress in research, health behaviors (sleep, substance use, risk-taking), and positive well-being (emotion, psychological resources, prosocial behavior). (Formerly Stress and Well-Being throughout Development.)

Prerequisite: Prerequisite(s): PSYC 10 and 100.

PSYC 111 - The origins of social biases (5)

Engages students with fundamental theories and research in developmental psychology to better understand the social nature of human beings and how social biases emerge. Discussions include research and questions central to how social biases form with a focus on research from infancy and early childhood. Asks questions such as: What sets us up to be social? How do we learn about power and status? When and how do kids start to learn about race? Educates students to have foundational knowledge in developmental psychology and critically assess research.

Prerequisite: Prerequisite(s): PSYC 1, PSYC 10, and PSYC 100.

PSYC 112 - Moral Development (5)

How and why do children develop into moral beings? This course covers key theories and empirical research about the cognitive, emotional, and behavioral aspects of moral development, including psychoanalytic, behaviorist, constructivist, nativist, and evolutionary approaches.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 114 - Human Development as a Cultural Process (5)

Examines interdisciplinary theory, research, and methods of studying the cultural basis of human development, and variations and similarities in human lives and practices in the United States and worldwide cultural communities.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 115 - Lifespan Developmental Psychopathology (5)

Examines theory and research on developmental psychopathology. Emphasizes the origin and longitudinal course of disordered behavior. Explores the processes underlying continuity and change in patterns of adaptation and age-related changes in manifestations of disorders.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 116 - Communication Technologies, Culture, and Human Development (5)

What is the role of Information Communication Technologies (ICTs) in human development and sociocultural change? Offers insights into how human cultures are changing with the proliferation of ICTs by examining how ICTs are incorporated into cognitive, social, and identity development in late childhood through adulthood.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 118A - Children and War (5)

Examines the development and behavioral ecology of children affected by war. Discusses refugee children, displaced children, abandoned children, orphaned children, children living in protracted conflict, and child soldiers. Reviews child protection strategies and psychosocial intervention for war-affected children.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 118B - Children in Extreme Circumstances (5)

Reviews child survival in life-threatening contexts. Examines the lives of street children, institutionalized children, orphans, children in extreme poverty, enslaved children, war-affected children, abandoned children, and children whose parents have HIV/AIDS and other life-threatening illnesses.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100.

PSYC 118C - Theory of Mind (5)

Reviews recent research on how children come to understand the human mind, such as desire, belief, goals, and intention. Also discusses the implications of this research on typically and atypically developing children.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100. Enrollment is restricted to psychology majors.

PSYC 119A - Development as a Sociocultural Process (5)

Examines theory and research in sociocultural approaches to how people (especially children) learn and develop through participating in activities of their communities with other people. Emphasizes the organization of social interactions and learning opportunities, especially in communities in the Americas where schooling has not historically been prevalent. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing, Composition requirements; PSYC 100, or ANTH 1 or ANTH 2, or EDUC 92A, or EDUC 92B, or EDUC 92C, or LALS 1, or SOCY 1. Enrollment is restricted to seniors or by permission.

PSYC 119D - Cultural Perspectives on Adolescent Development (5)

Examines cultural influences on adolescence from diverse cultural, ethnic, and socioeconomic communities from the perspective of current interdisciplinary theories and research. Topics include: identity development; changes from early adolescence to adulthood; links among family, school, peer, and community experiences; programs for youth; and implications of bridging research, social policy, and community practice. Includes research practicum. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors or by permission of instructor.

PSYC 119E - The World of Babies (5)

Focuses on how infants learn about intuitive physics, naive psychology, and shared culture. Also discusses how cultural communities shape infants' learning. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119H - Children, Research, and Policy (5)

Explores ways that research in developmental psychology can be used to address real-world problems facing children. With an analytical focus on evidence and generalizability, we will investigate research-policy connections in topics of popular interest (e.g., child custody, poverty). Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement (Formerly Developmental Psychology Research and Real World Problems)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119I - Special Topics in Narrative Development (5)

Examines a special topic of current interest in developmental psychology centering on the features of self-identity that develop in the context of telling stories of individual and/or shared experiences, such as self-defining memories or family stories. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119K - Emotional Development (5)

Covers classic and contemporary work on the nature and development of human emotions. Both theoretical perspectives and empirical research are discussed. Major topics include: emotion-cognition interplay, the measurement of emotion, universality and cultural variability, and emotional communication. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119M - Identity Development in Social and Cultural Contexts (5)

Senior seminar that focuses on identity development in adolescence and young adulthood. Discusses theory and research on the development of personal and social identities and the sociocultural contexts in which these personal and social identities are negotiated. Satisfies seminar requirement. Satisfies senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors or by permission of instructor.

PSYC 119N - Culture and Cognition (5)

Seminar course engaging students in current theories and research in cultural psychology to explore how culture shapes the ways humans make sense of the world around them. Starts with foundational theories and methods in studying how culture influences thinking across the lifespan. Then covers specific content areas that serve as examples of how these theories are applied to study specific topics. Course educates students to critically evaluate research in cultural psychology. Writing-intensive course (partially fulfilling the Disciplinary Communication requirement). Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119P - Children and Technology (5)

Covers current research and theory related to children and technology. Topics include: how children learn to use new technologies; how technology use impacts children's thinking; computer gaming and aggression; and how children's social relationships are influenced by technology. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100; and satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119Q - Perspectives on Autism (5)

Explores multiple perspectives on autism, highlighting those of autistic scholars, disability studies scholars, and philosophers. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology or cognitive science majors.

PSYC 119R - How to Combat Social Bias in Children (5)

Engages students in current theories and research in developmental psychology that aim to better understand and ultimately eradicate social bias starting in early childhood. Course starts with foundational theories and methods in studying children's social biases and then considers different approaches to address social bias in children. Also educates students to critically assess research and to creatively think about new solutions to combat social bias in our society. Satisfies seminar requirement. Satisfies senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119T - Media Contexts of Adolescent and Young Adult Development (5)

Focuses on the role of media in adolescents' and young adults' identity development, friendships, and peer relationships. Topics include: globalization; physical/body image; friendships and peer acceptance; and educational and career goals. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 119V - Adolescent Alcohol Use (5)

Covers aspects of alcohol use research including co-use, motives, intensity, and frequency of use and developmental factors that affect alcohol use including stress and peer norms using project-based learning, personal reflections, and in-class discussions. Satisfies the senior seminar and senior comprehensive requirements.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 120 - Visual and Spatial Cognition (5)

Focuses on high-level perception and visual, spatial, and other sensorimotor representations as elements of human cognition. Topics include imagery, visual attention, mental models,

spatial language, the body schema, near-body space, and brain organization for representing space.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to cognitive science and psychology majors.

PSYC 120D - Deafness and Sign Language (5)

Explores what we can learn about human cognition by studying sensory loss and language in a different sensory modality. Topics include brain organization, sensory compensation, working memory, visual cognition, and psycholinguistics.

Prerequisite: Prerequisite(s): PSYC 1 or PSYC 20 or PSYC 20A, and PSYC 100. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 121 - Perception (5)

Introduces the study of human perception. Topics include: the structure and function of the human eye and early visual cortex, perception of motion, color, and objects; recognition of faces; and audition, sensory integration, and synesthesia.

Prerequisite: Prerequisite(s): PSYC 100; and PSYC 20. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 122 - The Science of Learning (5)

Academic success often entails managing and mastering multiple courses covering a variety of topics, each with their own unique requirements. However, what study methods are effective versus ineffective, and why? For example, is learning based on the amount of time a student spends studying? Is highlighting an effective method of learning? Is it better to study by reviewing notes or testing oneself? How will you know if a study tip you read on the internet will really help you learn? Course poses questions about studying and discuss the answers that have been uncovered through scientific research on human memory.

Prerequisite: Prerequisite(s): PSYC 20 or PSYC 122; and PSYC 100.

PSYC 123 - Cognitive Neuroscience (5)

An examination of the physiological mechanisms of psychological processes, including sensory systems, motor systems, control systems, and memory and learning. Principles of nervous system organization are discussed at each level.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 124 - Psychology of Reading (5)

Focuses on the cognitive processes that underlie reading in adults. Additional topics include different writing systems, learning to read, and reading deficits. Recommended for upper-division students.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 125 - Psychology of Language (5)

Examines how people use language to communicate. Course covers speaking and understanding, including speech perception, grammatical processing, the meaning of words and strings of words, and how conversations work, among other topics.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 126 - Conversations (5)

Explores how conversations work and how speakers accomplish their goals in an interaction. Topics include conversational structure, turn-taking, politeness, and the functions and use of collateral signals, among others. Collateral signals include pauses in speech, words like um, uh, you know, and like, and processes, such as how words and utterances are produced. (Formerly PSYC 139G.)

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to psychology and cognitive science majors.

PSYC 129 - Human Learning and Memory (5)

Examines basic theories, models, methods, and research findings in human memory. Both traditional and nontraditional topics are covered.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 130 - Deception, Brain, and Behavior (5)

Focuses on behavioral and brain manifestations of deception. Topics include developmental changes that allow us to understand and to use deception, physical implications of lying expressed in the face, voice, posture, and brain activity. Also covers mechanical or behavioral techniques used in deceptive behavior, whether in the form of overt behavior or brain activity.

Prerequisite: Prerequisite(s): PSYC 100; and PSYC 20 or any upper-division cognitive course. Enrollment is restricted to psychology and cognitive science majors and minors.

PSYC 130D - Evolutionary Psychology (5)

Introduction to how evolutionary principles can help us understand origins of the human mind. Covers evolutionary approaches to cognitive, social, and developmental psychology with emphasis on how cognition has been shaped by natural selection.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 133 - Bilingualism from a Cognitive Perspective (5)

Provides in-depth discussion of bilingualism from a cognitive perspective. Psycholinguistic researchers who study bilingualism are interested in questions such as how to measure bilingualism, how the brain acquires more than one language, how bilinguals organize and manage two (or more) languages in one brain, and the consequences of the bilingual experience on cognition. Students are introduced to current research that investigates these topics as well as current controversies in the literature that are yet unresolved.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 138 - Computer Programming for the Cognitive Sciences (5)

Offers a practical introduction to computer programming for psychology and cognitive science students. Students learn simple and effective techniques for collecting, parsing, and analyzing behavioral data from behavioral experiments. Students create programs to present visual stimuli, collect keyboard responses, and then write response time and accuracy to datafiles on disk. Students then write new programs to extract information from the datafiles, perform statistical analysis, and present summaries of the findings. Students learn to use the Python programming language for cross-platform application development. No previous programming experience is necessary.

Prerequisite: Prerequisite(s): PSYC 1 or PSYC 20, and PSYC 100. Enrollment is restricted to psychology and cognitive science majors.

PSYC 138M - Introduction to Matlab Programming for the Cognitive Sciences (5)

Matlab is a powerful and widely used programming language to design stimuli, collect behavioral data, conduct statistical analyses, and visualize results. This course provides students with basic tools to use Matlab in a range of cognitive science applications. The course includes in-class coding, weekly assignments, and a term project in which students write a program to analyze, collect, or visualize a dataset or model a cognitive phenomenon. No previous programming experience is required. Topics include modeling of cognitive and neural processes and principal components analysis.

Prerequisite: Prerequisite(s): PSYC 20 and PSYC 100. Enrollment is restricted to psychology and cognitive science majors.

PSYC 139B - Consciousness (5)

Provides a psychological study of human consciousness. Aim is to explore the following questions: What is consciousness? Where does consciousness come from? What functions does consciousness have in everyday cognition? How do we best scientifically study consciousness? These issues are examined from the perspective of contemporary research in cognitive science. Satisfies seminar requirement. Satisfies senior comprehensive requirement.

Prerequisite: Prerequisite(s): Entry Level Writing and Composition requirements and PSYC 100. Enrollment is restricted to senior psychology, philosophy, anthropology, linguistics, and cognitive science majors.

PSYC 139C - The Cognitive Neuroscience of Consciousness (5)

Introduction to current debates in the scientific study of consciousness. The focus is on empirical results regarding the neural correlates and behavioral functions of consciousness, but topics also include the metaphysical status of consciousness and methodological issues within consciousness science. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 20, PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139E - The Science of Reading (5)

Studies reading through a cognitive science lens, including perspectives from cognitive and developmental psychology, linguistics, and neuroscience, as well as history, public policy, and education.Primarily examines scientific research focused on skilled reading, reading acquisition, and difficulties learning to read. Students read, discuss, and write about scientific research as well as media covering these topics.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139G - Eye-tracking: A Window into Cognition (5)

Examines eye-tracking as a valuable research method to study cognition. Research using this method has established that eye movements are closely linked to ongoing cognitive processes in the human brain. Course covers the use of this technique in research on reading, language comprehension, scene perception, visual search, infant cognition, and other areas of cognitive science. Students read and review journal articles, participate in class discussions, and analyze publicly available eye movement data for a final report due at the end of the quarter. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 20, PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139H - Weird Science (5)

Explores the relationship between science and pseudoscience from a cognitive psychological perspective, including discussion of collection and selection of data, statistical assessment of data, cognitive illusions, memory distortions, reasoning, and decision-making. Also highlights the dissemination of scientific knowledge. Satisfies seminar requirement. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements and PSYC 100.

Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139J - Forgetting (5)

Explores forgetting as an essential and adaptive process in human memory. Topics include: intentional and unintentional forms of forgetting; the (re)constructive nature of memory; and cases of extreme remembering. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139K - Face Recognition (5)

To navigate our social world, we need to extract a wealth of information from faces, including identity, expression, gaze, age, and gender. This seminar reviews current topics in face-recognition research, from cognitive, neuroscience, developmental, social, and computational perspectives. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and PSYC 20 or PSYC 20A; and PSYC 100. Enrollment is restricted to senior cognitive science, neuroscience, and psychology majors.

PSYC 139L - Illusions (5)

Illusions arise when our perception differs from reality. In this course, students investigate the mechanisms of visual, auditory, and proprioceptive illusions as an approach to understand the capacities and limitations of our perceptual system. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139N - Diversity in Cognitive Psychology (5)

Lists of influential contributors to cognitive psychology insufficiently represent the influence of more diverse, non-traditional scientists. This course profiles the life and work of women and minority scientists who've made well-documented contributions to cognitive psychology, as well as those who've received less recognition. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and PSYC 20 or PSYC 105; and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior cognitive science or psychology majors.

PSYC 139P - Natural and Artificial Intelligence (5)

Introduces one approach used in artificial intelligence: deep learning. This approach is inspired by the architecture and processing of real neural networks. Students learn about the algorithms developed and their applications in simulating intelligence. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and PSYC 20, and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139Q - Analogy and Transfer (5)

Examines the cognitive processes involved in analogical reasoning (understanding one example, object, problem, or event in terms of another better-understood one) and the transfer of knowledge (applying knowledge from one situation to another). Although discussion includes analogical reasoning and transfer in "genius" or exceptionally creative moments, students primarily focus on all the ways in which the same cognitive processes of analogy and transfer support day-to-day learning, thinking, reasoning, and problem-solving. Satisfies seminar requirement. Satisfies senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139R - Social Frames of Memory (5)

Remembering is an activity that we often do with others, and shared representations of the past bind us to one another as couples, families, and nations. Remembering is a fundamentally social process. Topics include extended cognitive systems, conversational remembering, family reminiscence, how social networks shape how and what we remember, cognitive content biases supporting collective convergence, and the psychology of collective memory. This includes social representations of history and their biases, cultural tools for thought, intergenerational transmission, and collective future thought. Satisfies seminar requirement. Satisfies senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139S - Brain Waves and Cognition (5)

Provides an overview of the study of brain waves and cognition, also known as human electrophysiology (EEG). Explores how this approach can be used to study major topics in cognitive psychology research. The course prioritizes the development of scientific reasoning and writing skills. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement. Prerequisite(s): PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 139T - Memory, Metacognition, and Education (5)

Academic success often entails managing and mastering multiple courses covering a variety of topics, each with their

own unique requirements. However, what study methods are effective versus ineffective, and why? For example, is learning based on the amount of time a student spends studying? Is highlighting an effective method of learning? Is it better to study by reviewing notes or testing oneself? How will you know if a study tip you read on the internet will really help you learn? Course poses questions about studying and discusses the answers that have been uncovered through scientific research on human memory. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 140B - African American Psychology (5)

Incorporates historical and conceptual foundations; issues of social psychology; individual and developmental processes; and adjustment and clinical issues. Readings expose students to attributes of African American culture that have an impact on the psychology of African Americans as well as methodological issues relevant to key psychological topics.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 140F - Mind, Society, and Culture (5)

Introduces how social, cultural, and historical contexts shape psychological experiences, including self-concept, perception, emotion, health, and behavior. Draws from theories and research in psychology, sociology, and anthropology to highlight cultural variations in national populations (e.g., North Americans, East Asians) and multicultural populations within the United States (e.g., working-class Americans, African Americans, Mexican Americans, Native Americans).

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 140G - Women's Lives in Context (5)

Examines gender as a psychological and social factor that influences women's experiences in different contexts. Cuts across other areas of psychology by taking a women-centered approach. Emphasis also placed on understanding how intersections between gender, race and ethnicity, sexual orientation, socioeconomic status, etc., impact women's psychological well-being.

Prerequisite: Prerequisite(s): PSYC 100, or SOCY 3A. Enrollment is restricted to junior and senior psychology and sociology majors.

PSYC 140H - Sexual Identity and Society (5)

Addresses sexual and gender identity diversity in social, historical, and political context. Highlights current social justice issues and cultural ideologies related to sexual and gender identity diversity. Discusses social and scientific activism for sexual liberation; gay and lesbian identities and communities; sexuality beyond binaries and categories (e.g., bisexuality, pansexuality); asexuality; kink/fetish; transgender identities and sexualities; sexual fluidity and heteroflexibility; and queer sexual ethics and politics.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 140L - Women's Bodies and Psychological Well-Being (5)

Examines how women's bodily experiences (e.g., sexual objectification, violence, menarche, sexual health) are uniquely tied to their subordinate status and impacts their psychological well-being. Theories of gender inequality will address how social control directed at women's bodies through power relations embedded in societal institutions contributes to women's marginalized status. Enrollment restricted to junior and senior psychology, sociology, feminist studies, and community studies majors.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and PSYC 100, or SOCY 3A, or FMST 100. Enrollment restricted to junior and senior psychology, sociology, feminist studies, and community studies majors.

PSYC 140M - Legitimizing (In)Equality: Attitudes, Beliefs, and Social Policy (5)

Drawing on research in social psychology, political psychology, and critical policy studies, course examines how beliefs legitimize inequality, influence intergroup relations, and inform policy attitudes. Both hierarchy-enhancing and hierarchy-attenuating beliefs are reviewed.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted psychology, community studies, legal studies, politics, and sociology students.

PSYC 140Q - Social Psychology of Gender (5)

Considers individual, interpersonal, and cultural influences on gender similarities and differences in thinking, motivation, and behavior. Emphasizes factors related to power and status inequalities between women and men.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 140T - Psychology of Trauma (5)

Overview of psychological theory and research on trauma and traumatic stress, including responses to childhood trauma (especially sexual abuse), combat, and natural disasters. Variety of theoretical frameworks presented, including developmental, cognitive, neuropsychological, clinical, and social/contextual.

Prerequisite: Prerequisite(s): PSYC 100 or permission of instructor.

PSYC 141 - Privacy and Surveillance (5)

Survey of theory and research on privacy and surveillance. Topics include: the functions of privacy; threats to privacy in multiple domains; the psychological impact of surveillance; historical and cultural differences in privacy and surveillance practices; and the relationship between privacy, surveillance, and social justice.

Prerequisite: Prerequisite(s): PSYC 100, or by permission of the instructor.

PSYC 142 - Psychology of Oppression and Liberation (5)

Provides theoretical frameworks for understanding interlocking systems of oppression from the perspective of the oppressed as well as the oppressor nationally and internationally. Goes beyond mainstream (traditional) psychology and emphasizes critical psychological perspectives that include micro- and macro-level theories of oppression; importance of ideology in oppressive systems; and theories of social change and liberation across contexts.

Prerequisite: Prerequisite(s): PSYC 100 or feminist studies, sociology, community studies, or politics majors.

PSYC 143 - Intergroup Relations (5)

Introduces the social psychology of conflict and intergroup relations, focusing on the cognitive, emotional, and behavioral processes that shape how we navigate our interactions with groups. Explores major psychological theories and concepts and their applications to real-world conflicts and contemporary social issues, including prejudice, discrimination, polarization, genocide, collective action, and social change.

PSYC 144 - Latinx Psychology (5)

Offers an overview of psychological frameworks and interdisciplinary research for understanding Latinx populations, behaviors, identities, and values systems related to their mental health. Examines socio-cultural contexts, best research practices, and culturally responsive strategies for working with Latinx communities.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 145 - Social Influence (5)

An advanced course for upper-division undergraduates interested in the study of the persuasion process. The course investigates common influence tactics and how those tactics are used in various settings.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 145D - Social Psychology of Autocracy and Democracy (5)

Humans are the only animal capable of living in both authoritarian and democratic regimes. Course explores the nature of these forms of social relationships with a goal of promoting democracy. Topics include: obedience to authority, conformity, self-justification, propaganda, power, and conflict resolution.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 146 - The Social Context (5)

A systematic analysis of the social and contextual determinants of human behavior, with special attention given to concepts of situational control, social comparison, role and attribution theories, as well as the macrodeterminants of behavior: cultural, historical, and sociopolitical context.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 147A - Psychology and Law (5)

Current and future relationships between law and psychology, paying special attention to gaps between legal fictions and psychological realities in the legal system. Topics include an introduction to social science and law, the nature of legal and criminal responsibility, the relationship between the social and legal concepts of discrimination, and the nature of legal punishment.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to psychology, cognitive science, and legal studies majors.

PSYC 147B - Psychology and Law (5)

Continuing discussion of current and future relationships between law and psychology and to contrasting psychological realities with legal fictions. Special attention is given to the criminal justice system including crime causation, the psychology of policing and interrogation, plea bargaining, jury selection and decision making, eyewitness identification, and the psychology of imprisonment.

Prerequisite: Prerequisite(s): PSYC 147A.

PSYC 148 - Stereotyping, Prejudice, and Racism (5)

Introduction to and analysis of the social psychology of stereotyping, prejudice, and racism in the United States. Examines how individuals both perpetuate and experience these phenomena, through the lens of race as a system of privilege and disadvantage.

Prerequisite: Prerequisite(s): PSYC 100. Note: CRES majors and Black studies minors may contact the instructor for permission to enroll.

PSYC 149 - Community Psychology: Transforming Communities (5)

Introduces community psychology, a discipline that blends social psychology, sociology, and anthropology. Topics include levels of analysis, ecologies, prevention, intervention, feminisms, empowerment, sense of community, coalition building, and social justice and action.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to juniors and seniors.

PSYC 150 - Race, Education, and the Carceral State (5)

Explores the multifaceted and complex relationship between the U.S. public education and juvenile legal systems to examine how these two seemingly disparate systems work together to systematically disadvantage multiply marginalized communities and individuals. Course follows these histories as a thread for better understanding how these two systems via logics, policies, and practices shape our everyday sensemaking and approach to discipline. Course explores contemporary issues related to schools and the carceral context to better understand the people embedded in these social contexts.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to declared and proposed psychology majors.

PSYC 153 - The Psychology of Poverty and Social Class (5)

Examines how social class shapes attitudes, beliefs, and behaviors. Emphasis is placed on structural barriers and their impact on the well-being of low-income groups. Strategies for reducing classist discrimination, improving interclass relations, and strengthening social policy are discussed.

Prerequisite: Prerequisite(s): PSYC 100, or anthropology, community studies, economics, legal studies, politics, sociology, or feminist studies majors.

PSYC 155 - Social-Community Psychology in Practice (5)

This service-learning course requires time in the classroom and the field. Students gain a deep understanding of social justice paradigms, community-based collaborative research, ethics, field-based research, reflexivity, and socio-cultural development modes. Prerequisite(s): PSYC 3 or PSYC 100; PSYC 149 and PSYC 182 are recommended prior to taking this course. Admission by application and interview only.

PSYC 159A - Sexual Identity (5)

Considers the experience of lesbian, gay, bisexual, and transgender individuals from a psychological perspective. Reviews theory and research on compulsive heterosexuality, heterosexism and homophobia, culture and sexual-identity diversity, issues of history and community of LGBT individuals, and perspectives on sex, gender, and sexuality from queer theory. Satisfies the seminar requirements. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 159C - Disability Justice and Psychology (5)

Introduces students to the paradigm and legacies of disability justice and inquires how psychology as a discipline and practice can incorporate disability justice theory and practice. These histories of ableism within psychology are traced and examined over the past two centuries to the present with a critique of "abnormality" and "cure." Taking an intersectional perspective, the course presents ableism intersecting with other power systems like racism and sexism and includes perspectives from the emerging area of DisCrit (also called critical disability studies). Within the framework of disability justice alternative models of healing justice and harm reduction are elaborated upon. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 159D - Psychology of Sexual Aggression (5)

An overview of psychological theory and research related to sexual aggression, focusing on both perpetration and victimization. Includes a discussion of the social construction of masculinity and femininity, media representations of sexual violence, and alternative (non-aggressive) visions of sexuality. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology, cognitive studies, and feminist studies majors, or by permission of instructor.

PSYC 159E - Peace Psychology (5)

Is war inevitable? What is peace? Is it more than the absence of violence? Explore how psychology—the study of human behavior—can help to decrease violence and enhance cooperation at multiple levels including the personal, interpersonal, community, and international arenas. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): Entry Level Writing and Composition requirements; and PSYC 100. Enrollment is restricted to senior psychology or cognitive science majors.

PSYC 159G - Gender, Race, and Justice (5)

Attends to the intersections of gender, race, and justice, with a specific focus on girls and women of color. Covers a range of topics related to gender, race, and carcerality including the historical treatment of girls and women in the U.S. criminal legal system; constructions of Black and Latinx girlhood; girls' treatment in schools; home life; survivorship; life while confined; motherhood; challenges to re-entry; and healing and abolition post-release. This is a writing-intensive course focused on developing research, oral presentation, and writing skills. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior cognitive science and psychology majors.

PSYC 159H - Community-Based Interventions (5)

Topics include: what makes a successful intervention; what happens before the formal intervention begins; the ethics involved with interventions; different methods for assessing interventions; and different praxis models. Satisfies the seminar requirement. Satisfies the senior comprehensive requirement. A service component is involved.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 159I - Psychology of Immigration (5)

Provides an overview of the social and cultural psychological study of immigrants in the United States. Examines the migration/immigration process; immigrants' social identities; schooling of immigrant youth; and impact of policy on the well-being of immigrants. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 159J - Social Psychology of Social Justice (5)

Why do some situations seem fair and others unfair? Are all people concerned with justice or are some scoundrels? This course looks at the principles of distributive, procedural, and retributive justice and at real world applications of theories. Satisfies seminar requirement. Satisfies senior comprehensive requirement.

Prerequisite: Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 159P - Race, Ethnicity, and Environmental Inequality (5)

Examines racially and ethnically marginalized and dominant conceptions of the environment throughout U.S. history. Also explores events and policies revealing how human behavior shapes and is shaped by environmental inequality, and strategies for achieving environmental justice. Satisfies the seminar requirements. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100; satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology or Cognitive Science majors.

PSYC 159R - Achievement Disparities: A Social Psychological Perspective (5)

In this interactive seminar, we draw on research and theories in social and cultural psychology to examine persisting disparities in education and achievement for varying social groups (e.g., race/ethnicity, gender, social class) and to identify intervention strategies for reducing these disparities. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 159S - Queer Intimacies (5)

Examines the science of relationship diversity through the lens of social psychology. Reviews popular and psychological literature on same-sex relationships, polyamory/consensual non-monogamy, kink/fetish/BDSM relationships, chosen families, asexuality, and transgender intimacy. Concludes with discussion of the impact of queer intimacies on heterosexuality. Satisfies the seminar requirements. Satisfies the senior comprehensive requirement.

Prerequisite: Prequisite(s): satisfaction of the Entry Level Writing and Composition requirements, and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 159X - Psychology of Social Activism (5)

Covers social-psychological scholarship relevant to social justice activism that receives limited academic attention in conventional psychology. The seminar aims at understanding how knowledge gained in action-oriented research can be applied to social change. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): PSYC 100, and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 160 - Psychopharmacology (5)

Biopsychosocial approach toward understanding the pharmacology and effects of psychoactive drugs. Topics include synaptic neurotransmission, pharmacokinetics, pharmacodynamics, tolerance and withdrawal, addiction and abuse, set and setting, harm reduction, drug policy, placebo effects, randomized controlled trials, and drug therapies for mental disorders. Covers a wide range of medicinal and recreational drugs including alcohol, opioids, psychedelics, antidepressants, and more.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 165 - Systems of Psychotherapy (5)

A review of the major methods of psychotherapy most currently practiced, including ethical standards and dilemmas, and client-therapist-system variables affecting efficacy.

Prerequisite: Prerequisite(s): PSYC 100; PSYC 60 or PSYC 170 recommended.

PSYC 166 - Personality Assessment (5)

How do we really know a person? Provides experience assessing such individual differences as intimacy motivation, dominance, creativity, and well-being. Students construct their own personality test and learn to evaluate the kinds of self-report, observational, projective, and interview techniques used in organizational and clinical contexts.

Prerequisite: Prerequisite(s): PSYC 100; PSYC 60 highly recommended as preparation.

PSYC 167 - Clinical Psychology (5)

Serves as an in-depth introduction to the field of clinical psychology. Covers issues of clinical assessment, interviewing, testing, and a range of therapeutic modalities.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to psychology majors.

PSYC 168 - The Study of Dreams (5)

An overview of dream studies by several major theorists and researchers of the 20th century, including Freud, Jung, and Hall. An emphasis on studies that reveal cognitive conceptions and personal concerns through quantitative and qualitative analyses of sets of dreams from individuals and groups. Other topics covered more briefly include dream recall, children and dreams, and the role of dreams within cultures.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 169 - Community Mental Health (CMH) (5)

How can we improve mental health? Examines theory, method, and efficacy research of outreach, prevention, and intervention methods with various mental health populations in community settings (e.g., victims of sexual violence, new immigrants, those with severe mental illness, children in foster care). Presents characteristics of successful CMH agencies and programs and how to develope one's own agency or intervention model.

Prerequisite: Prerequisite(s): PSYC 100. PSYC 60 or PSYC 170 recommended.

PSYC 170 - Psychopathology (5)

Survey of theory, research, and intervention in human psychopathology. Covers psychological, biological, developmental, and socio-cultural approaches. (Formerly offered as Abnormal Psychology.)

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 171 - Childhood Psychopathology (5)

A critical and intensive exploration of a wide variety of specific disorders within their biological, developmental, and social contexts. Concepts of psychopathology in childhood, major and minor diagnostic systems, and a variety of theories of etiology are explored. General intervention strategies and a wide range of specific psychotherapy systems for treatment are closely examined and demonstrated.

Prerequisite: Prerequisite(s): PSYC 10 and PSYC 100. PSYC 170 strongly recommended.

PSYC 172 - Health Psychology (5)

Course examines the psychological aspects of health, illness and healing. Focuses primarily on etiology, treatment and prevention; specific topics include stress and the immune response, social support, compliance, health beliefs, and the healing relationship. (Formerly course 140C.)

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 175 - Personality, Relationships, and Emotions (5)

Explores the reciprocal development of personalities and emotions/emotion regulation in the context of close relationships.

Prerequisite: Prerequisite(s): PSYC 100. PSYC 10 and PSYC 60 recommended as preparation.

PSYC 178 - Nutritional Psychology (5)

Explores the interactive relationship between nutrition and mental health. Includes a review of the research on the impact of different components of nutrition (e.g., protein, minerals, sugar) on the function of the brain, the nervous system, and the endocrine (hormone) system, and how that translates into changes in mood and cognitive capacity. Also explores the psychological factors that influence food choice and eating behaviors in the context of cultural beliefs and pressures.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to Cognitive Science, Psychology and Global and Community Health (B.A.) majors.

PSYC 179A - Theories of Moral Psychology (5)

A seminar course with focus on theories of moral development from the psychoanalytic, social learning, cognitive-developmental, and humanistic perspectives. Students confront and discuss moral dilemmas from the four perspectives, working toward their own individual theories of pro-social behavior. Satisfies the senior seminar requirement. Satisfies the senior comprehensive requirement.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and PSYC 100. Enrollment is restricted to senior psychology and cognitive science majors.

PSYC 179E - The Science of Emotions (5)

Our emotions influence nearly everything we do—from how we perceive the world to how we connect with other people. The scientific study of emotion, or affective science, investigates how emotions shape our lives. What purpose do emotions serve? How do we regulate them? How do they color cognitive processes like memory? Course considers emotions from several levels of analysis, including their evolutionary basis, their associated physiological responses, and the behaviors they motivate. Students gain a scientifically informed understanding of daily emotions and insight into how scientists study them. Satisfies seminar requirement. Satisfies senior comprehensive requirement. (Formerly Psychology of Emotion.)

Prerequisite: Prerequisite(s): PSYC 100 and satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to senior cognitive science and psychology majors.

PSYC 181 - Psychological Data Analysis (5)

Intermediate statistical methods widely used in psychology (e.g., ANOVA, ANCOVA, multiple-comparisons, bivariate correlation, multiple regression, repeated-measures), corresponding SPSS or R programs, and elements of measurement theory.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 182 - Qualitative Research Methods (5)

Designed to equip students with the ability to evaluate, conceive, and carry out psychological research. A variety of techniques (interpretive,phenomenological analysis, grounded theory and narrative inquiry) are examined and experienced. Students carry out research projects.

Prerequisite: Prerequisite: PSYC 100.

PSYC 183 - History and Systems of Psychology (5)

An overview of the history of psychology. Examines issues of paradigm and philosophy of science. Reviews central paradigms in the history of the discipline. Assumes a critical-historical approach, linking scientific knowledge produced to prevailing societal beliefs about mind and behavior.

Prerequisite: Prerequisite(s): PSYC 100.

PSYC 193 - Field Study (5)

Series designed to provide advanced psychology undergraduates the opportunity to apply what they have learned in the classroom to direct experience in a community agency. Students earn academic credit by working as interns at a variety of psychological settings where they are trained and supervised by a professional within the agency. Faculty also supervise the students' academic work by providing guidance and helping them integrate psychological theories with their hands-on intern experience. A two-quarter commitment. Applications due one quarter in advance to the Psychology Field Study Office. Prerequisite(s): PSYC 100. Enrollment restricted to junior and senior psychology majors.

PSYC 193I - International Field Study (10)

Designed to provide advanced psychology undergraduates the opportunity to apply what they have learned in the classroom to direct experience in a community agency abroad. Students earn academic credit by working as interns at a variety of psychological settings where they are trained and supervised by a professional within the agency. Faculty also supervise the students' academic work by providing guidance and helping them integrate psychological theories with their hands-on intern experience. Applications due two quarters in advance to the Psychology Field Study Office.

Prerequisite: Prerequisite(s): PSYC 100. Enrollment is restricted to junior and senior psychology and cognitive science majors.

PSYC 194A - Research Internship in Developmental Psychology (5)

Provides students with intensive experience conducting current research in developmental psychology. Students submit petition to sponsoring agency. (Formerly Advanced Developmental Research.)

PSYC 194B - Research Internship in Cognitive Psychology (5)

Provides students with intensive experience conducting current research in cognitive psychology. Students submit petition to sponsoring agency. (Formerly Advanced Cognitive Research.)

PSYC 194C - Research Internship in Social Psychology (5)

Provides students with intensive experience conducting current research in social psychology. Students submit petition to sponsoring agency. (Formerly Advanced Social Research.)

PSYC 194D - Research Internship Clinical Psychology (5)

Provides students with intensive experience conducting current research in clinical psychology. Students submit petition to sponsoring agency.

PSYC 195A - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students contemplating a senior thesis should have a superior academic record and be well prepared with a suitable background of previous coursework or independent study for performing their proposed research. Students must file a petition with the Psychology Office the quarter in which they would like to begin the thesis. Senior thesis petitions are available in the Psychology Department Office. Check with office for enrollment conditions.

PSYC 195B - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students contemplating a senior thesis should have a superior academic record and be well prepared with a suitable background of previous coursework or independent study for performing their proposed research. Students must file a petition with the Psychology Office the quarter in which they would like to begin the thesis. Senior thesis petitions are available in the Psychology Department Office. Check with office for enrollment conditions.

PSYC 195C - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. When taken as a multiple-term course extending over two or three quarters, the grade and evaluation submitted for the final quarter apply to each of the previous quarters. Students contemplating a senior thesis should have a superior academic record and be well prepared with a suitable background of previous coursework or independent study for performing their proposed research. Students must file a petition with the Psychology Office the quarter in which they would like to begin the thesis. Senior thesis petitions are available in the Psychology Department Office. Check with office for enrollment conditions.

PSYC 199 - Tutorial (5)

Individual directed study for upper-division undergraduates. Students must file a petition with the Psychology Office the

quarter in which they would like to take the tutorial. Petitions may be obtained in the Psychology Department Office.

PSYC 199F - Tutorial (2)

Specialized study with individual faculty as psychology peer advisors. May not be applied toward major requirements. Students submit petition to sponsoring agency. Application and interview required during the previous quarter. Enrollment restricted to junior and senior psychology majors.

PSYC 199G - Tutorial (3)

Specialized study with individual faculty. May not be applied toward major requirements. Students submit petition to sponsoring agency.

Graduate

PSYC 201 - Teaching in Psychology (5)

Provides graduate students with practical teaching skills in the areas of developing and stating a general philosophy of teaching, course design, writing a course syllabus, assessment techniques, evaluation procedures, effective teaching strategies, and media use.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 201A - Teaching in Psychology I (3)

Seminar providing graduate students with practical teaching skills that are relevant to TA'ing, mentoring research assistants, and eventual independent course design in the field of psychology. This is not a lecture course. The main activities are reading, reflecting, writing, constructively critiquing work, presentations, and group discussion. There is also time to workshop individual TA difficulties as they arise. Pedagogical approaches for diverse classrooms are discussed in hope of creating a climate in which students feel safe asking questions and speaking their minds.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 202M - Introduction to Matlab (5)

Introduces the programming language Matlab, focusing on its data analysis, visualization, stimulus presentation, and data-collection tools. Students develop Matlab skills by completing weekly assignments and a term project. No previous programming experience is required.

Prerequisite: Prerequisite(s): PSYC 204 or by permission of the instructor. Enrollment is restricted to psychology graduate students.

PSYC 202R - Introduction to R (3)

Teaches students how to use the statistical programming language and environment R to load, analyze, simulate, and visualize data. Assumes a basic understanding of descriptive and inferential statistics, but no prior experience with programming.

Prerequisite: Enrollment is restricted to psychology graduate students, or by permission of the instructor.

PSYC 204 - Quantitative Data Analysis (5)

Intermediate statistical methods widely used in psychology (e.g., ANOVA, ANCOVA, multiplecomparisons, repeated-measures) and corresponding SPSS or R programs.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 205 - Categorical Data Analysis (5)

Application of statistical methods for analyzing binomial and multinomial response variables in survey and experimental designs. Topics include hypothesis testing, confidence intervals, assessing effect size, sample size requirements, and an introduction to logistic regression models. Data analysis applications use SAS, SPSS, and R.

Prerequisite: Prerequisite(s): PSYC 204 or by permission of the instructor. Enrollment is restricted to graduate students.

PSYC 210 - The Experimental Method in Social Psychology (5)

Explores the philosophy and practice of the experimental method in social psychology.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 211A - Proseminar: Social Justice and the Individual (5)

Provides an introduction to social psychology, focusing on various individual-level social justice topics, including the self, social comparison, individual and collective identity, social historical and social structural determinants of behavior and various policy and social change-related issues.

Prerequisite: Enrollment is restricted to psychology graduate students; undergraduates planning graduate work in social psychology may enroll with permission of instructor.

PSYC 211B - Social Justice, Society, and Policy (5)

Provides an introduction to social psychology, focusing on empirical and theoretical developments related to social justice and group and intergroup dynamics. Topics include: prejudice and discrimination, power, collective action, and psychology's relationship to social policy.

Prerequisite: Enrollment is restricted to psychology graduate students. Undergraduates planning graduate work in social psychology may enroll with permission of instructor.

PSYC 211C - Communicating in Social Psychology (3)

Supports first-year social psychology graduate students in completing their first-year projects. Involves discussion of research methods, but the primary emphasis is on writing and presenting the APA-style report. Includes writing exercises as well as practice talks on the presentations that students give in colloquium. Because this is a workshop tailored specifically to each student, over the course of the quarter we will work collaboratively to discuss each others' work, read each others' drafts, and establish a challenging and supportive context for

thinking, writing, and presenting. First- and second-year projects required to be reported in two ways: a manuscript approved and signed by the first (adviser) and second readers, and a presentation of the project in the colloquium.

Prerequisite: Enrollment is restricted to social psychology first-year graduate students, or by permission of instructor.

PSYC 213 - Special Topics in Social Psychology (5)

Focuses on particular issues of theoretical and practical importance in social psychology. Topics vary from year to year and often concentrate on issues of social justice, social identity, intergroup relations, and social policy.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 214A - Multivariate Techniques for Psychology (5)

Introduces multiple regression, analysis of covariance, and random coefficient models. Both methodological and statistical aspects of data analysis are discussed. Practical problems of estimating and testing in general linear models are addressed. Students gain experience in carrying out and interpreting analysis using SPSS and R.

Prerequisite: Prerequisite(s): PSYC 204. Enrollment is restricted to graduate students.

PSYC 214B - Advanced Multivariate Techniques for Psychology (5)

Introduces factor analysis and structural equation modeling (SEM). Develop skills in defining, estimating, testing, and critiquing models. Topics include the rationale of SEM, model identification, goodness of fit, and estimation. Learn how to use relevant software packages (R, SAS, LISREL, EQS, or AMOS) to conduct exploratory and confirmatory factor analyses and latent variable path analyses.

Prerequisite: Prerequisite(s): PSYC 214A.

PSYC 215 - Production and Comprehension of Spontaneous Communication (5)

Seminar on spontaneous communication. Typical topics include discourse markers (including historical origins, cross-linguistic borrowing, second-language learning, children's acquisition), enquoting devices, backchannels, and spontaneous written communication.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 220 - Special Topics in Human Memory (5)

Topics announced when offered. Seminars involve discussion and critical evaluation of current, historical, and interdisciplinary readings relevant to topic. Emphasis on development of research ideas.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 221 - Visual Perception (5)

Seminar to study human perception, its methodology, and driving issues as illustrated by selected research topics (e.g., adaptation to unusual sensory environments). Where possible, parallels with other areas of psychology are drawn.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 222 - Topics in Lexical Organization (5)

The recognition of words is a critical step in natural language processing. Discusses a range of contemporary issues related to the representation of a word and the access of this information from the perspective of psychology, linguistics, and artificial intelligence.

Prerequisite: Enrollment is restricted to psychology graduate students; undergraduates who have completed PSYC 124 may enroll with permission of instructor.

PSYC 224A - Proseminar: Cognitive I (5)

A proseminar reviewing current topics in cognitive psychology, designed to introduce new graduate students to the field.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 224B - Proseminar: Cognitive II (5)

A proseminar reviewing current topics in cognitive psychology, designed to introduce new graduate students to the field.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 224C - Proseminar: Cognitive III (5)

A proseminar reviewing current topics in cognitive psychology, designed to introduce new graduate students to the field.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 225A - Introduction to Developmental Research I (3)

Examines the rationale and techniques of research in developmental psychology. Topics include theories and paradigms in developmental psychology; translating theoretical ideas into researchable hypotheses; diversity issues in sampling; and conducting ethical research. Multiple-term course; students receive 6 credits in the second quarter of attendance; the grade and evaluation submitted for the final quarter applies to both quarters.

Prerequisite: Enrollment is restricted to psychology graduate students or with instructor's permission.

PSYC 225B - Introduction to Developmental Research II (3)

Examines the rationale and techniques of research in developmental psychology. Topics include selecting appropriate research designs; measurement and statistical approaches for research problems; issues of validity; and communicating research findings. Multiple-term course; students receive 6 credits in the second quarter of attendance; the grade and evaluation submitted for the final quarter applies to both quarters.

Prerequisite: Prerequisite(s): PSYC 225A. Enrollment is restricted to psychology graduate students or with instructor's permission.

PSYC 225C - Introduction to Developmental Research III (5)

Focuses on drawing reasonable conclusions from research findings by working on students' first-year research projects and critiques of existing research.

Prerequisite: Prerequisite(s): PSYC 225A and PSYC 225B. Enrollment is restricted to developmental psychology graduate students or by permission of the instructor.

PSYC 227 - Contemporary Issues in Psychology of Language (5)

Special topics in thought and language are examined from the perspectives of cognitive science. Particular attention given to embodied experience and higher-order cognition.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 230 - Research in Cognitive Psychology Seminar (5)

Colloquium series to study and critique research in cognitive psychology and cognitive science.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 231 - Research in Social Psychology Seminar (5)

Seminar to study, critique, and develop research in social psychology.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 232 - Evolution of Cognition (5)

Explores current research on evolution of human cognition, drawing on findings from other species and from the archaeological record. Topics include language, working memory, episodic memory, numerical abilities, and social cognition.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 235 - Infant Development in Contexts (5)

Seminar on how contextual factors influence the development in infancy, especially on cognitive domains. Discusses at least four types of contextual factors: cultural, experiential, event, and interpersonal contexts.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 242 - Research in Developmental Psychology Seminar (5)

Seminar to study, critique, and develop research in developmental psychology.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 244A - Proseminar I: Cognitive and Language Development (5)

Explores major theories and research in the fields of cognitive development and language development. Begins with classic theorists, such as Piaget and Vygotsky, and proceeds to theories and research on topics of current interest.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 244B - Proseminar II: Social and Personality Development (5)

An examination of contemporary theory and research on social and personality development across the lifespan.

Prerequisite: Enrollment restricted to graduate students.

PSYC 246 - Cultural Diversity in Human Development (5)

Examines cultural influences in development from the perspective of current theories and empirical research in developmental psychology and related fields (including social psychology, anthropology, sociology, history, education, and social policy). Focuses on understanding development in diverse cultural, ethnic, and socioeconomic communities by examining the interplay of social, cultural, institutional, and psychological processes.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 247 - Special Topics in Developmental Psychology (5)

Focuses on particular issues of theoretical importance in developmental psychology. Topics vary from year to year. Particular issues in language, culture, cognitive, social, and personality development may be covered.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 248 - Survey Methods (5)

Practicum to give students hands-on experience with survey methods by conducting their own survey on the topic of their choice. Course requires the survey to be conducted off campus at a local agency or program chosen by student with approval of instructor.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 249 - Field Methodologies and Social Ethnography (5)

Designed to train graduate students in applied field methods. Emphasis is on gaining knowledge and experience with actual field methods, by conducting social ethnography in the community. Field research in community placements required.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 250 - Prejudice and Social Relations (5)

Examines the ways in which the various branches of psychology have approached the issue of prejudice. Attention paid to the assumptions underlying each approach and their relation to core psychological ideas such as the self and emotion.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 251 - Feminist Theory and Social Psychology (5)

Course bridges feminist theory and social psychological research to explore connections between theory covered and empirical studies on various topics in social psychology. Seminar format allows students opportunity for extensive discussion.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 252 - Special Topics in Cognitive Psychology (5)

Focuses on particular issues in cognitive psychology. Topics vary from year to year. Particular issues in language, memory, perception, cognitive modeling, cognitive neuroscience, and more are covered.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 253 - Theory and Research in Intergroup Relations (5)

Examines, compares, and contrasts a variety of theories in intergroup relations while examining relevant empirical research. The relevance of both theory and research findings to contemporary social issues is explored.

Prerequisite: Enrollment is restricted to psychology graduate students; undergraduates considering graduate work in social psychology are encouraged to enroll with permission of instructor.

PSYC 254 - Psychology of Gender (5)

Course reviews recent theory, research, and applications in the psychology of gender. Developmental, social-psychological, cultural, and feminist approaches are emphasized.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 255 - Qualitative Inquiry in Psychology (5)

A broad survey of qualitative inquiry in psychology. Presents epistemologies; reviews ethnography, interpretative-phenomenological analysis, grounded theory, interviewing and narrative analysis, discourse analysis, focus groups, thematic analysis, content analysis, intuitive inquiry; discusses disciplinary guidelines for reporting and reviewing qualitative research.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 256 - Psychology of Social Class and Economic Justice (5)

Course examines the social psychological antecedents, correlates, and consequences of economic inequality in contemporary U.S. society. The impact of social class on attitudes, beliefs, and behaviors is assessed. Strategies for reducing classist discrimination, improving interclass relations, and strengthening social policy are discussed.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 261 - Participatory Action Research (5)

Participatory Action Research (PAR) is a theoretical standpoint and collaborative methodology that is designed to ensure that those affected by the research project have a voice in that project. Topics include philosophies of science; defining and evaluating PAR; ethics; and reflexivity.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 264 - Transnational Feminism, Development, and Psychology (5)

A transnational feminist lens examines international development as linked to broader ideologies that transform gender relations and enhance women's empowerment. A social-psychology framework brings theoretical and practical import to the issues and examines how research can contribute to social justice and women's human rights.

Prerequisite: Enrollment is restricted to graduate psychology students, or by permission of instructor.

PSYC 290B - Advanced Developmental Research and Writing (2)

Tailored to graduate students' interests among topics involving research and scholarship in sociocultural approaches to development, methods for research design, data collection, coding, and analysis, and preparing and reviewing grant proposals and journal manuscripts. Multiple-term course; students receive 6 credits in the third quarter of attendance; the performance evaluation and grade submitted for the final quarter applies to all three quarters.

Prerequisite: Enrollment is restricted to graduate students.

PSYC 290C - Professional Development (5)

Designed to aid advanced psychology graduate students with development of competence in professional activities (e.g., preparing a vita, making job and conference presentations, submitting and reviewing manuscripts and grant proposals, professional communication, career decisions).

Prerequisite: Enrollment is restricted to advanced psychology graduate students.

PSYC 290E - Grant Writing for Psychologists (5)

Discusses how to write and put together a grant proposal for psychological research, culminating in a completed proposal.

Prerequisite: Enrollment is restricted to psychology graduate students.

PSYC 293 - Field Study (5)

Student-designed and student-conducted research carried out in field settings.

PSYC 297A - Independent Study (5)

Independent study and research under faculty supervision.

PSYC 297B - Independent Study (10)

Independent study and research under faculty supervision.

PSYC 297C - Independent Study (15)

Independent study and research under faculty supervision.

PSYC 297F - Independent Study (2)

Independent study and research under faculty supervision. Enrollment is restricted to graduate students.

PSYC 299A - Thesis Research (5)

PSYC 299B - Thesis Research (10)

PSYC 299C - Thesis Research (15)

PUNJ - PUNJABI

Lower-Division

PUNJ 1 - First-Year Punjabi 1 (5)

First course of a three-quarter sequence designed to introduce students to modern Punjabi as spoken in India, Pakistan, and the global Punjabi diaspora. Course materials have been created primarily in Gurmukhi script. Course is taught online utilizing Zoom classes, interactive online activities in Canvas, recorded captivate lessons, and a mobile app companion. Students master Gurmukhi script and phonology and are expected to develop basic proficiency in Punjabi. Course is organized by modules on core themes about Punjabi life and culture. Students gain greater ease at listening, reading, writing, and talking in Punjabi. Punjabi is spoken most of the time in class. This course emphasizes developing basic communication skills using everyday vocabulary and grammatical structures in Punjabi.

PUNJ 2 - First-Year Punjabi 2 (5)

The second course of a yearlong beginning sequence (Punjabi 1,2,3) continues the introduction to modern Punjabi as spoken in India, Pakistan, and wherever Punjabi speakers have settled globally. Enhances skills in reading, writing, speaking and listening. Instruction is provided in all four language skills. Oral communication and conversation emphasized as in PUNJ 1, while reading and writing skills are developed more deeply. Students are given systematic lessons on Punjabi grammar and enhance their understanding and use of Punjabi vocabulary for communication in real-life situations. Course materials have been created primarily in Gurmukhi script. Punjabi is spoken most of the time in class. Course emphasizes developing basic communication skills using everyday vocabulary and grammatical structures in Punjabi.

Prerequisite: Prerequisite(s): PUNJ 1 or instructor consent.

PUNJ 3 - First-Year Punjabi 3 (5)

The last course of a year-long beginning sequence (Punjabi 1, 2, 3). Continues building and strengthening students' skills in reading, writing, speaking and listening of modern Punjabi as spoken in India, Pakistan and wherever Punjabi speakers have settled globally. Helps students attain and enhance competence in the four modes of literacy reading, writing, speaking and listening. Course materials have been created primarily in Gurmukhi script. Punjabi spoken most of the time in class Course emphasizes developing communication skills using everyday vocabulary and grammatical structures in Punjabi.

Prerequisite: Prerequisite(s): PUNJ 2 or by consent of the instructor.

SCIC - SCIENCE COMMUNICATION

Upper-Division

SCIC 100 - Science Communication for Scientists (5)

Teaches students to communicate effectively about science with the public. Students formulate research questions, identify and interview appropriate expert sources, integrate material into engaging works of creative nonfiction using techniques such as structure, description and voice, and work with peers and the instructor to analyze and improve their work. Focuses on writing as the primary vehicle for creative nonfiction expression about science across mediums. Taught in conjunction with SCIC 200. Students cannot receive credit for this course and SCIC 200. Enrollment is restricted to sophomores, juniors, and seniors and subject to interview with the instructor to confirm level of scientific training and writing experience. Contact the instructor to arrange the interview.

SCIC 104B - Field Sketching in Color (5)

Covers field-adapted color illustration techniques including watercolor, colored pencil, inkwash, and mixed media. Field trips to various natural environments provide opportunities to sketch plants, mammals, birds, insects, landscapes, and other subject matter. In addition to in-class assignments, students produce a field sketchbook and a final project. Appropriate for students with demonstrated interest in science illustration through previous course work in science and art or through extracurricular activity in the field or a strong desire to learn the skills of the field. Enrollment process differs for Summer Session.

SCIC 106A - Introduction to Natural Science Illustration (5)

Introduction to graphite, pen and ink, coquille, and scratchboard, along with training in essential skills for creating accurate and dynamic scientific illustrations. Attention to the demands of the printing process along with basics of proportion, perspective, and composition. Appropriate for students with a demonstrated interest in science illustration through previous course work in science and art, or through extracurricular activity in the field, or a strong desire to learn the skills of the field.

SCIC 110 - Data-Driven Animation for Science

Communication (5)

Effective data visualizations have grown into global movements, such as the "warming stripes"; climate change visualization by Ed Hawkins, and have been used to guide policy, for instance, in the COVID-19 pandemic response. This course trains students in data-based storytelling that promotes research and science communication for the benefit of communities and policymakers on local and global scales. Students draft a science writing script, create custom raster and vector graphics, program data visualizations, learn to model and animate 3D models, and create animated compositions. For their final project, students assemble these data-driven assets into an animated video abstract for their own research or that of a collaborating researcher. Taught in conjunction with SCIC 210.

SCIC 160 - Introduction to Science Writing (5)

A rigorous examination and practice of the skills involved in writing articles about science, health, technology, and the environment for the general public. Covers the essential elements of news writing and explanatory journalism, including developing a story idea, interviewing scientists, fact checking, composition, and editing of multiple drafts about scientific research.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and C1, C2 requirements. Enrollment is restricted to junior and senior physical and biological sciences majors.

SCIC 199 - Tutorial (5)

Students submit petition to sponsoring agency.

SCIC 199F - Tutorial (2)

Students submit petition to sponsoring agency.

Graduate

SCIC 200 - Introduction to Science Communication for Scientists (5)

Instructs science students in communicating about their work with the non-scientist public, including written, visual, and audio forms of communication. Enrollment is restricted to graduate students in science and engineering studies. Enrollment is by interview with the instructor to confirm level of scientific training and writing experience. Taught in conjunction with SCIC 100. Students cannot receive credit for this course and SCIC 100.

SCIC 201A - Reporting and Writing Science News (5)

A survey of the conventions of newspaper journalism and the special application of those conventions to scientific and technological subjects.

Prerequisite: Enrollment is restricted tograduate students formally accepted into the writing track of the Science Communication Program.

SCIC 201B - The Science Feature (5)

A survey of selected feature articles in the current national science magazines, with attention to strategy, level of complexity, explanation technique, and style. Writing assignments include a publishable feature article.

Prerequisite: Enrollment is restricted to graduate students formally accepted into the writing track of the Science Communication Program.

SCIC 201C - Profile and Essay Writing (5)

A survey of science and nature profiles and essays. Purpose, content, form, and style are considered. Writing assignments include original profiles and essays on current issues in science, technology, and society.

Prerequisite: Enrollment is restricted to graduate students formally accepted into the writing track of the Science Communication Program.

SCIC 201D - Policy and Investigative Reporting (5)

Rigorous examination of techniques for reporting topics where science and technology meet public policy and society. Covers essential skills of investigative reporting, including obtaining documents through Public Records Act requests, using online reporting resources, and writing about ethical and legal issues.

Prerequisite: Enrollment is restricted to graduate students formally accepted into the writing track of the Science Communication Program.

SCIC 201E - Multimedia Science News (5)

Introduces web-media tools for reporting science stories and enhancing coverage for broad audiences, including video packages, narrated slideshows, podcasts, blogs, and still photography. Laboratory sections address skills for handling equipment and online editing.

Prerequisite: Enrollment is restricted to graduate students formally accepted into the writing track of the Science Communication Program.

SCIC 202 - Writing and Editing Workshop (5)

Theory and practice of writing and editing articles on scientific, medical, environmental, and technological subjects for newspapers, magazines, and special publications directed at non-technical readers.

Prerequisite: Enrollment is restricted to graduate students formally accepted into the writing track of the Science Communication Program.

SCIC 210 - Data-Driven Animation for Science Communication (5)

Effective data visualizations have grown into global movements, such as the "warming stripes," climate change visualization by Ed Hawkins, and have been used to guide policy, for instance, in the COVID-19 pandemic response. This course trains students in data-based storytelling that

promotes research and science communication for the benefit of communities and policymakers on local and global scales. Students draft a science writing script, create custom raster and vector graphics, program data visualizations, learn to model and animate 3D models, and create animated compositions. For their final project, students assemble these data-driven assets into an animated video abstract for their own research or that of a collaborating researcher. Taught in conjunction with SCIC 110.

SCIC 297 - Independent Study (5)

A media internship is completed with faculty tutorial assistance, to satisfy a need for the student when a regular course is not available. Enrollment restricted to graduate students formally accepted into the writing track of the Science Communication Program.

SCIC 297B - Independent Study (10)

Independent Study

SOCD - SOCIAL DOCUMENTATION

Graduate

SOCD 200 - Approaches to Social Documentation (5)

Comprehensive review and analysis of documentary strategies aimed at societal critique and social change, evaluating changes in argument, evidence, and process over development of the discipline.

Prerequisite: Enrollment is restricted to graduate students.

SOCD 201A - Introduction to Documentary Field Production and Editing (5)

Designed to provide supplemental instruction on specific topical and/or technical matters related to social documentation. Topics include technical standards and innovations within the field of social documentation, documentary subjects, location production, and/or the work of individual professional documentarians.

Prerequisite: Enrollment is restricted to social documentation graduate students.

SOCD 201B - Advanced Documentary Field Production and Editing (5)

Intensive directing and producing course that covers conceptualization, research, treatment and proposal writing, interview technique, camera, editing, production, and distribution.

Prerequisite: Enrollment is restricted to social documentation graduate students. Open to qualified undergraduates with permission of instructor.

SOCD 201C - Project Planning for the Social Documentary (5)

Workshop seminar in project planning focusing on the form and content of the documentary project; research and preproduction; technical, financial, and logistical plans; and coordination with subjects and resources.

Prerequisite: Enrollment is restricted to social documentation graduate students.

SOCD 202 - Multiple-Platform Social Documentary Production (5)

Introduction to social documentary genres including video, photography, new media and other mediums, which addresses social-scientific research and methodology in the context of these processes.

Prerequisite: Enrollment is restricted to social documentation graduate students.

SOCD 203 - Documentary Research Methods and Social Science Representation (5)

Designed to acquaint students with how social science research represents social reality and how social documentarians represent social reality. Designed to encourage comparison among different modes of social science research and between social science and different modes of social documentation representations of social life.

Prerequisite: Enrollment is restricted to graduate students.

SOCD 204 - Ethnographic Writing and Social Documentation (5)

Graduate-level advanced seminar explores ways that seeing, hearing, and knowing are influenced by culture, power, race, and other factors. Readings emphasize how documentary subjects are constituted and known, addressing questions of epistemology, social constructivism, objectivity, and method.

Prerequisite: Enrollment is restricted to graduate students.

SOCD 292 - Special Topics (2)

Provides supplemental instruction on specific topical and/or technical matters related to social documentation. Topics include technical standards, artistic strategies, and innovations within the field of social documentation, documentary subjects, and/or work of individual professional documentarians.

Prerequisite: Enrollment is restricted to graduate students.

SOCD 293 - Studies and Practice for Social Documentation, Filmmaking, and New Media (5)

This thematic, graduate-level, hybrid, production/critical studies course provides opportunities to learn specific technical skills while engaging in the analysis and critical interpretations of cinema, social documentary, animation, art, television, and new media. Technical topics may include animation; motion graphics; interactive web media; and installation, editing, cinematography, and sound.

Prerequisite: Enrollment is restricted to graduate students in social documentation. Graduate students from other programs may enroll by permission of the instructor.

SOCD 294A - Production/Analysis/Editing (5)

Workshop seminar oriented toward actual fieldwork, production, and preparation for editing of the thesis project in the student's chosen genre. Techniques of collection and recording, analysis, preparation, and editing taught.

Prerequisite: Enrollment is restricted to social documentation graduate students.

SOCD 294B - Production/Analysis/Editing (5)

Workshop seminar oriented toward the editing and creative assemblage of the thesis project in the student's chosen genre. Techniques of preparation, exhibition, and editing taught.

Prerequisite: Enrollment is restricted to social documentation graduate students.

SOCD 294C - Production/Analysis/Editing (5)

Social documentation students in the final phase of completing their master's thesis receive guidance in shaping their projects, receive feedback, and are taught key elements of structure and narrative at a time when the demand for clarity and social documentation exposition is crucial.

Prerequisite: Prerequisite(s): SOCD 294A and SOCD 294B. Enrollment is restricted to social documentation graduate students.

SOCD 295 - Project Completion (5)

Individualized study for second-year graduate students working on and completing their final projects. Limited to students enrolled in the social documentation program during their final quarter of study.

SOCD 297 - Independent Study (5)

Study either related to a course being taken or a totally independent study. Enrollment restricted to graduate students. Students submit petition to sponsoring agency.

SOCD 297F - Independent Study (2)

Students submit petition to course-sponsoring agency. Enrollment restricted to graduate students.

SOCY - SOCIOLOGY

Lower-Division

SOCY 1 - Introduction to Sociology (5)

A systematic study of social groups ranging in size from small to social institutions to entire societies. Organized around the themes of social interaction, social inequality, and social change. Fulfills lower-division major requirement.

SOCY 3A - The Evaluation of Evidence (5)

Introduces students to major types of date and data analysis used in sociology. Designed to give students a foundation in understanding social science research articles, reports, and media reports used in political and policy debates. Topics include: general principles of research design, measurement, inductive and deductive modes of reasoning, experimental design, field work and ethnographic design, and reading and understanding basic quantitative forms of data and analysis.

Prerequisite: Enrollment is restricted to majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 3B - Statistical Methods (5)

Introduces basic quantitative data analysis found in sociological research and policy reports. Topics include: inferential statistics, such as probability distributions, sampling, and testing; and descriptive statistics, such as measures of association, bivariate, and multivariate analysis. (Formerly course 103A.)

Prerequisite: Enrollment is restricted to majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 10 - Issues and Problems in American Society (5)

Exploration of nature, structure, and functionings of American society. Explores the following: social institutions and economic structure; the successes, failures, and intractabilities of institutions; general and distinctive features of American society; specific problems such as race, sex, and other inequalities; urban-rural differences. Fulfills lower-division major requirement.

SOCY 15 - World Society (5)

Introduction to comparative and historical sociology. Focuses on the global integration of human society. Examines social changes such as industrialization, globalization, colonial rule, and the rise of Islamic fundamentalism. Uses social theory (including ideas from Marx, Weber, and Adam Smith) to explore the making of institutions like the nation-state, the World Trade Organization, the World Bank, and the International Monetary Fund. Fulfills lower-division major requirement.

SOCY 30A - Introduction to Digital Justice Studies (5)

The first class in a three-quarter sequence that prepares students for designing social justice and sustainability projects using digital technologies and tools in partnerships with community and non-governmental organizations. Tuesday's class topics include globalization, info-exclusion, social justice, information revolution, global civil-society networks, social entrepreneurship, and organizational assessment. Thursday's technical laboratory teaches students to develop practical digital technology skills for working in solidarity with community organizations in areas such as web design, graphic design, and digital networking. (Formerly Introduction to Global Information and Social Enterprise Studies.)

SOCY 99 - Tutorial (5)

Directed reading and research. Petitions may be obtained from the Sociology Department Office. Ordinarily call numbers for this course will not be issued after the first week of instruction. Students submit petition to sponsoring agency.

Upper-Division

SOCY 105A - Classical Social Theory (5)

This intensive survey course examines the intellectual origins of the sociological tradition, focusing on changing conceptions of social order, social change, and the trends observed in the development of Western civilization in the modern era. Readings are all taken from original texts and include many of the classical works in social theory with special emphasis on the ideas of Marx, Weber, and Durkheim, which constitute the core of the discipline. Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 105B - Contemporary Social Theory (5)

Surveys major theoretical perspectives currently available in the discipline including functionalism, symbolic interactionism, ethnomethodology, conflict theory, critical theory, neo-Marxism, and feminist theory.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements. Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 107A - Designing Digital Justice Projects (5)

Covers designing doable digital technology-based projects to support the social and environmental goals of community and non-profit organizations. Topics include: step-by-step project design; integrating social and technical solutions; project management and social entrepreneurship/enterprise case studies. Technical topics include: Internet resources; advanced web/database design; computer networks/maintenance. Prerequisite(s): SOCY 30A and by permission of instructor. (Formerly Designing ICT Projects for Social Enterprise.)

SOCY 107B - Project Implementation for Digital Justice (5)

Covers conversion of planned digital justice projects into a fundable grant proposal for social justice, integration of social activism, entrepreneurship and justice, and implementation of project. Topics include: funders, proposal design, field methods, project assessment, innovative digital technology applications, action research methods, project implementation. (Formerly Project Implementation and Grant Writing for Social Entrepreneurs.)

Prerequisite: Prerequisite(s): SOCY 107A.

SOCY 107F - Digital Social Enterprise and Project Management (2)

Provides Everett Program Fellows with hands-on experience, working in teams, running a digital social enterprise and managing technology-linked projects implemented with student teams. Fellows work closely with faculty and staff of the Everett Program for Technology and Social change, managing and implementing all aspects of the program, including fundraising and financial administration, project planning and development, maintaining communication with community partners, and mentoring younger students in the project in their own technology learning and project implementation activities. Prerequisite(s): SOCY 30A, SOCY 107A, and SOCY 107B. Enrollment is by permission of the instructor.

SOCY 111 - Family and Society (5)

Focuses on the interaction between family and society by considering the historical and social influences on family life and by examining how the family unit affects the social world. Readings draw on theory, history, and ethnographic materials.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15. Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 113C - Topics in Civic Engagement (2)

Explores the historical origins of contemporary civic polarization through the decades of political, cultural, technological. and legal changes that have resulted in our current combative political environment.

Prerequisite: Enrollment is restricted to juniors and seniors.

SOCY 114 - Sports and Society (5)

Explores the interconnections between sports and society using sociological theories and methods. Topics include class, race, and gender; mass media and popular culture; political economy; education and socialization; leisure patterns (participants and spectators); globalization and cross-national comparisons.

SOCY 115 - Introduction to Sound Studies (5)

Explores the interdisciplinary field of Sound Studies. Surveys the work of social scientists, media scholars, philosophers and others to better understand the role of sound in society. Lectures are presented in an audio-only format with a variety of listening activities and supplemental videos. By the end of the course, students will have a working understanding of the field of Sound Studies and a completed final project of their own design.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15. Enrollment is restricted to juniors and seniors.

SOCY 116 - Communication, Media, and Culture (5)

Examines media institutions, communication technologies, and their related cultural expressions. Focuses on specific

ways the media—including media studies and criticism—operates as social and cultural factor. Contemporary theory or equivalent in related fields recommended.

Prerequisite: Prerequisite(s): SOCY 105A and SOCY 105B. Enrollment is restricted to junior and senior majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 117E - Migrant Europe (5)

Introduction to questions of immigration, nationalism, and racism in contemporary Europe. Addresses colonial roots of migration to Europe; patterns of immigration and responses to immigrants across different European regions; and political movements led by immigrants and other people of color.

Prerequisite: Prerequisite(s): SOCY 1, or SOCY 10 or SOCY 15 or CRES 10 or LGST 10; or by permission of the instructor.

SOCY 117M - Immigration Enforcement and Deportations (5)

The intensification of immigration enforcement in the United States and the associated rise of mass deportations have reached the lives of millions of immigrants and local communities. Course covers the context, determinants, and consequences of enforcement and deportation practices.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15 or LALS 1. Enrollment restricted to sophomores, juniors, and seniors.

SOCY 118 - Popular Music, Social Practices, and Cultural Politics (5)

Considers the role of popular music as a site of contemporary social practices and cultural politics. Examines the institutional organization and production of popular music, its cultural meanings, and its social uses by different communities and social formations. Also examines popular music as a vehicle through which major cultural and political debates about identity, sexuality, community, and politics are staged and performed.

Prerequisite: Prerequisite(s): SOCY 105A or SOCY 105B. Enrollment is restricted to juniors and seniors.

SOCY 119 - Sociology of Knowledge (5)

If people define things as real, they are real in their consequences, quipped W.I. Thomas. Surveys sociological theories about where and how knowledge comes from, and the politics of knowledge, with reference to contemporary debates surrounding issues, such as climate change, genetics, and inequality.

Prerequisite: Prerequisite(s): SOCY 105A or SOCY 105B, or by permission of the instructor.

SOCY 120 - Gender, Race/Ethnicity, Sexuality and Cultural Politics (5)

Focuses on the role feminist discourses play in cultural politics emphasizing sex, sexuality, and sex work as related to gender, race , and class. Examines the relationship between academic and popular feminisms. Interrogates post-feminism, third-wave feminism, and generational differences in feminisms. Formerly Gender, Sexuality, and Cultural Politics.)

Prerequisite: Prerequisite(s): SOCY 126 recommended. Enrollment is restricted to junior and senior sociology, critical race and ethnic studies, feminist studies, global information and enterprise, and Latin America/sociology majors, proposed majors, and minors.

SOCY 121 - Sociology of Health and Medicine (5)

Analysis of the current health care crises and exploration of the social relationships and formal organizations which constitute the medical institution. Study of the political, economic, and cultural factors which affect the recognition, distribution, and response to illness.

Prerequisite: Enrollment is restricted to junior and senior majors and minors in biochemistry; biological sciences; community studies; critical race and ethnic studies; sociology; the Latin American studies/sociology combined majors; proposed and declared biotechnology majors and proposed sociology majors.

SOCY 121G - Genomics and Society (5)

Teaches critical skills for analyzing the co-production of genomics and society. Examines issues at stake as societies across the world increasingly turn to genomic data to cure disease, solve crimes, regulate immigration, revitalize economies, and answer age-old questions about who we are.

Prerequisite: Prerequisite(s): SOCY 10 and SOCY 105B, or by permission of the instructor. Enrollment is restricted to juniors and seniors.

SOCY 122 - The Sociology of Law (5)

Explores the social forces that shape legal outcomes and the ways law, in turn, influences social life. Traces the history and political economy of American law; the relation between law and social change; how this relation is shaped by capitalism and democracy; and how class, race, and gender are expressed in welfare and regulatory law.

Prerequisite: Enrollment is restricted to sociology, community studies, global and community health BA and BS, legal studies, Latin American and Latino studies/sociology combined, and digital justice studies (formerly GISES) studies majors, proposed majors and minors.

SOCY 123 - Global and Transnational Perspectives in Science and Technology Studies (5)

Examines transnational dimensions of science, technology, and medicine, with special attention to knowledge production, scientific practices, and therapeutics outside of North America and Western Europe. Students develop a conceptual foundation to analyze the global scale and impacts of scientific research.

Prerequisite: Enrollment is restricted to junior and senior sociology, anthropology, biology B.A., biotechnology,

biochemistry and molecular biology, community studies, critical race and ethnic studies, feminist studies, global and community health BA and BS, history, legal studies, Latin American and Latino studies/sociology combined, politics, science and justice, and digital justice studies (formerly GISES) studies majors, proposed majors and minors.

SOCY 124 - Visual Sociology (5)

Learn to critically consume documentary, ethnographic film, photojournalism, and the genre of realism as these methods are increasingly used to describe the social world. Addresses theoretical, methodological, practical, and ethical issues of creating visual media. Optional media lab teaches students how to create visual products as well.

Prerequisite: Prerequisite(s): Enrollment is restricted to juniors and seniors.

SOCY 125 - Society and Nature (5)

A healthy society requires a stable and sustainable relationship between society and nature. Covering past, present, and future, the course covers environmental history of the U.S., the variety and extent of environmental problems today, and explores their likely development in our lifetimes.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior majors, proposed majors, and minors in sociology, global information and enterprise, and Latin American studies/sociology combined.

SOCY 126 - Sex and Sexuality as Social Practice and Representation (5)

Explores social and cultural aspects of human sexuality and reproduction, including how and why meanings and behaviors are contested. Analyzes sexuality and reproduction as forms of social and political control as well as cultural expression and self-determination.

Prerequisite: Enrollment is restricted to junior and senior sociology, critical race and ethnic studies, feminist studies, Latin American/sociology combined, and digital justice studies (formerly GISES) majors, proposed majors, and minors.

SOCY 127 - Drugs in Society (5)

Explores the history of the use and abuse of consciousness-altering substances like alcohol and other drugs. Social-psychological theories of addiction are reviewed in tandem with political-economic analyses to identify the social conditions under which the cultural practices involved in drug use come to be defined as public problems. An introductory sociology course is recommended prior to taking this course.

Prerequisite: Enrollment is restricted to majors and minors in legal studies, sociology, Latin American/sociology combined, and digital justice studies (formerly GISES).

SOCY 127P - Sociology of Drugs, Botanicals and Pharmaceuticals (5)

Engages the social, historical, and economic trajectories of the drugs, illicit and licit, botanical and pharmaceutical within U.S. society. Through an examination of case studies, and other texts of encounter, explores how international, state, and local actors mediate as interlocutors between globalized interests, local knowledges, and the molecules we have increasingly come to know, ingest, and incorporate.

Prerequisite: Enrollment is restricted to junior and senior sociology, anthropology, biology, biotechnology, biochemistry and molecular biology, community studies, critical race and ethnic studies, global and community health B.A. and B.S., Latin American/sociology combined, and digital justice studies (formerly GISES) majors, proposed majors, and minors.

SOCY 128 - Law and Politics in Contemporary Japan and East Asian Societies (5)

Introduction to contemporary analysis of Japan's race relations, ethnic conflicts, and a government's failure to restore remedial justice for war victims in Japan, Asia, and the U.S. Specific issues include comfort women, national or state narratives on Hiroshima, forced labor during World War II, and Haydon legislation that allows war victims to sue the Japanese government and corporations in California.

Prerequisite: Enrollment restricted to sophomore, junior, and senior majors, proposed majors, and minors in legal studies, sociology, community studies, Latin American/sociology combined, digital justice studies (formerly GISES), and critical race and ethnic studies.

SOCY 128A - Research Methods in Legal Studies and Critical Criminology (5)

Introduces survey research methods including problem formulation, research design, instrument construction, data collection, codification, data processing, computer analyses, and report writing. The greater emphasis is placed on statistical analyses and questionnaire constructions.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 128C - Social History of Democracy, Anarchism, and Indigenism (5)

Provided an overview of socio-political theories and thoughts from Athenian Direct Democracy in 500 BC, to Classical Liberalism, Social Contract, Libertarian Socialism, Anarcho-Syndicalism, Neo-Liberalism, Anarcho-Primitism, and lastly Indigenism in relation to the revival of indigenous knowledge, theMother Earth law, and the restoration of the nature's rights as espoused by many governments in the Third World today.

Prerequisite: Prerequisite(s): SOCY 1, SOCY 10, or SOCY 15. Enrollment restricted to sophomore, junior, and senior sociology, critical race and ethnic studies, community studies, legal studies, Latin American/sociology combined, and digital justice studies (formerly GISES) majors, proposed majors, and minors.

SOCY 128I - Race and Law (5)

An introduction to comparative and historical analyses of the relation between race and law in the U.S. Emphasis on examinations of continuous colonial policies and structural mechanisms that help maintain and perpetuate racial inequality in law, criminal justice, and jury trials. (Formerly Race and Justice)

Prerequisite: Enrollment restricted to sophomore, junior, and senior majors, proposed majors, and minors in legal studies, sociology, community studies, Latin American/sociology combined, digital justice studies (formerly GISES), and critical race and ethnic studies.

SOCY 128J - The World Jury on Trial (5)

Adoption of the jury and its varied forms in different nations provides ideal opportunities to examine differences between systems of popular legal participation. Course considers reasons why the right to jury trial is currently established in Japan or Asian societies, but abandoned or severely curtailed in others. American jury contrasted with other forms of lay participation in the legal process.

Prerequisite: Enrollment restricted to sophomore, junior, and senior majors, proposed majors, and minors in legal studies, sociology, community studies, Latin American/sociology combined, digital justice studies (formerly GISES), and critical race and ethnic studies.

SOCY 128M - International Law and Global Justice (5)

Examines war crimes, crimes against humanity, and the evolution and role of the International Criminal Court (ICC). Examines the evolution of the concept of international law, the rationale for its birth and existence, roots of international conflicts and genocides, possible remedies available to victims, mechanisms for the creation and enforcement of international legal order, as well as the role of colonialism, migration, poverty, race/ethnic conflicts, gender, and international corporations in creating and maintaining conflicts and wars.

Prerequisite: Enrollment restricted to sophomore, junior, and senior majors, proposed majors, and minors in legal studies, sociology, community studies, Latin American/sociology combined, digital justice studies (formerly GISES), and critical race and ethnic studies.

SOCY 129 - Popular Culture and Cultural Studies (5)

Examines the hidden politics of popular pleasure, studying the workings of domination and transgression in popular culture and everyday life. Explores not only media representations but cultural practices as well. Examines both cultural production and consumption. Considers how hegemonic discourses render the politics of resistance invisible.

Prerequisite: Prerequisite(s): SOCY 105A or SOCY 105B. Enrollment is restricted to junior and senior majors and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 130 - Sociology of Food (5)

Following food from mouth to dirt, explores the politics, economy, and culture of eating, feeding, buying, selling, and growing food. Topics cover both the political economy of the food system as well as how body and nature are contested categories at either end of this system.

Prerequisite: Enrollment is restricted to juniors and seniors. Enrollment is restricted to sociology majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 131 - Media, Marketing, and Culture (5)

Explores relationship between modern forms of cultural production and the economy and society in which they emerge. Course reads, screens, and discusses variety of the cultural texts: from the historical and theoretical to the commercial, popular, and counter-cultural.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), community studies, and Latin American studies/sociology combined.

SOCY 132 - Sociology of Science and Technology (5)

Reviews social and cultural perspectives on science and technology, including functionalist, Marxist, Kuhnian, social constructionist, ethnographic, interactionist, anthropological, historical, feminist, and cultural studies perspectives. Topics include sociology of knowledge, science as a social problem, lab studies, representations, practice, controversies, and biomedical knowledge and work.

Prerequisite: Enrollment is restricted to junior and senior majors/minors in sociology; biology; biochemistry; community studies; critical race/ethnic studies; global information/social enterprise; Latin American studies/sociology combined; proposed sociology majors.

SOCY 133 - Currents in African American Cultural Politics (5)

Takes as its subject, the dialogues, debates, conceptions, and strategies of self representation produced by blacks in the U.S. and Atlantic world in the twentieth and twenty-first centuries. These issues are examined through the insights of feminist theory, cultural studies, media studies, sociology, and African American studies.

Prerequisite: Enrollment is restricted to juniors and seniors.

SOCY 134 - Television and the Nation (5)

The role of American network television in the production of the post-war American national imagination is our focus. Our approach will explore issues of media power, especially television's industrial apparatus, its network structure, its strategies of representation in relationship to the construction of the image of the nation, and the meaning of citizens, consumers, and audiences.

Prerequisite: Enrollment is restricted to junior and senior majors and minors in sociology, Latin America and Latino studies/sociology combined, global information and social enterprise studies, history, literature, and film and digital media.

SOCY 135 - Healing Justice (5)

This experiential course explores the theoretical foundations, history, and future of healing justice as a framework using an embodied approach. Healing justice has shaped wide-ranging fields, from grassroots organizing and holistic health, to grant-making, and education. While the framework informs a dynamic movement, healing justice is grounded in consistent commitments like collective healing; centering Black, indigenous and people of color knowledges; and more that guide this course. Grounded in somatic or embodied inquiry, students engage various materials—from academic articles to poetry—using some of the restorative practices that are central to healing justice work.

Prerequisite: Prerequisite(s): SOCY 105A and SOCY 105B, or by permission of the instructor.

SOCY 136 - Social Psychology (5)

Major theories and concepts in sociological study of social psychology. Topics include identity and social interaction, deviance, sociology of emotions, social narratives, and the social construction of reality.

Prerequisite: Enrollment is restricted to junior and senior sociology and Latin American studies/sociology majors and proposed majors, and sociology and digital justice studies (formerly GISES) minors.

SOCY 137 - Deviance and Its Discontents (5)

Why certain social acts are considered threatening and how individuals or groups become stigmatized. Sociological analysis of the institutions and processes of social control and the experience of becoming deviant and living with a stigmatized identity. Introductory course in sociology recommended. (Formerly Deviance and Conformity.)

Prerequisite: Enrollment is restricted to junior and senior sociology majors, minors, and proposed majors, digital justice studies (formerly GISES) studies minors, and Latin American and Latino studies/sociology combined majors and proposed majors.

SOCY 139 - Field Research Methods (5)

Research practicum which examines methods and problems of qualitative field research both through examining literature published in this tradition and by carrying out directed field exercises. Students also design and carry out their own research project.

Prerequisite: Prerequisite(s): SOCY 3A.

SOCY 139D - Critical Digital Methods (5)

Introduces critical digital methods to examine ethical and epistemological concerns with Big Data, archives and digital collections, organizational records, mobile ethnographies, social media, and crowd-sourced data. Students use open-source text mining and data-visualization programs.

Prerequisite: Prerequisite(s): SOCY 1, SOCY 10, or SOCY 15; and SOCY 3A. Enrollment is restricted to junior and senior sociology, Latin American and Latino studies/sociology, and digital justice studies (formerly GISES) majors, proposed majors, and minors.

SOCY 139G - Introduction to Geographic Information Systems (GIS) (5)

Introduces Geographic Information Systems (GIS) including methods to analyze geographic data and create maps. Students learn software, such as Google Map APIs and Bing Maps APIs, and focus on the ArcGIS mapping software. A course in statistics is recommended as preparation.

Prerequisite: Enrollment restricted to junior and senior anthropology, environmental studies, sociology, Latin American and Latino studies/sociology combined, and digital justice studies (formerly GISES) majors, proposed majors, and minors; other majors by permission of instructor.

SOCY 139I - Community Engaged Research, Learning and Internships (5)

Introduction to critical community engaged learning and research for social change as practiced within the Sociology Department. Students build out their own internship and/or research objectives centering ethical community engaged practices. Students supported in locating internships, learning about various approaches to community engaged research and learning, and connecting to a range of opportunities to engage both on and off campus.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15 or by permission of the instructor. Enrollment is restricted to sociology majors and proposed majors, Latin American and Latino studies/sociology combined majors and proposed majors, and digital justice studies (formerly GISES) minors.

SOCY 139T - Community-Engaged Research Practicum (5)

Covers the theories and methods associated with community-based and participatory action research. Students review relevant scholarship then engage in a collective field research project in collaboration with a community organization. Themes, collaborations, and research projects vary. Enrollment is by permission of the instructor.

SOCY 140 - Social Psychology of Power (5)

This course uses historical, sociological, and social psychological materials to introduce students to issues concerning class and power, religion and power, minorities and power, women and power, the rise of the New Right, and the successes and failures of the Left.

Prerequisite: Prerequisite(s): SOCY 1, SOCY 10, SOCY 15, or PSYC 40. Enrollment is restricted to juniors and seniors.

SOCY 141 - Social Welfare (5)

Familiarizes students with the major social welfare programs and policies in the U.S., exploring changes in conceptualizations of social welfare, and offering a critical perspective on the present-day welfare state.

Prerequisite: Prerequisite(s): Two courses chosen from SOCY 1, SOCY 10, and SOCY 15. Enrollment is restricted to sophomore, junior, and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 142 - Language and Social Interaction (5)

Concerns the routine and taken-for-granted activities that make up our interactions with one another, consisting in large part—but not exclusively—of verbal exchanges. Emphasis on the socially situated character of communication, whether intimacy between two people or dominance of a group.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, language studies, linguistics, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 143 - Black Botanical Medicine in the Americas (5)

How have plants been part of Black-led community health and healing in the Americas? How has this botanical knowledge been central to material and discursive geographies of blackness; to how blackness is lived; and to how blackness is constructed in health narratives, policy, and movements? In addition to learning about Black botanical knowledge in North and Latin America (African-American and Afro-Latinx), students analyze their own social locations; interrogate assumptions about local and traditional plant knowledge; and encounter broad understandings of health that include environmental, economic, and spiritual dimensions. Students engage with academic texts, news stories, art, and creative writing.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15 or CRES 10 or CRES 68 or GCH 1, or by instructor permission. Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 145 - Sociology of Masculinities (5)

Examines conflicting views on the development and state of modern masculinity as adaptation, transitional phase, or pathology. Did men lose the gender war? Do boys need rescuing? What are common and divergent social experiences of men within race, class, gender, culture, era? An introductory sociology course recommended.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, psychology, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 146 - Introduction to Population Health (5)

Why do people live longer today than they did 50 years ago? What drives differences in health between neighborhoods or nations? This course introduces students to questions and concepts central to the study of population health—an interdisciplinary field based in demography, sociology, and epidemiology. It examines the policy implications and limitations of research on population health. Students practice evaluating evidence, translating big-picture concepts into measurable variables, and working with data. Student learning is evaluated through class discussion forums, quizzes, data interpretation assignments, and a take-home final exam.

Prerequisite: Prerequisites: GCH 1 or SOCY 1 or SOCY 10 or SOCY 15 or CRES/SOCY 12. Enrollment restricted to sophomore, junior or senior proposed or declared majors and minors in GCH BA, SOCY BA, LALS/SOCY combined BA, digital justice studies (formerly GISES) minor, and science and justice minor.

SOCY 147 - Health in a Changing America (5)

What about America is making Americans sick? In this interdisciplinary course, students consider the changing social context of health in the United States and the social and political commitments necessary to protect health as a human right. Students analyze current challenges at the intersection of structural racism, political values, and health, and examine the ways that framing health as personal versus public responsibility is consequential for social policy. Using case studies, students envision a human rights- based response to these and other health challenges. Enrollment is restricted to sophomores, juniors, and seniors.

Prerequisite: Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 148 - Educational Inequality (5)

Examines educational inequality in the United States, focusing on contemporary debates and issues, especially in the California context. Covers schooling from preschool to higher education, and examines educational inequality from a system, setting, and individual-level perspective.

Prerequisite: Prerequisite(s): SOCY 3A and SOCY 3B, or by instructor permission. Enrollment restricted to junior, senior majors, proposed majors, and minors in sociology, education, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 149 - Sex and Gender (5)

Modern analyses of sexuality and gender show personal life closely linked to large-scale social structures: power relations, economic processes, structures of emotion. Explores these links, examining questions of bodily difference, femininity and masculinity, structures of inequality, the state in sexual politics, and the global re-making of gender in modern history. Recommended as background: any lower-division sociology course.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 150 - Sociology of Death and Dying (5)

Explores contemporary, historical, cross-cultural and interdisciplinary perspectives on the social psychology of death and dying. Cultural norms and institutional contexts are studied, along with the individual experience, and the ways in which our perspectives on death and dying influence our experiences of life and living.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15 Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 151 - Media Activism (5)

Delves into the dynamic interplay between media and activism, underscoring the ways in which grassroots communities use diverse media forms for mutual aid and social change. By analyzing case studies from across the globe, students gain a deeper understanding of the multifaceted influence of media—from its portrayal and (mis)framing of popular struggles to its capability to either propel or hinder social justice activism. Key areas of study encompass media and direct action, net histories, cyber queer and feminism, abolition technology, alternative media, gaming and tactical media, and more.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15. Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 152 - Body and Society (5)

Critically examines the place of the human body in contemporary society. Focuses on the social and cultural construction of bodies, including how they are gendered, racialized, sexualized, politicized, represented, colonized, contained, controlled, and inscribed. Discusses relationship between embodiment, lived experiences, and social action. Focuses on body politics in Western society and culture, especially the United States.

Prerequisite: Enrollment is restricted to junior and senior majors and minors and proposed majors and minors in sociology, global information and enterprise, and Latin American studies/sociology combined.

SOCY 153 - Sociology of Emotions (5)

Examines sociological approaches to the understanding of emotions and the application of these approaches to work, learning, interpersonal relationships, health and illness, sports, and other aspects of everyday life.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 154 - Sociology of Anti-Fat Bias (5)

Examines the ways in which U.S. society pathologizes and marginalizes fat bodies, the impact that structural and social exclusion have on fat people's lives and health, and possibilities for transforming discourses of anti-fatness in cultural conversations around body size.

Prerequisite: Enrollment is restricted to proposed and declared junior and senior majors and minors in sociology, Latin American and Latino studies/sociology combined, and global and community health.

SOCY 155 - Political Consciousness (5)

Explores the relationship between consciousness, ideology, and political behaviors from voting to rebellion. Special attention is given to the lived experience and the identity interests that complicate the nexus of class position and political ideology. An introductory sociology course is recommended as preparation.

SOCY 156 - U.S. Latinx Identities: Centers and Margins (5)

Explores historical and contemporary constructions of Latinx identities and experiences in U.S. Particular emphasis placed on transcultural social contexts, racial formations, and intersections with other identities including sexuality and gender. (Formerly U.S. Latina/o Identities: Centers and Margins).

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, global information and enterprise, Latin American studies, and Latin American studies/sociology combined.

SOCY 157 - Sexualities and Society (5)

Explores controversies in the sociology of sexuality. Focuses on tensions and disagreements that characterize debates over sex and society, and attempts to identify political and theoretical issues at stake in these debates.

Prerequisite: Enrollment is restricted to sophomore, junior and senior majors, proposed majors, and minors in sociology, feminist studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 158 - Politics of Sex Work and Erotic Labor (5)

Examines sex work in an historical and cultural context, considering how it has changed over time. Considers the relationship of pornography, exotic dance, and selling sex on the Internet to racialization, queer politics, globalization, and tourism. Employs theories and methods of cultural studies in rethinking historical debates on sex work.

Prerequisite: Prerequisite(s): SOCY 120 and SOCY 126. Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, feminist studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 159 - Pregnancy and Birth (5)

Examines the socio-cultural processes that shape the meanings, experiences, institutions, and outcomes of pregnancy and birth. Pregnancy and birth serve as a microcosm for understanding the interlocking forces of patriarchy, racial capitalism, and white supremacy, as well as

the gendered and sexualized meanings and practices that work to discipline individuals and naturalize those processes. As such, course examines institutional efforts to control the reproductive capacities of people with wombs, as well as resistance to those efforts.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or FMST 1 or CRES 10 or GCH 1 or by permission of the instructor. Enrollment is restricted to sophomores, juniors and seniors.

SOCY 160 - Solving Homelessness (5)

Explores the phenomenon of homelessness and potential solutions to this troubling and persistent feature of American society. Discussions center on social research, historical context, and community and political discourse as they relate to homelessness at both the local and global level with the goal of better understanding what the trends in these areas mean for service providers, government entities, advocates, and our unhoused community members. While the course readings often center on theories and data, a key component this course is field visits and expert presentations, which introduce students to key individuals and organizations doing work or making policy to address homelessness.

SOCY 161 - Postpartum (5)

Examines the social processes that shape the meanings, experiences, institutions, and outcomes of the postpartum period. The postpartum period serves as a microcosm for understanding the interlocking forces of patriarchy, racial capitalism, and white supremacy, as well as the gendered and sexualized meanings and practices that work to discipline individuals and naturalize those processes. Despite that, parents organize for collective solutions, break stigma, resist shame and silence, and demand better conditions for families.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or FMST 1 or CRES 10 or GCH 1, or by permission of the instructor. Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 162 - Sociology of Organizations (5)

Introduces students to a range of sociological approaches to the study of organizations. Covers the origins of organizations and informal organization. Also introduces a number of theoretical approaches to organizational studies. The course is relevant for organizational analyses applied in the public, private, and nonprofit sectors. In addition to reading foundational texts and theory, students also apply key concepts in the course to assignments with real-world applications.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15 or by permission of the instructor. Enrollment is restricted to sociology, Latin American and Latino studies/sociology, and digital justice studies (formerly GISES) studies majors.

SOCY 163 - Global Corporations and National States (5)

Examines the nature and development of the capitalist world system since 1945. Emphasis is on the power of multinational corporations as managers of the world system and the response of states: role of multilateral agencies such as the World Bank, International Monetary Fund, United Nations.

Prerequisite: Prerequisite(s): SOCY 15. Enrollment is restricted to sophomore, junior, and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 164 - Capitalism and Its Critics (5)

Through comparative analysis of texts by several social theorists, explores the rise and consequences of capitalism. How has capitalism affected how humans understand and act in the world? How do oppressions along the lines of race, gender, sexuality, and nations intersect with capitalism? Is resistance desirable and/or possible?

Prerequisite: Enrollment is restricted to junior and senior sociology, global information and enterprise, and combined Latin American and Latin Studies/sociology majors, proposed majors, and minors, or by instructor permission.

SOCY 164T - Marx and Marxist Theory (5)

Along with studying Marx's anatomy of capitalist society, this course also explores the work of Marxist theorists from the early 20th century through the contemporary moment.

Prerequisite: Prerequisite(s): SOCY 105A or consent of instructor.

SOCY 166 - Economics for Non-Economists (5)

Fosters economic literacy among students who are not economics majors but are interested in the political and social ramifications of economic change. Emphasizes economic institutions and policy and is taught by case-study method, which requires active student participation.

Prerequisite: Enrollment is restricted to juniors and seniors.

SOCY 167 - Development and Underdevelopment (5)

Examines contemporary debates about development in the Third World: alternative meanings of development, recent work on the impact of colonial rule, how some economies have industrialized, ideas about agrarian change, and recent research on paths out of poverty. Students work in pairs to examine a development in one country since World War II. SOCY 15 recommended.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior majors, proposed majors, and minors in sociology, anthropology, politics, global economics, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 168 - Social Justice (5)

Explores sociological approaches to the quest for--and the realization of--social justice. Examines a range of approaches to such ongoing challenges as racism, sexism, gendered discrimination, classism, poverty, violence, militarism, environmental devastation, ableism, and ageism using non-fiction literature and biographical anthologies.

SOCY 169 - Social Inequality (5)

A survey of theories and systems of social stratification focusing on such phenomena as race, class, power, and prestige.

Prerequisite: Enrollment is restricted to junior and senior sociology and Latin American studies/sociology combined majors.

SOCY 170 - Ethnicity and Race (5)

Examines the enduring and changing status of ethnic and racialized minority groups in the United States, such as Latina/os, African Americans, Asian Americans, indigenous peoples within the U.S., as intersecting, historically situated, and dynamically produced categories of social identity and organization. (Formerly Ethnic and Status Groups.)

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or CRES 10.

SOCY 170P - The Political Economy of Race (5)

Explores the enduring racial and economic legacies of slavery and colonialism in relation to contemporary social problems, with an emphasis on segregation, policing, the prison industrial complex, immigration, and borders.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15 or CRES 10, or by permission of the instructor.

SOCY 171 - Exploring Global Inequality (5)

Seminar focusing on readings of key texts and recent research papers on several dimensions of global inequality (material, health, gender, cultural, migration) to find innovative ways of understanding the connections among different dimensions of inequality and of visualizing inequality in digital media. Students prepare visual presentations on contemporary social inequalities suitable for an online (for example, http://ucatlas.ucsc.edu/) or print atlas.

Prerequisite: Enrollment is restricted to seniors.

SOCY 172 - Sociology of Social Movements (5)

Through readings on social movements that span the 20th century, course examines the causes of popular mobilizations, their potential for rapid social change, and the theories developed to understand and explain their role in modern social life.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 173 - Water (5)

Analyzes access to clean water, both in the American West and global South. Reviews water quality, pivotal role of water in settlement and society, history and contemporary inequalities, water supplies, international conflict over water, climate change, and human use of water.

Prerequisite: Enrollment is restricted to junior and senior sociology majors, and proposed majors, and minors in sociology, environmental studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 173X - Water and Sanitation Justice (5)

Explores the many manifestations of water and sanitation justice and injustice on interlocking scales (i.e. local, national, transnational) while illustrating analytical ideas connecting a range of social processes including claims for human rights, deprivation and exclusion, urbanization and infrastructure development, and privatization of land and water. Looks at various case studies in high-income and low-income countries and uses key technical and social concepts to examine rights, equity, and justice with respect to water and sanitation.

SOCY 174 - Tools for Human Rights Advocacy and Practice (5)

Presents professional practices in the international field of human rights leading to improvements in people's lives. Addresses recent political developments in the global application of human rights and exposes students to strategic tools—"levers of effectiveness"—used to promote the realization of human rights standards. Course also presents the work of key international and local non-governmental organizations in promoting the capacities of rights holder to claim and enjoy their rights and in persuading duty bearers to fulfill their human rights obligations.

Prerequisite: Prerequisites: SOCY 1 or SOCY 10 or SOCY 15 or LGST 10 or by permission of the instructor. Enrollment is restricted to proposed and declared sophomore, junior, and senior majors in sociology, legal studies, Latin American and Latino studies and sociology combined studies, and digital justice studies (formerly GISES) studies minors.

SOCY 175 - Technology and Labor (5)

This reading-intensive elective delves into the rapid acceleration of technology and its profound societal implications, especially the ways through which workplaces, homes, and the liminal spaces in between are imagined, constructed and reshuffled. It employs a historical, intersectional, infrastructural and global perspective to dismantle and reexamine conventional notions of technology and technological labor.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15. Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 176 - Women and Work (5)

Examines the history of women and work; women's current conditions of work and political, economic, and social factors affecting these conditions; means by which women may shape working conditions including contributing leadership, developing policies, building unity, and creating alliances.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, feminist

studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 176A - Work and Inequality (5)

Addresses how work is organized and shapes life changes. Covers: the history of paid work; the impact of technology; race/class/gender at work; professional and service work; work and family; collective responses to work; and challenges of work in a globalizing economy.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, community studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 177 - Urban Sociology (5)

Historical and contemporary examination of urban life including community, race, geography, urban and suburban cultures and lifestyles, stratification, housing, crime, economic and environmental issues, demographic changes, and global urbanization.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 177A - Latinos/as and the American Global City (5)

Examines roles of emerging Latino/a majorities in urban centers across the U.S. Explores the Latinization of U.S. cities and various factors affecting the life chances of Latinos/as including, but not limited to, immigration, segregation, social movements, and other forms of political participation.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, Latin American and latino studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 177E - Eco-Metropolis: Research Seminar in Urban and Environmental Studies (5)

Explores the intersection of cities and the environment through the emerging field of urban environmental studies. Focuses on varied and often contested efforts at urban sustainability in recent history. Draws on literatures in environmental history, environmental and urban sociology, geography, political ecology, and cultural studies.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, community studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 177G - Global Cities (5)

Explores how global cities have facilitated increasing integration of the diverse cultures and economies of the world. Using historical, sociological, and comparative methods, analyzes how these spaces both enable and constrain transnational flows of capital, labor, information, and culture.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, community studies, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 178 - Sociology of Social Problems (5)

Views problems in society not as given but as social constructs. Examines the ways in which conditions in society become identified and defined as problems and consequences that follow from such a process.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 178T - Special Topics in Sociology (5)

Taught on a rolling basis by faculty members with each offering varying by instructor. Topics are announced by the department.

Prerequisite: Prerequisite(s): SOCY 1 or SOCY 10 or SOCY 15. Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 178Z - Disability and Society (5)

An in-depth exploration of Disability Studies, an interdisciplinary field of research that seeks to question and critique dominant Western understandings of disability and to advance discussions around issues of intersectionality, equality, inclusionary politics of access, and social justice.

SOCY 179 - Nature, Poverty, and Progress: Dilemmas of Development and Environment (5)

Concerns about environmental change, including global warming, threats to the ozone layer, and industrial pollution, raise questions about Third World development. Simple views of the relation between society and nature, such as blaming population growth, industrialization, or poor people, seem to preclude higher living standards. Uses debates and case studies to explore more subtle and optimistic views of social-natural relations.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior majors, proposed majors, and minors in environmental studies, sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined majors. SOCY 15 recommended.

SOCY 180 - Social Movements of the 1960s (5)

Examines the roots, development, and political outcomes of black civil rights organizations during the Sixties. Explores social and structural forces, mobilization of black communities, strategies and tactics used, nature of the relationships between various civil rights organizations, unity and disunity among organizations, leadership gains, and impact on race relations in the U.S.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital

justice studies (formerly GISES), and Latin American studies/sociology combined majors.

SOCY 184 - Hunger and Famine (5)

Why do famines happen? Why are some hungry and some over-fed? Recent advances in the understanding of food crises and chronic undernutrition are the focus of this course.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, digital justice studies (formerly GISES), and Latin American studies/sociology combined.

SOCY 185 - Environmental Inequality (5)

Modern society not only assaults nature, it does so in ways that reproduce existing social inequalities. This course reviews three types of contemporary environmental inequality (environmental racism, displacement, and privilege), and the processes that produced them, with a focus on industrialization, urbanization, and the rise of capitalism in Europe and the United States.

Prerequisite: Enrollment is restricted to junior and senior majors, proposed majors, and minors in sociology, community studies, digital justice studies (formerly GISES), environmental studies, and Latin American studies/sociology combined.

SOCY 187 - Feminist Theory (5)

Examination of shifts in 20th- and 21st-century feminist theory and epistemology. Considers various deconstructive challenges to second wave feminism based on the politics of race, ethnicity, nation, sexuality, and class. Focus changes regularly.

Prerequisite: Prerequisite(s): SOCY 1 or FMST 1. Enrollment is restricted to sophomores, juniors, and seniors.

SOCY 188A - Social Change in the Global Economy (5)

Explores local dimensions of globalization, focusing on experiencing more global divisions of labor in both industrialized and developing countries. Themes include: economic integration and dislocation; new forms of governance; globalizing consumption and culture; gender; and popular resistance.

Prerequisite: Enrollment is restricted to sophomore, junior, and senior majors, proposed majors, and minors in sociology, digital justice studies and Latin American studies/sociology combined majors.

SOCY 193 - Field Study (5)

Provides for (department-sponsored) individual field study in the vicinity of the campus under the direct supervision of a faculty sponsor (as opposed to SOCY 198 where faculty supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Ordinarily call numbers for this course will not be issued after the first week of instruction. Students submit petition to sponsoring agency.

SOCY 193D - Summer Digital Justice Project Implementation (10)

Open to students in the Everett Program who have completed SOCY 107A and SOCY 107B and are in the process of completing their project requirement for the Digital Justice Studies minor/intensive concentration in sociology. This course provides hands-on experience, working in teams, to implement a digital justice project in collaboration with a community partner. Prerequisite(s): SOCY 107A and SOCY 107B. Enrollment is by permission of the instructor.

SOCY 193F - Field Study (2)

Provides for department-sponsored individual field study in the vicinity of campus under the direct supervision of a faculty sponsor. May not be counted toward major requirements. Students submit petition to sponsoring agency.

SOCY 193I - Sociology Global Internship (10)

This course, in collaboration with Global Learning, supports students in completing an internship abroad, while engaging in research and scholarly investigation around the context that the organization is working in. Students are supported with a faculty member to process skills, and engage in research that supports the work of the internship. Students must apply through the UCSC Global Internships program. Enrollment is restricted to junior and senior declared and proposed sociology and Latin American and Latino studies/sociology combined majors, and global information and social enterprise studies minors.

SOCY 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

SOCY 194F - Group Tutorial (2)

Small group study of a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

SOCY 195A - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. The senior thesis satisfies the comprehensive requirement. Course is for independent thesis research and writing. Courses may be taken consecutively or concurrently. Students submit petition to sponsoring agency.

SOCY 195B - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. The senior thesis satisfies the comprehensive requirement. Course is for independent thesis research and writing. Courses may be taken consecutively or concurrently. Students submit petition to sponsoring agency.

SOCY 195C - Senior Thesis (5)

Preparation of a senior thesis over one, two, or three quarters, beginning in any quarter. The senior thesis satisfies the comprehensive requirement. Course is for independent thesis research and writing. Courses may be taken consecutively or

concurrently. Completion of course 195C (completion of the thesis) satisfies the W general education requirement. Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements. Students submit petition to sponsoring agency.

SOCY 196G - Project Practicum: Digital Justice Studies (5)

Project practicum and evaluation are required for completion of major or minor in digital justice studies studies (DJS). Projects require approval in advance by the director of DJS. Completed projects must be uploaded electronically on the website or archive of the Everett Program. (Formerly Project Practicum: Global Information and Social Enterprise.)

Prerequisite: Prerequisite(s): SOCY 107B or SOCY 30C.

SOCY 196S - Senior Seminar (5)

Small seminars that focus on advanced topics in sociology. The pedagogical aims vary but these seminars often emphasize at least one of the following: close textual analysis, critical and analytical thinking, active learning, field research, advanced research methods, or advanced theory. Topics vary yearly; consult current course listings. Enrollment by application with selection based on appropriate background and by consent of instructor. Satisfies senior comprehensive requirement. Restricted to senior sociology majors.

SOCY 198 - Independent Field Study (5)

Provides for (department-sponsored) individual study program off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Ordinarily call numbers for this course will not be issued after the first week of instruction. Students submit petition to sponsoring agency.

SOCY 199 - Tutorial (5)

Advanced directed reading and research. Petitions may be obtained from the Sociology Department Office. Students submit petition to sponsoring agency.

SOCY 199F - Tutorial (2)

Advanced directed readingsand research. Petitions may be obtained from the Sociology Department Office. Students submit petition to sponsoring agency.

Graduate

SOCY 200A - Social Theory 1 (5)

The first in a three-quarter theory sequence that surveys major schools of modern social and political thought, including political economy, structuralism, post-structuralism, phenomenology, global Marxisms, post-colonial theory, critical race theory, and queer and feminist theory. Each quarter covers three thematic modules from the following: the history of sociology and the social sciences; the Enlightenment and the social turn; modernity and its others; political economy; culture and cultural politics; identity, subjectivity, consciousness; the social production of difference; the human and its others; space, place, and power.

Prerequisite: Enrollment is restricted to sociology graduate students or by permission of the instructor.

SOCY 200B - Social Theory 2 (5)

The second in the three-quarter theory sequence that surveys major schools of modern social and political thought, including political economy, structuralism, post-structuralism, phenomenology, global Marxisms, post-colonial theory, critical race theory, and queer and feminist theory. Each quarter covers three thematic modules from the following: the history of sociology and the social sciences; the Enlightenment and the social turn; modernity and its others; political economy; culture and cultural politics; identity, subjectivity, consciousness; the social production of difference; the human and its others; space, place, and power.

Prerequisite: Prerequisite(s): SOCY 200A. Enrollment is restricted to sociology graduate students or by permission of the instructor.

SOCY 200C - Social Theory 3 (5)

The third in Sociology’s three-quarter theory sequence that surveys major schools of modern social and political thought, including political economy, structuralism, post-structuralism, phenomenology, global Marxisms, post-colonial theory, critical race theory, and queer and feminist theory. Each quarter covers three thematic modules from the following: the history of sociology and the social sciences; the Enlightenment and the social turn; modernity and its others; political economy; culture and cultural politics; identity, subjectivity, consciousness; the social production of difference; the human and its others; space, place, and power.

Prerequisite: Prerequisites: SOCY 200A and 200B. Enrollment is restricted to sociology graduate students or by permission of the instructor.

SOCY 203 - Sociological Methods (5)

Approaches methods as a series of conscious and strategic choices for doing various kinds of research. Introduces students to the epistemological questions of method in social sciences; to key issues in technique, particularly control, reliability, and validity; and to good examples of social research.

Prerequisite: Enrollment is restricted to sociology graduate students and by permission number.

SOCY 204 - Methods of Quantitative Analysis (5)

Students are provided with intuitive explanation of fundamental concepts in statistics and learn how to use statistics to answer sociological questions. Experience and guidance in using computers to efficiently analyze data are provided.

Prerequisite: Enrollment is restricted to sociology graduate students and by permission number.

SOCY 205 - Field Research Methods (5)

Gives students first-hand experience doing fieldwork with an emphasis on participant observation and some interviewing. Students submit weekly field notes and a final project analysis. At seminar meetings, field experiences and relevant literature are examined.

Prerequisite: Enrollment is restricted to sociology graduate students and by permission number.

SOCY 206 - Comparative Historical Methods (5)

Overview of research strategies and methods used in historical and social sciences. Students read works exemplifying a variety of analytical approaches. Written assignments cultivate critical skills, weighing of tradeoffs inherent in all methodological choices, and elaboration of hypothetical research designs.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 208 - Writing Practicum (5)

Writing intensive course designed to facilitate the completion of the master's thesis, orals field statement, or the dissertation in sociology. The seminar is convened by a faculty member in conjunction with students and their adviser or appropriate committee chair. Students are expected to produce and present drafts of work completed in the seminar.

Prerequisite: Enrollment is restricted to sociology graduate students and by permission number.

SOCY 209 - The Analysis of Cultural Forms (5)

Examines material and symbolic forms such as media products, cultural artifacts, language, nonverbal communication and social practices using discourse, textual, content, interpretive, and conversation analyses as well as ethnography and different channels of communication. Theoretically, relies on cultural studies, communication studies, cultural sociology, film studies, and ethnomethodology.

Prerequisite: Enrollment is restricted to sociology graduate students.

SOCY 220 - Global Transformation: Macrosociological Perspectives (5)

Classical concepts and contemporary approaches in macrosociology, the study of large-scale, long term social change. Readings drawn primarily from the Marxian and Weberian traditions (new institutionalism, varieties of neo-Marxism, environmental history, state centrism) as they focus on agrarian and industrial structures and commodity chains; household, village, and neighborhood organization; social movements and revolutions; culture, ideology, and consciousness; policy analysis; comparative urban, national, and civilizational development.

Prerequisite: Enrollment is restricted to sociology graduate students.

SOCY 222 - Political Sociology (5)

A survey of major works and themes in the relationship of politics and society, with primary emphasis on the compatibilities and contradictions of pluralist, elite, and class perspectives on the state.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 223 - Sociology of the Environment (5)

Advanced treatment of the dominant ideas of nature and the environment in the West and their relationship to the development of Western capitalism. Leading Western theories of environmental crisis and their relation with ideologies of environmentalism and environmental movements.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 224 - Globalization: Theories and Social Movements (5)

Examines the structures, processes, and movements associated with globalization processes. Reviews political economy theories, cultural theories systems, state industrial policies, and popular responses to globalization. Also assesses contribution of resistance movements informed by class, ethno-nationalism, religion, or gender.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 225 - Political Economy for Sociologists (5)

Examines rudiments of historical materialism in light of advances in cultural and ecological Marxism. Basic categories of Marxist political economy. Thematic focus on the first and second contradictions of capitalism in world economy today.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 227 - Learning from Environmental Historians (5)

Looks at several major themes in the sociology of the environment and asks how the works of environmental history address those themes. Includes reflections on how history as a method interrogates social questions. Possible themes include: sustainability; social justice; universalism vs. particularity; city and country; and social movements.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 229 - Work and Labor Markets in the New Economy (5)

Focuses on the interaction of work restructuring and existing race/class/gender inequalities. Themes include: the labor process and theories of consent; labor market segmentation; job and occupational segregation; information technologies, flexible work, and post-industrialism; flexible employment relations; and low-wage service and labor markets.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 230 - Theory and Method in the Sociology of Marx (5)

Examines theoretical and methodological implications of Marxist theory for empirical social research. Analyzes how historians and social scientists apply Marxist method in explaining society, social change, globalization, culture, and

late capitalism. Goal is to assist students to employ Marxist theory and method creatively in their research projects.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 240 - Inequality and Identity (5)

Explores recent theoretical and empirical studies of race, class, gender, and sexuality with an emphasis on the production of identities and their relationship to processes and structures of power in a postcolonial context.

Prerequisite: Enrollment is restricted to sociology graduate students.

SOCY 241 - Cross-National and Cross-Cultural Research (5)

Seminar examining theoretical and methodological issues in doing cross-national and cross-cultural research. In addition to a consideration of different research paradigms and approaches, representative works from each comparative tradition are examined.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 242 - Feminist Research Seminar (5)

Provides scholarly support to students doing feminist research. Examines issues concerning conceptualization of feminism and feminist research. Explores relation of feminist research to intersections of gender, class, and race; to the self; to power; and to transformative social praxis. Students present and are given assistance with their work, as well as listen to, read, and assist with the work of others.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 244 - Race and Ethnicity (5)

A critical survey of the theoretical issues of persistence and change, public policy, and recent empirical studies in the field of race and ethnic relations. Readings introduce comparative race relations and a historical background of major theoretical paradigms in the field which purport to explain race and ethnic relations in general and race relations in America specifically.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 245 - Feminist Theory (5)

Examination of shifts in 20th- and 21st-century feminist theory and epistemology. Explores the decentering of universalist feminist theories and asks what constitutes feminist theory after gender has been decentered. Considers various deconstructive challenges to second-wave feminist theory based on the politics of race, ethnicity, nation, sexuality, and class. Focus changes regularly.

Prerequisite: Enrollment is restricted to sociology graduate students.

SOCY 246 - Class, Culture, and Movement (5)

Analyzes impact of ethnicity, gender, and religion on the class situation of laboring people in a globalized economy by intensive reading and critique of classic studies, explaining how social movements reflect combinations of social relations and cultural practices.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 247 - Race and Class (5)

Introduces the student to the recent literature on race and class. Covers several different theoretical perspectives including internal colonialism, labor market segmentation theories, racial formation, and neo-gramscian cultural analyses. In addition to study of theory, also compares theoretical perspectives to the historical experience of minority groups, in particular, blacks, Hispanics, and Asians.

Prerequisite: Enrollment is restricted to sociology graduate students.

SOCY 249 - Feminisms and Cultural Politics (5)

Focuses on the role feminist discourses play in contemporary cultural politics with the main focus on the politics of sex, sexuality, and sex work. Begins with considerations of (mis)representations of feminisms in popular cultures; considers the relationship between academic and popular feminisms; and interrogates the meaning of terms *post-feminism* and *third-wave feminism*.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 250 - Course Design and Grant-Writing Seminar (5)

A professional training seminar devoted to the philosophical, conceptual, and practical issues of course design, pedagogy, and grant writing. Topics covered: institutional contexts; curriculum (including syllabi, course content, assignments, evaluation); pedagogy; teaching as work/labor process; grant writing; budgets.

Prerequisite: Enrollment is restricted to sociology graduate students.

SOCY 252 - Symbolic Interactionism and Sociology of Emotions (5)

Examines classic and contemporary theories and concepts that play a major role in sociological studies of identity, symbolic and social interaction, and the sociology of emotions. Examines how cultural forms, rules, and rituals define, structure, and mediate emotions and how identities are situated within social institutions.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 253 - Race, Crime, and Justice (5)

Covers empirical research on "race, crime, and justice" from multiple methodological and theoretical traditions in social science research. The course draws on historical examples of slavery, state violence, and crimes against humanity across the globe. Also covers research on the entanglement of race and crime in the United States, both historically and today.

Prerequisite: Enrollment is restricted graduate students.

SOCY 255 - Engaging Cultural Studies (5)

Examines feminist and ethnic studies production, appropriation, and transformation of cultural studies theories and methodologies. Considers the utility of various theoretical apparatuses and methodological strategies employed in the interdisciplinary site that combines feminist, ethnic, and cultural studies.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 256 - Urban Sociology (5)

Introduction to core writings and key theoretical pardigms in urban sociology. Examines the history and contemporary conditions of cities in the U.S. and the urban experience. Urbanization, suburbanization, community, social inequality, urban politics, relationship between the built environment and human behavior.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 257 - Colonialism, International Law, and Global Justice (5)

Examines colonialism, war crimes, crimes against humanity, and legal remedies, and the role of the International Criminal Court (ICC); traces the history of colonial expansionism, starting from the Roman Empire to the present American imperial dominance in global politics.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 258 - Global Lay Justice Systems and Direct Democracy (5)

Introduces historical analysis of lay justice participation. Examines global exploration of the use of lay judge institutions in citizen's movements and the assumption that juries are a derivative institution of democratic ideals. Focuses on corporate media creation of anti-jury sentiment.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 259 - Space and the Politics of Difference (5)

Brings together the fields of sociology and geography to explore the complex and multiple ways of thinking together space and social difference. Course texts examine the co-constitution of space with bodies, subjectivities, and social formations.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 260 - Culture, Knowledge, Power (5)

An introduction to theoretical approaches and exemplary studies of culture, knowledge, and power which critically interrogate the relationship between cultural formations and the production, circulation, and meaning of knowledges, materials, artifacts, and symbolic forms. Explores the concrete ways that power is organized and operates through different forms and sites, how it interpolates with other forms of power, and examines knowledges and culture as specific forms of power and sites of political struggle.

Prerequisite: Enrollment is restricted to sociology graduate students.

SOCY 261 - Sociology of Knowledge (5)

Explores three main issues: the social determination of knowledge, including natural science; the character of intellectual labor and intellectuals as a social group; the role of organized knowledge and knowledge industries in contemporary social change. Texts examined include class-based theories (Lukacs, Mannheim, Gramsci), feminist standpoint analysis (Smith, Harding, etc.), and theories of postmodern culture (Lyotard, Harvey, etc.).

Prerequisite: Enrollment is restricted to graduate students.

SOCY 262 - Cultural Practice and Everyday Life (5)

Examines contemporary debates about the role of mass produced expressive symbols in modern industrial societies, and the circumstances of cultural production for its impact on the creation, organization, and use of cultural artifacts. Concern with the use and experience of popular symbols for the ways that their use involves the creation of meanings and the role of such meanings in the social organization of society.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 263 - Cultural Politics of Difference (5)

Considers the cultural turn and the turn to difference in understanding relations of power and struggles over representation in studies of race, media, and culture. Examines national identity, difference, subjectivity, and authenticity, especially as they bear on quests to create new identifications, alignments, and efforts to protect existing identities.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 264 - Science, Technology, and Medicine (5)

Explores social and cultural perspectives on science, technology, and medicine. Analyzes theoretical approaches that open up black boxes of scientific and biomedical knowledge, including the politics of bodies, objects, and health/illness. Links are made to medical sociology.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 268A - Science and Justice: Experiments in Collaboration (5)

Considers the practical and epistemological necessity of collaborative research in the development of new sciences and technologies that are attentive to questions of ethics and justice. Enrollment is by permission of instructor. Enrollment is restricted to graduate students.

SOCY 268B - Science and Justice Research Seminar (5)

Provides in-depth instruction in conducting collaborative interdisciplinary research. Students produce a final research project that explores how this training might generate research that is more responsive to the links between questions of knowledge and questions of justice. Prerequisite(s): SOCY

268A, BME 268A, FMST 268A, or ANTH 267A. Enrollment is restricted to graduate students and by permission of the instructor.

SOCY 282 - Social Policy Research (5)

Policy research. Covers a variety of theoretical perspectives found in policy studies. Surveys various methodological approaches used in policy research. Theories and methods linked to research agendas on the various phases of the policy life cycle. Students are required to design a research proposal.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 290 - Advanced Topics in Sociological Analysis (5)

The topics to be analyzed each year vary with the instructor but focus upon a specific research area. Enrollment restricted to graduate students by consent of the instructor.

SOCY 290W - Sociological Analysis Working Group (2)

This two-credit course, repeatable for credit, brings together faculty and graduate students interested and actively engaged in a particular research area, and does so in a variety of ways. May include: close readings and discussion, invited speakers, sharing of student and faculty work, and field trips. Working group framework enhances one-on-one mentoring experiences by creating a scholarly community and support structure on campus for scholars in this area, and by introducing students to a range of faculty on our campus and beyond. Also fosters peer-to-peer learning and collegiality among graduate students researching similar topics. Enrollment is by permission of the instructor. Enrollment is restricted to graduate students.

SOCY 293 - Going on the Job Market (5)

A seminar devoted to the practical problems of securing a job as a professional sociologist. Topics covered: researching colleges, universities, and public and private organizations that employ sociologists; designing a curriculum vitae; writing an application letter; preparing a job talk; handling questions during the interview process; the etiquette of visiting (and its aftermath); finding out about them; and the terms of employment: what is negotiable and what is not.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 294 - Writing for Social Scientists (5)

Seminar on the genres of social science writing, and the problems of starting and finishing a publishable thesis, book, or article. For advanced graduate students working on the composition of their dissertations and journal articles.

Prerequisite: Enrollment is restricted to graduate students.

SOCY 295 - The Pedagogy of Sociology (2)

Graduate students develop, enhance, or deepen their pedagogical knowledge and skills in the field of sociology and other social sciences.

Prerequisite: Enrollment is restricted to sociology graduate students at all stages of their graduate careers.

SOCY 297 - Independent Study (5)

Students submit petition to sponsoring agency.

SOCY 299 - Thesis Research (5)

Students submit petition to sponsoring agency.

SPAN - SPANISH

Lower-Division

SPAN 1 - First-Year Spanish (5)

The first-year program is aimed at developing proficiency in Spanish. Listening, speaking, reading, and writing are addressed through classroom practice and supplemented by language laboratory work. Classes are taught entirely in Spanish and are held three days a week.

Prerequisite: Prerequisite(s): Placement into Spanish 1 via the online Spanish Placement Examination.

SPAN 2 - First-Year Spanish (5)

The first-year program is aimed at developing proficiency in Spanish. Listening, speaking, reading, and writing are addressed through classroom practice and supplemented by language laboratory work. Classes are taught entirely in Spanish and are held three days a week.

Prerequisite: Prerequisite(s): SPAN 1 or placement into Spanish 2 via the online Spanish Placement Examination.

SPAN 3 - First-Year Spanish (5)

The first-year program is aimed at developing proficiency in Spanish. Listening, speaking, reading, and writing are addressed through classroom practice and supplemented by language laboratory work. Classes are taught entirely in Spanish and are held three days a week.

Prerequisite: Prerequisite(s): SPAN 2 or placement into SPAN 3 via the online Spanish Placement Examination.

SPAN 4 - Second-Year Spanish (5)

Includes comprehensive grammar review, composition, readings, and discussion. Reading and audiovisual material deal with various sociopolitical and cultural issues in the Spanish-speaking world. Classes are conducted in Spanish.

Prerequisite: Prerequisite(s): SPAN 1B or SPAN 3 or placement into SPAN 4 via the online Spanish Placement Examination.

SPAN 5 - Second-Year Spanish (5)

Includes comprehensive grammar review, composition, readings, and discussion. Reading and audiovisual material deal with various socio-political and cultural issues in the Spanish-speaking world. Classes are conducted in Spanish.

Prerequisite: Prerequisite(s): SPAN 4 or placement into SPAN 5 via the online Spanish Placement Examination.

SPAN 5M - Medical Spanish (5)

Students learn medical vocabulary, useful expressions, suitable grammatical structures, and cultural background to be able to interact with Spanish-speaking patients and doctors. Medical Spanish fulfills language requirement for Human Biology majors and Global Community Health B.A. and B.S. majors.

Prerequisite: Prerequisite(s): SPAN 4; or SPHS 4, or SPHS 5, or SPHS 6; or placement into SPAN 5 or SPHS 4 via the online Spanish Placement Examination. Enrollment is restricted to human biology majors.

SPAN 6 - Second-Year Spanish (5)

Increases oral and written proficiency using authentic reading materials which focus on such topics as social class, ethnicity, education, religion, economic, and political developments in the Spanish-speaking world.

Prerequisite: Prerequisite(s): SPAN 5 or SPAN 5M or placement into SPAN 6 via the online Spanish Placement Examination.

SPAN 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

SPAN 99 - Tutorial (5)

Students submit petition to sponsoring agency.

SPAN 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

SPAN 114 - Advanced Conversation and Composition (5)

Advanced conversation and composition based on extensive readings in the humanities and social sciences. Students interested in this course who have not taken the prerequisite should meet with the instructor prior to the first class meeting.

Prerequisite: Prerequisite(s): satisfaction of Entry Level Writing and Composition requirements; SPAN 6, or SPHS 6, or by instructor consent.

SPAN 130 - Spanish for the Legal Profession (5)

Introduction to legal language in Spanish by surveying a range of topics in civil law, criminal law, and immigration law. While acquiring the necessary vocabulary to talk about these topics, students gain awareness of the functioning of the U.S. legal system as well as the ways in which language intersects with the law. Comparisons with Latin America and Spain are made when relevant. Class discussions provide opportunities for debate, analysis, and critical reflection.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or by permission of the instructor. Crosslisted as: Prerequisite(s): SPAN 6 or SPHS 6. Enrollment is restricted to declared major in legal studies or by permission of the instructor.

SPAN 140 - Sounds of Spanish (5)

Examines the sound system of Spanish, compares the English and Spanish systems of pronunciation, and teaches the phonetic/phonological variation across dialects of Spanish.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6; and LING 50.

SPAN 141 - Advanced Spanish Grammar (5)

This practical course builds upon students' existing knowledge of Spanish grammar. Introducing linguistic framework, some analysis tools, and intensive practice, it aims at fostering students' reflection about Spanish grammar, consolidating their knowledge of the system of rules underlying it, and improving their grammatical accuracy.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or equivalent proficiency.

SPAN 142 - El mundo de las palabras. Spanish Morphology and Lexicon (5)

Deals with topics related to processes of word formation in Spanish, extending to some issues related to the syntax and morphology of set phrases as well as topics related to lexicon. One of the goals is to widen students' knowledge of Spanish vocabulary.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or equivalent proficiency. Enrollment is restricted to Spanish studies majors and minors.

SPAN 150 - Topics in Hispanic Linguistics: Introduction to Hispanic Linguistics (5)

Taught in Spanish. Students learn the major properties of the Spanish language from a linguistics perspective. Topics covered include: phonetics/phonology, morphology, and syntax.

Prerequisite: Prerequisite(s): LING 50; and SPAN 6 or SPHS 6 or equivalent Spanish proficiency.

SPAN 151 - Topics in Hispanic Linguistics: Varieties of Spanish (5)

Taught in Spanish. Explores the linguistic variety of the Spanish language in the Iberian Peninsula, the former Spanish colonies, and the Americas from a descriptive, synchronic perspective. Issues of languages in contact, variation in speech communities, and bilingualism are also introduced.

Prerequisite: Prerequisite(s): SPAN 150. Enrollment is restricted to senior Spanish studies majors.

SPAN 152 - Topics in Hispanic Linguistics: Spanish in the U.S. (5)

Taught in Spanish. Serves as a linguistic introduction to the varieties of Spanish that are currently spoken in the United

States. Some central topics include: code-switching, language maintenance, and language contact phenomena.

Prerequisite: Prerequisite(s): SPAN 150. Enrollment is restricted to senior Spanish studies majors.

SPAN 153 - Spanish Language Teaching (5)

Taught in Spanish. Examines the Spanish language as it is acquired and used by non-native speakers. Provides an overview of language-teaching methodologies and in-depth treatment of areas of Spanish grammar/lexicon that are generally problematic for English-speaking learners. (Formerly Topics in Hispanic Linguistics: Spanish as a Second Language.)

Prerequisite: Prerequisite(s): SPAN 150. Enrollment is restricted to senior Spanish studies majors.

SPAN 154 - Topics in Hispanic Linguistics: Spanish Pragmatics (5)

Explores how Spanish is used in context by speakers to achieve particular meanings and to realize various speech acts (e.g., requests, apologies, etc.) in socially appropriate ways. Pragmatic variation across the Spanish-speaking world is examined in depth.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6; and SPAN 150. Enrollment is restricted to juniors and seniors majoring in Spanish studies, language studies or linguistics.

SPAN 155 - Topics in Hispanic Linguistics: Language Contact in the Spanish Speaking World (5)

Explores language contact in the Spanish-speaking world from a linguistic and a sociocultural perspective. Analyzes contact-induced change in Spanish and in the languages with which Spanish is in contact. Students also discuss social identity, linguistic attitudes and ideologies, and language maintenance and revitalization. Prerequisite(s): Spanish 150.

Prerequisite: Prerequisite(s): Spanish 150.

SPAN 156A - The Language of Latin America Cinema (5)

Explores Latin American culture through its cinematic art. Students are exposed to and participate in discussion, analysis, and commentary on important social, historical, and political issues presented in the films. Provides a greater understanding of Latin America, and works toward advanced communicative proficiency and comprehension of linguistic variations in countries such as Cuba, Argentina, México, Bolivia, Chile, and others.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or placement into SPAN 156A via the online Spanish Placement Examination.

SPAN 156E - Spanish Culture (5)

A broad survey of Spanish cultural topics, including history, politics, religions, art forms, music, and films. It is based on extensive conversations, discussion, and composition. Particular emphasis is placed on key changes that have occurred during the 20th century in Spain. Classes conducted through commentary on texts read (or viewed), oral presentations, and debate. Recommended for students preparing to go to Spain with EAP.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or placement into SPAN 156E via the online Spanish Placement Examination.

SPAN 156F - El Humor en Espanol (5)

Topic-oriented language course on sociopolitical and historical issues as seen through humor in different genres and media. Topics include Mafalda and Condorito (comic strips), Rius (collage of comic strips, photographs and original documents), Continflas and Almodovar (cinema), El Teatro Campesino (theater), Ana L., Vega (literature), Les Luthiers (song and music). Course deals with written and oral discourse pertaining to the following Spanish language varieties: Rio de la Plata, Mexican, Caribbean, U.S., and Peninsular. Intensive writing and speaking in Spanish.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or placement into SPAN 156F via the online Spanish Placement Examination.

SPAN 156J - Contemporary Central America (5)

Introduces Central American cultures, including an overview of historical, political, and socioeconomic development, and cultural products, such as literature, film, and visual arts. Emphasis placed on the forces that shaped contemporary Central America, cultural and ethnic diversity, identity, revolutionary processes, diaspora, and building democracy in post-civil conflict societies. Draws attention to the linguistic features of Central American variations of Spanish. The class is conducted in Spanish with high expectations to enhance oral and written proficiency through writing assignments, research tasks, group presentations, analysis, discussion, and debate.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or placement into Spanish 156J via the online Spanish Placement Examination.

SPAN 156K - Spanish Discourse Analysis (5)

Focuses on the main linguistic approaches that have discourse (i.e. pieces of talk larger than a sentence) as their main object of study. Reviews the theoretical foundations of each approach and the main tools used, with special attention to those studies developed about Spanish in all its varieties.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6, and LING 50.

SPAN 156L - Society and Sustainability in Latin America (5)

Explores environmental issues in Latin America and their impact on contemporary society. Topics relate to indigenous communities, the management of natural resources, and include a Reacting to the Past role-playing game, "Negotiating a Rainforest's Ransom: Ecuador 2007-2013."

Prerequisite: Prerequisite(s): Span 6 or SPHS 6 or equivalent Spanish proficiency.

SPAN 156M - Mexico and the Southwest (5)

An interdisciplinary survey of the cultural history of the Mexican people in both Mexico and the U.S. Southwest. Topics include literature, art, folklore, oral tradition, music, politics, as well as everyday cultural manifestations. Conducted in Spanish. May be counted toward fulfillment of upper-division major requirements for Latin American and Latino studies and language studies.

Prerequisite: Prerequisite(s): SPAN 6 or SPHS 6 or equivalent Spanish proficiency.

SPAN 157 - Spanish Sociolinguistics (5)

Explores how Spanish structural patterns can vary depending on social group, social situation, and place. Applies linguistic terminology and uses research tools to describe variability of structure (phonology, grammar, and pragmatics) among Spanish dialects.

Prerequisite: Prerequisite(s): SPAN 150. Enrollment restricted to Spanish studies majors.

SPAN 158 - Spanish in the U.S.-Mexico Borderlands (5)

Provides an introduction to Spanish in the borderlands through linguistic, sociocultural, historical and critical lenses. Explores issues of language maintenance and loss, hybridity and conflict, linguistic variation and identity, as well as hegemony and resistance within the context of the borderlands.

Prerequisite: Prerequisite(s): SPAN 6.

SPAN 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

SPAN 199 - Tutorial (5)

Students submit petition to sponsoring agency.

SPAN 199F - Tutorial (2)

Students submit petition to sponsoring agency.

SPHS - SPANISH FOR HERITAGE SPEAKERS

Lower-Division

SPHS 4 - Spanish for Heritage Speakers (5)

Deals with orthography, lexicon development, morphology, syntax, and other linguistic topics as applied to the development of all language skills (listening, reading, speaking, and writing). Emphasizes reading and writing about well-known and pivotal authentic texts of varying genres and formats from the Spanish-speaking world. Emphasis is on the United States, Mexico, and Spain. Students need to use the self-placement questionnaire posted on the Languages and Applied Linguistics web page. The Spanish Placement Exam can be taken but it is not required.

SPHS 5 - Spanish for Heritage Speakers (5)

Deals with orthography, lexicon development, morphology, syntax, and other linguistic topics as applied to the development of all language skills (listening, reading, speaking, and writing). Emphasizes reading and writing about well-known and pivotal authentic texts of varying genres and formats from the Spanish-speaking world. Emphasis is on Central America and the Caribbean.

Prerequisite: Prerequisite(s): SPHS 4 or by consent of program coordinator.

SPHS 6 - Spanish for Heritage Speakers (5)

Deals with orthography, lexicon development, morphology, syntax, and other linguistic topics as applied to the development of all language skills (listening, reading, speaking, and writing). Emphasizes reading and writing about well-known and pivotal authentic texts of varying genres and formats from the Spanish-speaking world. Emphasis is on South America.

Prerequisite: Prerequisite(s): SPHS 5.

SPHS 94 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor. Students submit petition to sponsoring agency.

SPHS 99 - Tutorial (5)

Students submit petition to sponsoring agency.

SPHS 99F - Tutorial (2)

Students submit petition to sponsoring agency.

Upper-Division

SPHS 115 - El ensayo lectura, análisis y redacción (5)

Centers on three areas: essay reading, essay analysis and interpretation, and essay writing. Student read representative essays by Latin American writers, analyze their discourse structure, and apply the lessons learned to their own writing.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; SPAN 6 or SPHS 6. Enrollment restricted to sophomore, junior, and senior Spanish studies majors.

SPHS 194 - Group Tutorial (5)

Provides a means for a small group of students to study a particular topic in consultation with a faculty sponsor.

SPHS 199 - Tutorial (5)

Students submit petition to sponsoring agency.

SPHS 199F - Tutorial (2)

Students submit petition to sponsoring agency.

STAT - STATISTICS

To view planned offerings for the current academic year, please visit this page.

Lower-Division

STAT 5 - Statistics (5)

Introduction to statistical methods/reasoning, including descriptive methods, data-gathering (experimental design and sample surveys), probability, interval estimation, significance tests, one- and two-sample problems, categorical data analysis, correlation and regression. Emphasis on applications to the natural and social sciences. Students cannot receive credit for this course if they have already received credit for STAT 7 or STAT 17.

Prerequisite: Students cannot enroll in STAT 5 after receiving a C or better in STAT 7 or STAT 17.

STAT 7 - Statistical Methods for the Biological, Environmental, and Health Sciences (5)

Case-study-based introduction to statistical methods as practiced in the biological, environmental, and health sciences. Descriptive methods, experimental design, probability, interval estimation, hypothesis testing, one- and two-sample problems, power and sample size calculations, simple correlation and simple linear regression, one-way analysis of variance, categorical data analysis.

Prerequisite: Prerequisite(s): Mathematics placement (MP) score of 300 or higher or AM 3 or AM 11A or AM 15A or MATH 3 or MATH 11A or MATH 16A or MATH 19A or MATH 20A. Concurrent enrollment in STAT 7L is required.

STAT 7L - Statistical Methods for the Biological, Environmental, and Health Sciences Laboratory (2)

Computer-based laboratory course in which students gain hands-on experience in analysis of data sets arising from statistical problem-solving in the biological, environmental, and health sciences. Descriptive methods, interval estimation, hypothesis testing, one-and two-sample problems, correlation and regression, one-way analysis of variance, categorical data analysis. (Formerly AMS 7L.)

Prerequisite: Prerequisite(s): score of 300 or higher on the mathematics placement examination (MPE), AM 3 or AM 11A or AM 15A or MATH 3 or MATH 11A or MATH 16A or MATH 19A or MATH 20A. Concurrent enrollment in STAT 7 is required.

STAT 17 - Statistical Methods for Business and Economics (5)

Introduction to statistical methods as practiced in business and economics. Topics include descriptive methods, probability, random variables, expected values, sampling, estimation, confidence intervals, hypothesis testing, one- and two-sample problems, power and sample size calculations, correlation, and simple linear regression.

Prerequisite: Prerequisite(s): Mathematics placement (MP) score of 300 or higher or completion of AM 3 or AM 11A or ECON 11A or MATH 3 or MATH 11A or MATH 16A or MATH 19A or MATH 20A. Concurrent enrollment in STAT 17L is required.

STAT 17L - Statistical Methods for Business and Economics Laboratory (2)

Overview and basic training in statistical programs used in the economics major. Introduces students to basic data analysis workflow. A workflow of data analysis is a process for managing all aspects of data analysis. Planning, documenting, and organizing work; cleaning the data; creating, renaming, and verifying variables; creating summary statistics; and archiving what has been done are all integral parts of students' data analysis. This is an online asynchronous lab, with synchronous office hours/question and answer sessions.

Prerequisite: Prerequisites: Mathematics placement (MP) score of 300 or higher, or completion of AM 3 or AM 11A or ECON 11A or MATH 3 or MATH 11A or MATH 16A or MATH 19A or MATH 20A. Concurrent enrollment in STAT 17 is required. Declared and proposed majors in one of the economics programs who are transferring in a course equivalent to STAT 17, should contact the Economics Department to petition for an exception to the concurrent enrollment requirement.

STAT 80A - Gambling and Gaming (5)

Games of chance and strategy motivated early developments in probability, statistics, and decision theory. Course uses popular games to introduce students to these concepts, which underpin recent scientific developments in economics, genetics, ecology, and physics. (Formerly AMS 80A.)

STAT 80B - Data Visualization (5)

Introduces the use of complex-data graphical representations to extract information from data. Topics include: summary statistics, boxplots, histograms, dotplots, scatterplots, bubble plots, and map-creation, as well as visualization of trees and hierarchies, networks and graphs, and text. (Formerly AMS 80B.)

Upper-Division

STAT 108 - Linear Regression (5)

Covers simple linear regression, multiple regression, and analysis of variance models. Students learn to use the software package R to perform the analysis, and to construct a clear technical report on their analysis, readable by either scientists or nontechnical audiences. (Formerly AMS 156.)

Prerequisite: Prerequisite(s): STAT 132 and satisfaction of the Entry Level Writing and Composition requirements.

STAT 131 - Introduction to Probability Theory (5)

Introduction to probability theory and its applications. Combinatorial analysis, axioms of probability and independence, random variables (discrete and continuous), joint probability distributions, properties of expectation, Central Limit Theorem, Law of Large Numbers, Markov chains. Students cannot receive credit for this course and STAT 203 and CMPE 107. (Formerly AMS 131.)

Prerequisite: Prerequisite(s): AM 11B or ECON 11B or MATH 11B or MATH 19B or MATH 20B.

STAT 132 - Classical and Bayesian Inference (5)

Introduction to statistical inference at a calculus-based level: maximum likelihood estimation, sufficient statistics, distributions of estimators, confidence intervals, hypothesis testing, and Bayesian inference. (Formerly AMS 132.)

Prerequisite: Prerequisite(s): STAT 131 or CSE 107.

STAT 198 - Independent Study or Research (5)

Students submit petition to sponsoring agency.

STAT 198F - Independent Study or Research (2)

Students submit petition to sponsoring agency.

Graduate

STAT 200 - Research and Teaching in Statistics (3)

Focuses on basic teaching techniques for teaching assistants, including responsibilities and rights, leading discussion or lab sessions, presentation techniques, maintaining class records, and grading. Examines research and professional training, including use of library, technical writing, giving seminar and conference talks, and ethical issues in science and engineering.

Prerequisite: Enrollment is restricted to graduate students.

STAT 202 - Linear Models in SAS (5)

Case study-based course teaches statistical linear modeling using the SAS software package. Teaches generalized linear models; linear regression; analysis of variance/covariance; analysis of data with random effects and repeated measures. (Formerly AMS 202.)

Prerequisite: Prerequisite(s): STAT 108 or STAT 208, or permission of instructor. Enrollment is restricted to graduate students.

STAT 203 - Introduction to Probability Theory (5)

Introduces probability theory and its applications. Requires a multivariate calculus background, but has no measure theoretic content. Topics include: combinatorial analysis; axioms of probability; random variables (discrete and continuous); joint probability distributions; expectation and higher moments; central limit theorem; law of large numbers; and Markov chains. Students cannot receive credit for this course and STAT 131 or CMPE 107. (Formerly AMS 203.)

Prerequisite: Enrollment is restricted to graduate students, or by permission of the instructor.

STAT 204 - Introduction to Statistical Data Analysis (5)

Presents tools for exploratory data analysis (EDA) and statistical modeling in R. Topics include numerical and graphical tools for EDA, linear and logistic regression, ANOVA, PCA, and tools for acquiring and storing large data. No R knowledge is required. Enrollment is restricted to graduate students and by permission of instructor. (Formerly AMS 204.)

Prerequisite: Enrollment restricted to graduate students.

STAT 205 - Introduction to Classical Statistical Learning (5)

Introduction to classical statistical inference. Topic include: random variables and distributions; types of convergence; central limit theorems; maximum likelihood estimation; Newton-Raphson, Fisher scoring, Expectation-Maximization, and stochastic gradient algorithms; confidence intervals; hypothesis testing; ridge regression, lasso, and elastic net.

Prerequisite: Prerequisite(s): STAT 203; or STAT 131 and STAT 132. Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor if they've completed STAT 131 and STAT 132 (subject to instructor verification).

STAT 205B - Intermediate Classical Inference (5)

Statistical inference from a frequentist point of view. Properties of random samples; convergence concepts applied to point estimators; principles of statistical inference; obtaining and evaluating point estimators with particular attention to maximum likelihood estimates and their properties; obtaining and evaluating interval estimators; and hypothesis testing methods and their properties. (Formerly AMS 205B.)

Prerequisite: Prerequisite(s): STAT 203. Enrollment is restricted to graduate students. Undergraduates may enroll by permission (STAT 131 and 132 have to be verified by the instructor directly with the student).

STAT 206 - Applied Bayesian Statistics (5)

Introduces Bayesian statistical modeling from a practitioner's perspective. Covers basic concepts (e.g., prior-posterior updating, Bayes factors, conjugacy, hierarchical modeling, shrinkage, etc.), computational tools (Markov chain Monte Carlo, Laplace approximations), and Bayesian inference for some specific models widely used in the literature (linear and generalized linear mixed models). (Formerly AMS 206.)

Prerequisite: Prerequisite(s): STAT 131 or STAT 203, or by permission of the instructor. Enrollment is restricted to graduate students.

STAT 206B - Intermediate Bayesian Inference (5)

Bayesian statistical methods for inference and prediction including: estimation; model selection and prediction; exchangeability; prior, likelihood, posterior, and predictive

distributions; coherence and calibration; conjugate analysis; Markov Chain Monte Carlo methods for simulation-based computation; hierarchical modeling; Bayesian model diagnostics, model selection, and sensitivity analysis. (Formerly AMS 206B.)

Prerequisite: Prerequisite(s): STAT 203. Enrollment is restricted to graduate students. Undergraduates may enroll by permission (STAT 131 and 132 have to be verified by the instructor directly with the student).

STAT 207 - Intermediate Bayesian Statistical Modeling (5)

Hierarchical modeling, linear models (regression and analysis of variance) from the Bayesian point of view, intermediate Markov chain Monte Carlo methods, generalized linear models, multivariate models, mixture models, hidden Markov models. (Formerly AMS 207.)

Prerequisite: Prerequisite(s): STAT 206. Enrollment is restricted to graduate students or by permission of instructor.

STAT 208 - Linear Statistical Models (5)

Theory, methods, and applications of linear statistical models. Review of simple correlation and simple linear regression. Multiple and partial correlation and multiple linear regression. Analysis of variance and covariance. Linear model diagnostics and model selection. Case studies drawn from natural, social, and medical sciences. STAT 205 strongly recommended as a prerequisite. Undergraduates are encouraged to take this class with permission of instructor. (Formerly AMS 256.)

Prerequisite: Prerequisite(s): course STAT 205B or permission of instructor. Enrollment is restricted to graduate students.

STAT 209 - Generalized Linear Models (5)

Theory, methods, and applications of generalized linear statistical models; review of linear models; binomial models for binary responses (including logistical regression and probit models); log-linear models for categorical data analysis; and Poisson models for count data. Case studies drawn from social, engineering, and life sciences. (Formerly AMS 274.)

Prerequisite: Prerequisite(s): STAT 205 or STAT 205B; and STAT 206B. Enrollment is restricted to graduate students.

STAT 221 - Statistical Machine Learning (5)

Explores statistical methods in machine learning. Discusses the methodology and algorithms behind modern supervised and unsupervised learning techniques that are commonly applied to complex, high dimensional problems. Course topics include linear and logistic regression, classification, clustering, resampling methods, model selection and regularization, and non-linear regression. Students also gain exposure to popular statistical machine learning algorithms implemented in R. One focus is on understanding the formulation of statistical models and their implementation, and the practical application of learning methods to real-world datasets.

Prerequisite: Prerequisite(s): STAT 205 or STAT 208 or by permission of instructor. Enrollment is restricted to graduate students.

STAT 222 - Bayesian Nonparametric Methods (5)

Theory, methods, and applications of Bayesian nonparametric modeling. Prior probability models for spaces of functions. Dirichlet processes. Polya trees. Nonparametric mixtures. Models for regression, survival analysis, categorical data analysis, and spatial statistics. Examples drawn from social, engineering, and life sciences. (Formerly AMS 241.)

Prerequisite: Prerequisite(s): STAT 207. Enrollment is restricted to graduate students.

STAT 223 - Time Series Analysis (5)

Graduate level introductory course on time series data and models in the time and frequency domains: descriptive time series methods; the periodogram; basic theory of stationary processes; linear filters; spectral analysis; time series analysis for repeated measurements; ARIMA models; introduction to Bayesian spectral analysis; Bayesian learning, forecasting, and smoothing; introduction to Bayesian Dynamic Linear Models (DLMs); DLM mathematical structure; DLMs for trends and seasonal patterns; and autoregression and time series regression models. (Formerly AMS 223.)

Prerequisite: Prerequisite(s): STAT 206B, or by permission of instructor. Enrollment is restricted to graduate students.

STAT 224 - Bayesian Survival Analysis and Clinical Design (5)

Introduction to Bayesian statistical methods for survival analysis and clinical trial design: parametric and semiparametric models for survival data, frailty models, cure rate models, the design of clinical studies in phase I/II/III. (Formerly AMS 276.)

Prerequisite: Prerequisite(s): STAT 206B or STAT 207. Enrollment is restricted to graduate students.

STAT 225 - Multivariate Statistical Methods (5)

Introduction to statistical methods for analyzing data sets in which two or more variables play the role of outcome or response. Descriptive methods for multivariate data. Matrix algebra and random vectors. The multivariate normal distribution. Likelihood and Bayesian inferences about multivariate mean vectors. Analysis of covariance structure: principle components, factor analysis. Discriminant, classification and cluster analysis.

Prerequisite: Prerequisite(s): STAT 205 or STAT 205B or STAT 208. Enrollment is restricted to graduate students. Undergraduates may enroll by permission of the instructor if they've completed STAT 205 or STAT 205B or STAT 208 (subject to instructor verification).

STAT 226 - Spatial Statistics (5)

Introduction to the analysis of spatial data: theory of correlation structures and variograms; kriging and Gaussian

processes; Markov random fields; fitting models to data; computational techniques; frequentist and Bayesian approaches. (Formerly AMS 245.)

Prerequisite: Prerequisite(s): STAT 207. Enrollment is restricted to graduate students.

STAT 227 - Statistical Learning and High Dimensional Data Analysis (5)

Introductions to statistical learning, modeling, and inference with complex, large, and high-dimensional data. Topics include supervised and unsupervised learning, model selection, dimension reduction, matrix factorization, latent variable models, graphical models, interpretability and causality. Applications in health, social sciences, and engineering.

Prerequisite: Prerequisite(s): STAT 205 and STAT 206B; or STAT 205B. Enrollment is restricted to graduate students.

STAT 229 - Advanced Bayesian Computation (5)

Teaches some advanced techniques in Bayesian Computation. Topics include Hamiltonian Monte Carlo; slice sampling; sequential Monte Carlo; assumed density filtering; expectation propagation; stochastic gradient descent; approximate Markov chain Monte Carlo; variational inference; and stochastic variational inference. (Formerly AMS 268.)

Prerequisite: Prerequisite(s): STAT 207, or by permission of the instructor. Enrollment is restricted to graduate students; undergraduates may enroll by permission of the instructor.

STAT 243 - Stochastic Processes (5)

Includes probabilistic and statistical analysis of random processes, continuous-time Markov chains, hidden Markov models, point processes, Markov random fields, spatial and spatio-temporal processes, and statistical modeling and inference in stochastic processes. Applications to a variety of fields. (Formerly AMS 263.)

Prerequisite: Prerequisite(s): STAT 205; or STAT 131 and STAT 132. Enrollment is restricted to graduate students, undergraduates may enroll by permission of the instructor if they've completed STAT 131 and STAT 132 (subject to instructor verification).

STAT 244 - Bayesian Decision Theory (5)

Explores conceptual and theoretical bases of statistical decision making under uncertainty. Focuses on axiomatic foundations of expected utility, elicitation of subjective probabilities and utilities, and the value of information and modern computational methods for decision problems. (Formerly AMS 221.)

Prerequisite: Prerequisite(s): STAT 203 or equivalent; and STAT 206 or STAT 206B; or permission of the instructor. Enrollment is restricted to graduate students.

STAT 246 - Probability Theory with Markov Chains (5)

Introduction to probability theory: probability spaces, expectation as Lebesgue integral, characteristic functions, modes of convergence, conditional probability and expectation, discrete-state Markov chains, stationary distributions, limit theorems, ergodic theorem, continuous-state Markov chains, applications to Markov chain Monte Carlo methods. (Formerly AMS 261.)

Prerequisite: Prerequisite(s): STAT 203. Enrollment is restricted to graduate students.

STAT 266A - Data Visualization and Statistical Programming in R (3)

Introduces students to data visualization and statistical programming techniques using the R language. Covers the basics of the language, descriptive statistics, visual analytics, and applied linear regression. Enrollment is by permission of the instructor. (Formerly Applied Math and Statistics 266A and Computer Science 266A.)

STAT 266B - Advanced Statistical Programming in R (3)

Teaches students already familiar with the R language advanced tools such as interactive graphics, interfacing with low-level languages, package construction, debugging, profiling, and parallel computation. (Formerly Applied Math and Statistics 266B and Computer Science 266B.)

Prerequisite: Prerequisite(s): STAT 266A or CSE 266A.

STAT 266C - Introduction to Data Wrangling (3)

Introduces students to concepts and tools associated with data collection, curation, manipulation, and cleaning including an introduction to relational databases and SQL, regular expressions, API usage, and web scraping using Python. (Formerly Applied Math and Statistics 266C and Computer Science 266C.)

Prerequisite: Prerequisite(s): STAT 266A or CSE 266A.

STAT 280B - Seminars in Statistics (2)

Weekly seminar series covering topics of current research in statistics.

Prerequisite: Enrollment is restricted to graduate students.

STAT 280D - Seminar in Bayesian Statistical Methodology (2)

Weekly seminar/discussion group on Bayesian statistical methods, covering both analytical and computational approaches. Participants present research progress and finding in semiformal discussions. Students must present their own research on a regular basis. (Formerly AMS 280D.)

Prerequisite: Enrollment is restricted to graduate students.

STAT 285 - Seminar in Career Skills (2)

Seminar in career skills for applied mathematicians and statisticians. Learn about professional activities such as the publication process, grant proposals, and the job market.

Prerequisite: Enrollment is restricted to graduate students, typically within two years of their expected Ph.D. completion date.

STAT 291 - Advanced Topics in Bayesian Statistics (3)

Advanced study of research topics in the theory, methods, or applications of Bayesian statistics. The specific subject depends on the instructor. Enrollment is restricted to graduate students and by permission of instructor. (Formerly AMS 291.)

STAT 292 - Advanced Topics in Statistics (3)

Advanced study of research topics in the theory, methods, or applications of statistics. The specific subject depends on the instructor. Enrollment is restricted to graduate students and by permission of the instructor.

STAT 296 - Masters Project (2)

Independent completion of a masters project under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

STAT 297A - Independent Study or Research (5)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

STAT 297B - Independent Study or Research (10)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

STAT 297C - Independent Study or Research (15)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

STAT 297F - Independent Study (2)

Independent study or research under faculty supervision. Students submit petition to sponsoring agency. Enrollment is restricted to graduate students.

STAT 299A - Thesis Research (5)

Thesis research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

STAT 299B - Thesis Research (10)

Thesis research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

STAT 299C - Thesis Research (15)

Thesis research under faculty supervision. Students submit petition to sponsoring agency. Enrollment restricted to graduate students.

STEV - STEVENSON COLLEGE

Lower-Division

STEV 1 - Academic Literacy and Ethos: Self and Society (5)

Teaches foundational concepts for intellectual exploration and personal development within an academic community: analysis, critical thinking, metacognition, engagement with others across difference, and self-efficacy. Examines the roots of modern society using diverse religious texts and major classical and modern philosophical works.

Prerequisite: Enrollment is restricted to college members.

STEV 1A - Introduction to University Life and Learning (1)

Orientation to and an exploration of the nature of the liberal arts, and of learning at research universities. Topics include: academic planning for upper-division coursework; enrollment processes; and understanding pathways to degree completion; UCSC resources that support health and well-being; strategies for academic success; the cultivation of just communities; the prevention of sexual harassment and violence; campus conduct policies; awareness of risks associated with drug and/or alcohol use; and an introduction to traditions of community-engaged learning, ground-breaking research, and interdisciplinary thinking that define a UC Santa Cruz degree. This course can be taken for Pass/No Pass grading only.

Prerequisite: Enrollment is restricted to entering first-year Stevenson College students.

STEV 1B - Stevenson Core On the Trail: An Outdoor Supplement to the Stevenson Core Course (2)

As an outdoor, walking support class for students concurrently enrolled in Stevenson's College 1 Core Course, this "Core Walks" course provides an opportunity for students to discuss the week's reading while exploring UCSC's extraordinary campus on foot. As our walks will be an hour and a half in length and will take place on trails with uneven, unpaved surfaces with some steep uphill portions, students should have appropriate walking shoes and be ready to hike, explore, and experience nature. Students prepare for each walk having read the assigned reading and prepared questions to generate conversations about the reading while walking. Students are expected to bring the week's reading, a composition book, and water for each walk.

Prerequisite: Concurrent enrollment in STEV 1 required. Enrollment is restricted to Stevenson frosh and sophomores.

STEV 2 - Self and Society 2 (5)

Winter quarter of Stevenson's core course continues development of analytical writing, critical reading, and effective speaking in exploring conflicts inherent in modern society. Investigates themes of colonization, race, gender, class, and cultural conflict. (Formerly course 81A.)

Prerequisite: Enrollment is restricted to first-yearand sophomore college members.

STEV 10 - Skills for College and Beyond (2)

Applications of practical skills for effective, meaningful study in the context of a full, busy life. Topics include learning styles, time management, test preparation, and life balance. Specific techniques for efficient reading comprehension, note-taking, memorization, and self-assessment are introduced.

STEV 16 - Stevenson Community Garden (2)

Hands-on course in ecological horticulture at the Stevenson garden. Students grow the Stevenson community through gardening and projects focused on building a healthy and regenerative local-foods culture. Enrollment by interview only. Enrollment restricted to Stevenson College members.

STEV 21 - Citizens and Nations: Self and Society in the 19th Century (2)

A reading seminar focusing on a set of key texts. Examines how the political and industrial revolutions of the 19th century fundamentally transformed the relationships between individuals and their respective societies.

Prerequisite: Enrollment is restricted to Stevenson College members.

STEV 22 - Self and Society in Classical Social Theory (2)

Reading seminar focusing on a set of key texts from classical social theory. Explores the transition from traditional to modern societies. Authors addressed may include Locke, Rousseau, de Tocqueville, Marx, Weber, and Durkheim.

Prerequisite: Enrollment is restricted to Stevenson College members.

STEV 26 - Navigating the Research University (2)

Explores critical engagement in education in the context of a research university. Introduces first-year issues and success strategies and ways to participate in the institution's academic life. Investigates strategies for clarifying education goals and devising a plan for success. Students cannot receive credit for this course and PRTR 26 or KRSG 26.

Prerequisite: Enrollment is restricted to first-year students.

STEV 27 - Service Learning (2)

This online course frames and supports the service-learning experiences of students engaged in field placements both here in Santa Cruz and in their home communities. Students approach social challenges thematically (e.g., homelessness, environmentalism, domestic violence, etc.) and consider how different disciplines might engage these issues. They consider how our community partners conceptualize and address social issues and how these conceptions connect, or fail to connect, with academic approaches,

STEV 30 - Thesis Writing and Editing (2)

Identifies and examines the assumptions, expectations, and formats of writing in students' fields, with the goal of beginning—or continuing—academic research. Prerequisite(s): satisfaction of the Composition requirement. Enrollment restricted to junior and senior college members and by permission of instructor.

STEV 33 - Self and Society Examined Through Ethical Dilemmas (2)

Examines ethical dilemmas in contemporary topics, such as the status of moral principles during warfare; animal rights and the ethics of eating meat; privacy in the age of the Internet; imprisonment and rehabilitation; legal and illegal immigration; same-sex marriage; and health care.

STEV 35 - Everyday Ethics for College Life (2)

Exploration of and reflection on everyday values and virtues such as integrity, open-mindedness, honesty, and community. Objectives include learning how to think about moral dilemmas and how to begin drafting one's own code of ethics.

Prerequisite: Enrollment is restricted to college members.

STEV 38 - Critical Thinking for the Misinformation Age (2)

Focuses on the acquisition of critical thinking skills and their application to issues that affect today’s students. Topics include rationality, fallacies, cognitive biases, bullshit, propaganda, and scams.

STEV 40 - Love and Politics: An Academic Exploration (5)

Explores the intersection of love and politics, asking how we can bring love into our political lives as responsible citizens. By examining historical, feminist, activist literature, and pop culture, students investigate the practical and political applications of love. Through this lens, the course challenges traditional notions of politics and considers how love can shape activism and citizenship.

STEV 41 - Spirituality in a Modern World (2)

Investigates scientific and pragmatic perspectives on spirituality from William James to Fritjof Capra. Explores spirituality in Western and Eastern traditions from Martin Buber to Pema Chodron. Students analyze, support, and articulate their spiritual positions in a culminating paper.

Prerequisite: Enrollment is restricted to Stevenson College members.

STEV 43 - Comparative Nationalisms in Historical Perspective (5)

From the white nationalist demonstrations in the USA to Brexit and the resurgence of populist movements in India and Europe, nationalism is resurgent worldwide. In this course, students conduct research into a current nationalist movement of their choice.

Prerequisite: Enrollment restricted to students in the College Scholars Program.

STEV 44 - Shakespeare Research Seminar (5)

Introduces students to different forms of literary research through the works of William Shakespeare. Together, students read five plays, along with articles that represent a range of

methodological approaches to literary scholarship and research. In addition to a final paper, four research exercises are assigned throughout the quarter, of which students must complete two of their choosing. Each exercise requires a different methodology: a review of scholarship, historical research, history of theatrical production, and literary allusion.

Prerequisite: Enrollment is restricted to students enrolled in the College Scholars Program.

STEV 45 - Creation and its Discontents: From Human to Posthuman (5)

Considers the trajectory of creation, from the birth of humankind to the advent of the posthuman. Beginning with depictions of God's creation of humans in the Garden of Eden, course also examines Frankenstein's creation of the "human" at the advent of modern science, and technology's creation of the posthuman in the modern age. Broad and varied selection of readings consider the following questions: What does it mean to be human? How do we define the human and draw the boundary between it and the nonhuman? How does the nonhuman help us to understand ourselves? What is the relationship between creator and created? What obligations does the creator have to that which they create?

STEV 50A - Stevenson Alumni Careers in Law (2)

Connecting students with alumni who provide practical advice for careers in law. Topics covered include the variety of career possibilities in law, preparing for law school, internships, networking, applying for jobs, and interviewing. This class does not accept new students after Week 2.

STEV 50B - Stevenson Alumni Careers in Science and Technology (2)

Connecting students with alumni who provide practical advice for careers in science and technology. Topics covered include internships, graduate school, networking, applying for jobs, interviewing, and adapting to a rapidly changing job market. This class does not accept new students after week 2.

STEV 80F - Academic Success in the College Core Course (3)

Provides support for reading, understanding, and engaging with difficult Core texts; models and facilitates college-level discussion; provides instruction in collaborative processes; encourages community-building with the college; and helps acclimate students to university culture. Enrollment is restricted to first-year Stevenson students who have been placed in the Multilingual Curriculum.

STEV 80G - Self and Society Through Film (5)

Uses feature films and documentaries to address and discuss perspectives of self and society. Films include Star Wars, The Hunger Games, and The Matrix.

STEV 80T - Self and Society for Transfer Students (5)

Condensed version of Stevenson's core course for transfer students. Develops analytical writing, critical reading, and effective speaking by considering influential philosophical works while exploring cultural conflicts in modern society. Themes include imperialism, racism, and class conflict.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements. Enrollment is restricted to college members.

STEV 96 - Theory and Practice of Peer-Guided Learning for Tutors and Learning Assistants (2)

Provides first-time tutors and supplemental-instruction learning assistants with the theoretical background and practical interactive teaching and learning strategies essential for planning, implementing, and evaluating effective peer-guided learning.

STEV 99 - Tutorial (5)

Tutorial

Upper-Division

STEV 120 - Self and Society: Teaching Practicum (5)

In pairs, students facilitate one seminar section of STEV 2, attend lectures, and meet with faculty for mentoring and guidance through the teaching process. Students are responsible for designing and executing lesson plans, creating assignments, and for evaluating student work. Prerequisite(s): STEV 80 or STEV 1, and STEV 81 or STEV 2. Admission to the program by application and subsequent interview. Applications are available each fall in early October from the college office and interviews are conducted in early November. Qualifications include, but are not limited to, excellent performance in the core courses, good academic standing, leadership experience, genuine passion for teaching, and caring for fellow students. Strong candidates will be skilled in time management, organization, communication, and judgment.

STEV 136 - Imagination (5)

Examines contemporary perspectives on the theme of imagination. Course readings include philosophical treatments of imagination, Indigenous imaginative cultural formations, and Black radical imaginations for socio-spatial liberation. Addresses the following questions: To what extent is imagination tied to our particular position, culture, and time period? What are some ways to expand our imaginations and when are these approaches limited? And how can imagination help us advance radical social change? Explores imagination as an inherently cross-cultural topic and teaches students to present, analyze, and critically discuss philosophical and sociological arguments about imagination. Students cannot receive credit for this course and PHIL 136C, PRTR 175A / PHIL 136B, or COWL 175A/PHIL 136A.

STEV 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision (see course 42). Prerequisite(s): upper-division standing and a proposal supported by a faculty member willing to supervise.

STEV 193 - Field Study (5)

Provides for individual programs of study, sponsored by the college and performed off-campus. This course may be counted for up to three courses of credit in any quarter. Prerequisite(s): approval of student's adviser and the academic preceptor, and, in the case of full-time study, the board of studies supervising the major.

STEV 194 - Group Tutorial (5)

A program of independent study arranged between a group of students and a faculty instructor. Enrollment restricted to members of Stevenson College. Enrollment limited to 12.

STEV 194F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty instructor. Course designed for members of Stevenson College. Students submit petition to sponsoring agency. Enrollment limited to 10.

STEV 198 - Independent Field Study (5)

Provides for college-sponsored individual study programs off campus, for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be taken for credit in any one quarter. Prerequisite(s): approval of the student's adviser, certification of adequate preparation, approval by the academic preceptor.

STEV 198F - Independent Field Study (2)

Provides for college-sponsored individual study programs off campus, for which faculty supervision is not in person (e.g., supervision is by correspondence). Up to three such courses may be take for credit in any one quarter. Students submit petition to sponsoring agency. Requires approval of the student's adviser and academic preceptor

STEV 199 - Tutorial (5)

Individual projects carried out under the supervision of a Stevenson faculty member. Students submit petition to sponsoring agency.

STEV 199F - Tutorial (2)

Individual projects carried out under the supervision of a Stevenson faculty member. Students submit petition to sponsoring agency.

THEA - THEATER ARTS

Lower-Division

THEA 7 - The Arts Dean's Lecture Series on the Art of Change with Lyle Troxell of Netflix (2)

Course features a distinguished roster of guest speakers of arts practitioners and educators who provide illuminating insights and personal stories on the artistic character that can shape a creative life dedicated to social change. Speakers cover a lively range of topics, ranging from the importance of habits of heart and mind that can transform "some thing" into something "original" to the ways the arts create productive change. Taught by Lyle Troxell, host of the WeAreNetflix Podcast. (Formerly Arts Dean's Lecture Series on Creative Entrepreneurship.)

THEA 8 - Introduction to Iranian Theatre (2)

Introduces Iranian theater covering Ta'zieh religious performance, Ruhuzi improvised drama, Naghali storytelling, and modern efforts in national and diasporic theaters fusing indigenous and western styles. No prior knowledge of Iran is required and readings are in English.

THEA 10 - Introduction to Theater Design and Technology (5)

Addresses imagination and creativity. Using the framework of theater production, students explore the process of translating a script into a performance. Topics include visual literacy, creative problem solving, establishing effective working teams, tear sheets, storyboarding, drawing, sound and color theory. This course is a prerequisite for all upper-division design courses.

THEA 12 - Stage Management (5)

Designed to acquaint students with the complexities of staging productions from the audition process to final performance. Directing, lighting, scenic production, sound, cueing, and personnel management are aspects that will be touched upon in class.

THEA 14 - Drawing (5)

A fundamental course in drawing from still life, the figure, and in the landscape. The approach is from the tonal and volumetric aspects of the object. Color is introduced as the course progresses. Instruction fashioned to the individual needs of the student. The inexperienced are welcomed as well as the experienced.

THEA 15 - Special Topics in Textiles (5)

Introduces varied techniques in textile manipulation to create scenic and costume-design properties including drapery, upholstery, masks, bags, and millinery. Students learn basic sewing and surface-design methods, such as knitting, screen-printing, painting/dyeing, and distressing.

THEA 17 - Costume Construction (5)

Explores different aspects of costume construction, including draping, basic sewing, flat patterning techniques, proper protocols for measurements and fittings, dyeing, and costume crafting. The class activities are a mixture of lectures, demonstrations, and project-based learning. Students work in a lab setting and learn proper costume shop etiquette regarding shared spaces, organization, and cleanliness.

THEA 18 - Drafting for Theatrical Production (5)

An examination of the fundamentals of drafting scale drawings for production, including floor plans, elevations, sections, working drawings, dimensions, layout, and lettering. Students learn isometric drawing, perspective, and rendering techniques.

THEA 18C - Drafting-Computer Aided (5)

In-depth exploration of designing for theater using computer-aided drafting in the Vectorworks Design Suite and Renderworks. Topics include: the user interface, ground plan, section and detail views, paper space vs. working space, tool palettes, USITT drafting standards, layers, line weights, objects, classes, library annotations, importing rasters, and 3D modeling. Students required to do weekly projects such as ground plans, lighting plots, perspectives, and detail drawings, as well as turn in a major final project, and complete a mid-term, final, and quizzes.

Prerequisite: Enrollment is restricted to theater arts majors.

THEA 19 - Design Studio: Lighting Studio A (5)

An introduction to the theory and practice of lighting design with attention to the practical skills and creative approaches to lighting performance pieces; the technical side of lighting design via demonstrations, lectures, and labs. Students complete projects evolving and executing concepts for lighting chosen pieces.

Prerequisite: Prerequisite(s): THEA 10.

THEA 20 - Introductory Studies in Acting (5)

Introduction to basic acting skills and the problems of performance. Concentrates on expanding a range of expression and ability to respond to and analyze dramatic text. Designed for students with little or no experience in acting.

THEA 21 - Acting Studio I: Psychological Realism (5)

Explores the fundamentals from the work of Konstantin Stanislavski as developed at the Moscow Art Theater to the works of his and our contemporary playwrights. Specifically, students apply those techniques of action, physical score, given circumstances, subtext, interior monologue, goals, and objectives, throughline, superobjective, and emotional recall to works of Henrik Ibsen, Anton Chekov, and relevant American realists, such as Sam Shepard, August Wilson, etc. Designed for students focused on acting as an academic or professional discipline. Admission by audition at first class meeting.

THEA 22 - Indonesian Dance and Drama (5)

Students learn the basic movement repertoire of the specific characters of the Indonesian dance-drama/puppetry tradition over the quarter with explication of how these types operate in their own cultural context. Course culminates in an open showing of scene work.

THEA 23 - Voice for the Actor (5)

Introduces using the spoken voice effectively and powerfully on stage and off. Physical release, alignment, breath, resonance, and articulation are explored. Students gain an understanding of how the voice relates to the self, the body, and breath and become more aware of tensions and habits that may impede vocal and speech use.

THEA 24 - Movement for Performers (5)

Students develop awareness and extension of personal movement repertoire through observation, movement experience, and exploration.

THEA 25 - Understanding Shakespeare (5)

Emphasizes key theoretical and practical modes of dramaturgy in order to research, analyze, and interpret the dramatic works and performances of Shakespeare within historical and contemporary contexts.

THEA 30 - Introduction to Dance Theory and Technique (5)

Intensive instruction in developing the dancer's mind/body, with introduction to movement theory and practice.

THEA 31A - Dance Studio I: Asian or Asian Diasporic Practice (5)

Introduces Asian or Asian diasporic dance practice through physical training and theoretical engagement. Focuses on basic techniques of performance practice and critical engagement with aesthetic, cultural, and/or historical context.

THEA 31B - Dance Studio I: Ballet (5)

Introduces classical ballet as a form of ethnic dance. Focus on combining basic training in ballet technique with academic studies to achieve a synthesis in the understanding of dance as a performing arts practice in diverse socio-cultural and historical contexts. Emphasis on simple phrasing and articulation into more complex material requiring richer dynamic range. Attention to the anatomical principles that governs ballet mechanics.

THEA 31C - Dance Studio I: Contemporary Dance Theory and Technique (5)

Intensive instruction in contemporary dance technique. Combining movement theory and practice, students will develop basic knowledge of anatomical function (somatics) and a foundational embodiment of contemporary dance technique.

Prerequisite: Prerequisite(s): THEA 30.

THEA 31E - The Dance Experience (2)

Introduction to contemporary dance theory and practice. Focus on basic dance technique, range of styles, and aesthetic points of view of historically significant contemporary dance choreographers in America and worldwide.

THEA 31L - Dance Studio I: Introduction to Latin American Social Dances (5)

Introduces movement fundamentals and histories of two Afro-Latin social dances: samba from Brazil, and salsa from Cuba. Students learn about their common Afro-Indigenous roots and stylistic evolutions, as well as key threads that connect a wide range of people and practices across the Latin Diaspora—culturally, musically, physically, and spiritually. Course examines the complex origins and how they arose out of histories of persecution, enslavement, migration, and a deep

desire to hold onto tradition and celebrate life in the face of great injustice. Includes attendance at off-campus community dance events, plus weekly movement practice and lectures in class, reading and writing assignments, and keeping a journal that reflects on their ongoing experience.

THEA 31M - Introduction to Aikido (5)

Provides students with an introduction to the practice of Aikido, a contemporary Japanese martial art founded in the mid-20th century by Morihei Ueshiba (O-Sensei). Essentially nonviolent and noncompetitive, Aikido aims to achieve harmony with others, the environment, and oneself. Students who complete this course will be able to perform basic Aikido techniques, demonstrate their understanding of the Japanese terminology used in class, and apply the philosophies outlined to the physical practice of the form.

THEA 33C - Dance Studio I (5)

Intensive instruction in developing the dancer's physical instrument. Intended for students who have a previous fundamental knowledge of the basics of classic dance, combined with movement theory.

Prerequisite: Prerequisite(s): THEA 30.

THEA 36 - Introduction to Dance Making (5)

Introduces dance improvisation and choreographic practice. Observation and recognition of personal movement patterns and discovering new sources for creative material. (Formerly offered as Introduction to Dance Composition.)

THEA 37 - African Dance (5)

A griot (musician-entertainer from western Africa) from Burkina Faso teaches The African Journey, which emphasizes dance as combined in Africa, including singing, history, oral tradition, and storytelling.

THEA 38 - Dance on Film (2)

Introduces dance on film, examining such topics as narrative storytelling in dance films (documentary and fiction); cinematic strategies for representing the kinesthetic; and dance film as a unique and distinct art form.

THEA 40 - Introduction to Directing (5)

An overview of the analytical and creative processes that inform the director's work. Close examination of texts, concepts, and selected directors and directorial choices.

THEA 41 - Fundamentals of Directing (5)

An experience designed to develop an active and creative vision leading to a concept that takes an audience on a memorable journey with lives that are created on the stage. Students direct a monologue, a dual scene, and a final project which represents the collaborative nature of the art of directing. Topics include blocking techniques, history of directing, how to work with designers, rehearsal techniques, and strategies for actor coaching.

THEA 50 - Fundamentals of Theater Production (2)

Work is on various aspects of theatrical production, including scenery, lighting, costumes, sound, stage management, and video documentation. Satisfies the department's technical experience requirement.

THEA 52 - Basic Stagecraft (5)

Provides introduction to technical theater and basic stagecraft. Course examines two-dimensional and three-dimensional scenery, scenic engineering, the physical theater, stage and scene shop equipment, project organization and process, technical theater graphics, materials, and theatrical construction techniques.

Prerequisite: Prerequisite(s): THEA 10.

THEA 55A - Workshop in Performance: Barnstorm (5)

Process-oriented investigation of practical theater production by working in and on productions in the Barnstorm season. Requires a total of 150 hours working backstage or onstage. Admission by audition at first class meeting; see department office for more information.

THEA 55B - Workshop in Performance: Barnstorm Lab (2)

Process-oriented investigation of practical theater production by working in and on productions in the Barnstorm season. Requires a total of 50 hours working backstage or onstage. Admission by audition at first class meeting; see department office for more information.

THEA 56D - Rainbow Theater Cultural Studies (5)

Introduction to multicultural theater and multicultural plays that aims to bring cultural awareness to all students interested in theater discipline. Students are required to read and critically analyze contemporary plays of color with emphasis on race and culture in contemporary American society. (Formerly OAKS 80H.)

THEA 56R - Rainbow Theater: An Introduction to Multicultural Theater (5)

Introduction to Asian American, Chicano/Latino, and African American plays through reading of major authors, discussion of social and historical context of their work, and development of a production of a one-act play from each cultural group. In-depth examination of key historical context of these three cultural groups. Video presentations followed by class discussion. Enrollment by audition. (Formerly offered solely as STEV 80H. Now offered as both THEA 56R and STEV 80H, with THEA 56R the primary offering and STEV 80H the crosslisted offering.)

THEA 61A - Ancient and Medieval Drama (5)

Ancient enmities; horrific acts of parricide; monumental errors; suffering and contrition. This course examines the enormous appeal of the ancient Greek tragic and comic visions from their inception through their enthusiastic adaptation by the Romans and on into the Middle Ages. For comparison purposes, Greek and Roman dramas are studied

back-to-back with the contemporary non-Western dramatic forms of Noh and ancient Sanskrit drama.

THEA 61B - Drama from the Renaissance to the Modern Age (5)

Examines major trends in European drama from the rediscovery of ancient Greek and Roman drama in the early 17th century to the late 19th century. These trends include neo-classical drama, the rise of middle-class drama, social realism, romanticism, early naturalism, and the well-made play. These trends are compared with the parallel developments of the non-Western forms of Japanese Kabuki and Javanese Wayang.

THEA 61C - The Birth of the Modern: Drama and Performance After the Renaissance (5)

Examines dramatic and theatrical works that sprang into being in the wake of the European Renaissance. Follows the ways modern artists have dramatized their questions, struggles, beliefs, and despair in the face of world wars, cultural fragmentation, unprecedented prosperity, and new technologies.

THEA 64 - Shakespeare and Adaptation in Text and Performance (5)

Juxtaposes Shakespeare's plays with sources Shakespeare may have adapted and adaptations that his works, in turn, have spawned. Explores Renaissance stage and printing practices and the processes of adapting for page and stage.

THEA 80A - Introduction to African American Theater (5)

Surveys African American theater from late-19th-century to contemporary 21st-century playwrights and examines dramatic narratives to trace creation, evolution, and development of African American cultural identity formation in American theater.

THEA 80B - Rock 'n' Roll Design (5)

Examination of the genesis, history, and development of technical theater practices used in large arena rock shows. Topics will include the development of rigging practices used in arenas, touring logistics, lighting instrumentation and aesthetics of rock shows, and the nature, practice, and approach of sound in these venues.

THEA 80C - Monsters (5)

Examines the operation of monsters in plays from Ancient Greece to today, inquiring as to why these powerful cultural tools for the expression of social tension show no sign of diminishing despite our ostensible advance into scientific rationalism.

THEA 80D - Commercial Design 1900 to Present (5)

History of 20th-century commercial design for the theater through the eyes of the Western consumer.

THEA 80H - Hamlet Conundrums (5)

Offered online, the course explores major issues of interpretation of Shakespeare's classic play, which has occupied the minds of audiences, directors, designers, performers, and critics during its 400-year history. In doing this, it offers a sense of history of people's preoccupations with and thoughts about the play. Students taking this class are expected to complete the course during the quarter for which they are enrolled. All students enrolled in this course should visit elsinore.ucsc.edu and write to elsinore@ucsc.edu.

THEA 80K - Shakespeare 4every1 (5)

Introduces all students, regardless of experience, to the plays and theater of Shakespeare, and directly addresses linked relevance to contemporary 21st century American culture.

THEA 80L - Muppet Magic: Jim Henson's Art (5)

The artistic and social impact of the Muppets on American puppetry, children's television, and Hollywood film is explored through viewings, guest lectures, and analysis. Henson's legacy in artistic innovation, mainstreaming of puppet theater for adult audiences, and establishment of puppetry in media and marketing are also explored.

THEA 80M - Chicano/a Teatro (5)

Introduction to Teatro Chicano/a with examination of how cultural diversity plays a role in theater. Through lectures, films, and workshop exercises, reflect upon the process of Teatro Chicano. Students write their own acts, improvise, and perform in class.

THEA 80N - Walt Disney (5)

An examination of Walt Disney's creation of the American vision of family entertainment. Particular attention will be paid to the classic animated feature films of Walt Disney and to the way this Disney invention has been preserved and developed since his death. We will also look at the live action films, theme parks, and other Disney creations.

THEA 80P - Pixar - Story Matters (5)

Emphasizes script development by exploring dramatic writings from ancient to contemporary theater, then focusing on Pixar screenplays with their universal themes and compelling characters. Film analysis of Pixar movies delves into animation history, fairytale, psychology, and popular culture.

THEA 80Q - Introduction to Queer Theater (5)

Examines the history of the queer perspective in dramatic literature, from the Greeks to Marlowe and Shakespeare through the calcification of homosexuality in the era of Freud, then traces theater stewardship by gay and lesbian artists from within the closet and without.

THEA 80R - Bollywood Dance and Culture in India and Indian Diaspora (5)

Bollywood is the largest film industry in the world. Students learn several fundamental footsteps, eye, hand and body

movements, to perform Bollywood dance. They also learn various traditions of Indian classical, folk, and Bollywood dance terms.

THEA 80S - Theater Arts Education and the Community (5)

This course is designed to develop ways in which we can direct our interest in the arts into concrete and successful community projects. Although the emphasis will be on developing skills to work within K-12 classrooms, other community projects will be discussed and designed.

THEA 80T - Flashmob! Mass Performance in the Information Age (5)

Flashmobs represent a new social configuration using information technology. Course covers the history of experiments in art and technology and the role of mass performance in society. Students consider the socio-cultural ramifications of flashmobs and participate in them.

THEA 80U - Everybody Dance Now! (5)

Examines dance as a primary mode of human communication and expression. Through readings and the viewing of recorded and live performances, students compare and contrast dance traditions of the world.

THEA 80V - The Circus in American Culture (5)

Circus arts from their shamanic roots to contemporary practice will be analyzed in a historical, aesthetic, and creative dimension. Lecture, discussion, and demonstrations will explore the theory and practice of American circus arts. In section, students will explore basic circus skills from clowning to tumbling to exhibition of freaks.

THEA 80X - The Performance of Story in Theater and Film (5)

An examination of the theory and practice of theater and film, comparing and contrasting works that have been adapted from one genre to another. Lecture, film and video viewing and discussion of materialist, psychoanalytic, and feminist approaches will be shared.

THEA 80Y - American Musical Theater (5)

The history of American musical theater, from its roots to today, is studied through scripts, scores, and film. Major composers and lyricists' work is shown, discussed, and analyzed.

THEA 80Z - Indian Dance (5)

Study of Indian classical dance through embodied training and theoretical engagement. Training in the foundational elements of abstract rhythmic dance, including drum syllables and associated steps, and introduction to abhinaya (storytelling).

THEA 99 - Tutorial (5)

Students must file their petitions for this course with the department office by the end of the fifth day of instruction in the quarter in which they would like to take the tutorial.

Prerequisite(s): petition required, approved by instructor and department.

Upper-Division

THEA 100A - Asian Theater/Dance and Global Impacts (5)

Overview of selected theater/dance performance genres of India, Indonesia, China, Korea, and Japan with attention to how cultural, political, and social flows have impacted contemporary performance in Asia and beyond. Lectures supplemented by workshops.

THEA 100B - Black Theater USA (5)

Spanning slavery, emancipation, reconstruction, the great depression, civil rights, and the black power/black arts movements, course explores African American drama from literary, historical, and biographical perspectives in lecture/discussions, film excerpts, dramatizations, and visits from award-winning guests.

THEA 100C - Courts, Courtesans, Shamans, and Clowns: Asian Drama (5)

Asian court and popular performance are traced. Sanskrit drama is contrasted with Indian epic recitation, medium, and courtesan dance. Gender specialization is noted in Indonesian courts using Indian and local legends in dance, mask/puppetry, and clowning. Buddhist and Confucian impulses in Chinese theater and early Korean and Japanese mask and puppetry are introduced. Students are evaluated on participation, tests, writing, and a performance project.

THEA 100W - Black/African Diasporic World Theater (5)

Examines major black African diasporic playwrights and theater. Focuses on the historical, cultural, and literary contexts that gave rise to the works of dramatists such as Ama Ata Aidoo, Derek Walcott, Wole Soyinke, Aime Cesaire, Debbie Green Tucker, and Paul Boakye.

Prerequisite: Prerequisite(s): THEA 61 or THEA 60A or THEA 60B or THEA 60C.

THEA 103 - Design Concept Development (5)

Students develop an advanced design project related to theatrical production, apparel or housewares, marketing collateral, packaging or product development, or any related fields. Students address research and development, materials sourcing, budgeting, fabrication, and portfolio-quality presentation materials. Prerequisite(s): THEA 10; or two courses from ART 10D, ART 10E, and ART 10F. Enrollment is by permission of the instructor. THEA 106 is recommended as preparation.

THEA 104 - Multimedia Authoring (5)

Introduces students to basic tools for the creation of multimedia digital projects. Special attention is given to the integration of video, sound, graphics, text and virtual reality and to the creation and execution of strategies for interaction between users and the projects themselves. With this in mind, students design and create computer puzzles and games.

THEA 106 - Digital Illustration (5)

Introduces tools and techniques for creating digital costume renderings and theatrical design illustrations using Procreate for iPad and the Adobe Creative applications. Explores a range of uses for digital renderings, including tools for design and communication.

Prerequisite: Enrollment is restricted to declared or proposed majors in art, games and playable media, creative technologies, film and digital media, or theater arts; or minors in dance, film and digital media, or theater arts.

THEA 108 - Theater and Interaction Design (5)

Investigates interactive media including computer games, virtual reality, and participatory theater to inform design practice. Examines Aristotle's Poetics with some modernist excursions. Also examines the various values embedded in works--artistic, civic, spiritual, and political.

Prerequisite: Enrollment is restricted to juniors and seniors.

THEA 113 - The History of Design for Theater (5)

The development of scenic design from the Greek period to the present. Concentration is on the changing styles of set design in relation to the changing attitudes toward dramatic literature, art, and theater architecture.

THEA 114 - Sound Design and Engineering for the Theater (5)

Mixing theory with practice, this course covers everything from script analysis and sound-design paperwork to how to use the software and hardware needed to bring a sound design to reality.

Prerequisite: Prerequisite(s): THEA 10.

THEA 115A - Design Studio: Scenic Design (5)

Advanced work in principles and theory of scenic design.

Prerequisite: Prerequisite(s): THEA 10.

THEA 115B - Design Studio: Scenic Design B (5)

Advanced theory and practice of theatrical set design.

Prerequisite: Prerequisite(s): THEA 115.

THEA 116A - History of Clothing and Costume (5)

Survey of clothing and theatrical costumes; emphasis on dress of the audience and actor in historical periods of theatrical activity.

THEA 117 - Design Studio: Costume (5)

Explores different aspects of the costume design process. Through projects and exercises, students develop a general view of various aspects of costume designers' work and gain a broader and more informed understanding of the costume designer's methods, techniques, and tools.

THEA 117A - Advanced Costume Construction (5)

Advanced principles in costume construction, including tailoring, advanced pattern drafting, and draping techniques. Focuses on translating modern techniques into historical garment construction. Teaches how to study artifacts and do primary research to unlock the past.

Prerequisite: Prerequisite(s): THEA 17.

THEA 118 - Design Studio: Scene Painting (5)

Emphasis on techniques used in painting scenery for the theater.

Prerequisite: Prerequisite(s): THEA 10.

THEA 119 - Design Studio: Lighting Studio B (5)

The theory and practice of lighting design with emphasis on practical application. Light plots, electricity, optics, design, and manipulation of lighting for the theater and related performance events are investigated. The student explores mechanics and aesthetics with hands-on experience.

Prerequisite: Prerequisite(s): THEA 19.

THEA 120 - Voice and Movement for Performers (5)

Intensive work on the voice and body involving breathing, relaxation, and an understanding of anatomy as it pertains to voice and movement. Awareness and extension of personal vocal and movement repertoire through observation, experience, and exploration. Active preparation for performance (emphasizing Shakespeare) with work on phonetics and scansion and integration of physical technique.

THEA 121 - Acting Studio II: Shakespeare (5)

This acting studio centers around Shakespeare and specific techniques used in performing his plays. Continues concentrated work on basic acting skills and textual analysis through scene study. Courses 21 and 23 are recommended as preparation. Admission is by audition at the first class meeting.

THEA 122 - Indian Performance: Rama, Siva, Krishna (5)

Study of the classical theater and dance of India, with attention to performance practice, aesthetic theory, relationship to religious practice devoted to Rama, Siva, and Krishna, political implications and intercultural experimentation.

THEA 123 - Acting and Shakespeare (5)

Challenges of performing Shakespearean and Renaissance plays are explored through confronting the acting problems they pose. Attention to verse scansion, character analysis, and textual meaning. Strategies for enacting scenes and monologues are tested in class presentations.

THEA 124 - Movement for Performers (5)

Awareness and extension of personal movement repertoire, through observation, movement experience, and exploration.

THEA 126 - Acting Studio III (5)

Individual work on acting skills and problems, with emphasis on individual interpretation and scene work with other students. THEA 21 and THEA 124 are recommended as preparation. Admission is by audition at the first class meeting.

THEA 126M - The Meisner Technique: A Practical Exploration (5)

An intensive immersion into the teaching techniques and actor-training originated by Sanford Meisner. Presents exercises and projects utilizing improvisation, physical activities, and, finally, memorized text. THEA 21 and THEA 124 are recommended as preparation. Admission is by audition at the first class meeting.

THEA 128 - Choreographic Workshop (2)

Intensive upper-division choreographic workshop that begins from the key motifs of historical dance to develop original work. Dancers made available to the student choreographers. Concurrent enrollment in THEA 139 is required.

THEA 131A - Dance Studio II: Asian or Asian Diasporic Practice (5)

Continues the study of an Asian or Asian diasporic dance theory and practice. Focuses on intermediate dance technique, refinement of performance expression, and creative ownership of material, alongside critical engagement with aesthetic, cultural, and/or historical context.

Prerequisite: Prerequisite(s): THEA 31A or permission of instructor.

THEA 131B - Dance Studio II: Ballet (5)

Continued study of classical ballet theory and practice with progressions in barre, center, and across the floor exercises. Focus on contemporary ballet and critical dance studies. Emphasis on musicality, strength and coordination, and refinement in epaulement in adagio and allegro sequences. Attention to body alignment and maintaining the kinetic integrity of the body while moving through space.

Prerequisite: Prerequisite(s): THEA 31B or by permission.

THEA 131C - Dance Studio II: Advanced Contemporary Forms and Practices (5)

Continued study of contemporary dance theory and practice. Focus on intermediate dance technique, individual and group movement invention, choreographic voice, and theatrical applications.

Prerequisite: Prerequisite(s): THEA 31C or permission of instructor.

THEA 131L - Advanced Latin American Social Dances (5)

In this advanced-level course, students continue building on their technical and historical study of two Afro-Latin social dances which they began learning in THEA 31L: Samba from Brazil, and Salsa from Cuba. Students continue learning about the common Afro-Indigenous roots and stylistic evolutions of these dances, including key threads that connect a wide range of people and practices across the Latin Diaspora. Students also continue learning about the complex origins of Samba and Salsa and how they arose out of histories of persecution, enslavement, migration, and a deep desire to hold onto tradition and celebrate life in the face of great injustice. Students attend off-campus community dance events, participate in weekly movement practice, lectures, reading and writing assignments, and keep an embodiment journal.

Prerequisite: Prerequisite(s): THEA 31L, or by permission of instructor.

THEA 131X - Advanced Contemporary Forms and Practices Within a Global Dance Context (6)

Global Seminar exploring movement and choreographic practices, situating students' personal experiences within their counterparts from around the world. Students travel to Paris and Lyon to participate in an international dance festival. Students co-create an original work prior to the departure date to be presented at the festival. Students lead a peer-to-peer class via movement practices, choreography, or improvisation. This course immerses dancers into advanced levels of contemporary dance practice, continuing the exploration that began in THEA 31C and 131C into more nuance, greater perceptual skills, and deeper access to dynamic range of motion.

THEA 135 - Choreography I (5)

Students explore sources for movement; gain expressivity in a wide range of movement elements; work in ensemble and solos; and explore the use of scores to develop collaborative skills.

Prerequisite: Prerequisite(s): THEA 36 or by permission of the instructor.

THEA 136 - Choreography II (5)

Advanced study, exploration, and analysis of choreographic form and content. Solo, duet, and group work are created with a focus on developing the creative process, interpreting styles and trends, and knowledge of compositional devices and generative movement practices. Enrollment by permission of instructor.

THEA 137 - Studies in Performance (Dance) (5)

Studies in dance, taken in connection with performance in a major dance concert. Students are required to work on all aspects of the production. Students work with guest and faculty choreographers. May be repeated for credit with consent of instructor. Admission by audition held late winter quarter; see department office for more information.

THEA 137A - Studies in Performance (Dance): Asian (5)

Studies in Asian or Asian diasporic dance theory and practice, taken in connection with performance in a major dance concert. Students are required to work on all aspects of the production. Students work with guest and faculty choreographers.

Prerequisite: Prerequisite(s): THEA 31A or by permission of the instructor. Concurrent enrollment in THEA 131A is required.

THEA 139 - Random: With a Purpose (5)

Participation in a student-choreographed and directed dance concert under faculty supervision. Rehearsals culminate in public performances. Auditions to be held on the first day of class.

THEA 141 - Play Direction Studio I (5)

Basic studio exploration through scene problems and exercises of the development of directing principles. Intensive work on the director's pre-rehearsal work from text selection, analysis, and casting. Audition at first class. (Formerly Future Stages.)

THEA 142 - Play Direction Studio II (5)

Intensive studio exploration of the art and craft of directing. Primary focus on text analysis, collaboration with designers, developing a point of view and visual/auditory language for the play, staging techniques, and communication techniques with actors.

Prerequisite: Prerequisite(s): THEA 40, or THEA 141, or permission of instructor.

THEA 145R - From Hamlet to Hamilton: Performing Rhythm and Rhyme in the Twenty-first Century (5)

This acting studio is an introduction to the skills needed in the performance of rhythmic and rhyming texts. Explores the similarities and differences in the use of rhythm and rhyme between Shakespeare and the contemporary playwright Lin-Manuel Miranda. No acting experience or audition is needed to enroll.

THEA 150 - Pre-production (2)

Students participate in a pre-production course working toward a faculty-directed full stage production or a student-directed full stage production under faculty supervision. Course culminates in public performances the following quarter. Students cast as actors or chosen in design roles for this course will have the right of first refusal as to whether they want to enroll and continue with the full THEA 151 or THEA 45 production course the following quarter. Enrollment is by permission of the instructor.

THEA 151 - Studies in Performance (Drama) (5)

Studies in theater, taken in connection with participation in a Theater Arts Department sponsored production. Enrollment is limited to those persons chosen to take part in a particular production. Admission by audition; audition schedule to be announced at first class meeting.

THEA 151A - Studies in Performance: African American Theater Arts Troupe (5)

Studies in drama; emphasis on African American theater taken in connection with participation in a theater arts sponsored production. Enrollment by audition only, and limited to those persons chosen to take part in a particular production.

THEA 151I - Studies in Performance: Indonesian Dance and Drama (5)

Studies in drama; emphasis on Indonesian theater taken in connection with participation in a theater arts sponsored production. Enrollment by audition only, and limited to those persons chosen to take part in a particular production.

THEA 152 - Advanced Stagecraft (5)

Exploration of stage technology from the scene shop's perspective. Conversion of scenic designs to construction drawings. Pursuit of scenic-engineering and construction techniques using steel, wood, and other materials. Training on use of stage machinery: rigging, flying, wagons, tracking, and propulsion.

Prerequisite: Prerequisite(s): THEA 52.

THEA 154 - Shakespeare Santa Cruz: Writing in Response to the Bard (5)

Uses writing to respond to Shakespeare Santa Cruz's summer productions. Requires frequent assignments, such as reviews, interviews, performance notes, comparisons of productions, background pieces, and reflective essays. Students regularly revise work in response to instructor and peer feedback.

Prerequisite: Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements.

THEA 155 - Shakespeare to Go (5)

A process-oriented investigation of Shakespeare consisting of work which may culminate in a final production. Requires a two-quarter committment (winter and spring) with credit given in winter and touring in spring. Admission by audition at first class meeting.

THEA 157 - Playwriting (5)

Students are given the opportunity to write their own scripts and refine them as the result of class discussion and scenework with actors. Work is on specific problems involving such elements as the structuring of a plot or the development of character.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

THEA 158 - New Play Festival (5)

Provides playwrights, directors, writers, and performers an opportunity to develop new works in progress and to become familiar with the process of how new works for the stage are written, revised, and presented. The class culminates in a staged reading/workshop performance in the department's New Play Festival near the end of the quarter. This course is open to students with all levels of theatrical/performance experience. Playwrights and projects are selected on the basis of submissions made in the previous quarter.

THEA 159 - Advanced Playwriting (5)

Advanced study, through writing practice, of craft elements in the construction of dramatic work for the stage. Students experiment with the construction of a full-length play and the development of their individual writing process through organization of complex plots, characters, dialogue, structures, poetics and other worldmaking tools.

Prerequisite: Prerequisite(s): THEA 157 or an equivalent from creative writing, and satisfaction of the Entry Level Writing and Composition requirements.

THEA 160 - Dramatic Theories (5)

An examination of the theories of acting and directing from the 19th century to our own time, starting with the classic theater and concentrating on the 20th-century debate centered in Stanislavski and Brecht, Grotowski, and Robert Wilson.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

THEA 161 - Advanced Dramaturgy (5)

Teaches the art and science of dramaturgy. Dramaturgy refers to the accumulated techniques that all theatrical artists employ to determine the aesthetic architecture of a piece of dramatic literature; discover everything needed to transform the inert script into a living performance; and apply that knowledge in a way that makes sense to an audience. Prerequisite THEA 160 may be used to satisfy a theater arts minor requirement. THEA 160 is typically taken in junior year but may be taken earlier if a student feels ready and wants to be able to take THEA 161 earlier. Taking both classes best prepares students to undertake dramaturgical work on theatrical productions.

Prerequisite: Prerequisite(s): THEA 160.

THEA 161A - Irish Theater (5)

Examines the idea of a National Theater in Ireland from its beginnings in the founding of the National Literary Society in 1892 to the current vitality of the contemporary Irish Theater.

THEA 161B - Black Women and Diasporic Theatrical Expression (5)

Introduction to the landscape of playmaking, theatrical production, and interdisciplinary performance art by women in the African Diaspora/Black Women in the United States and beyond. Course includes close reading, analysis and discussion of play scripts, poetry, related theoretical and historical readings, film and theatrical/performance art presentations. Also includes exploration of individual student artistic practice. Themes explored include: Black women and feminism, ritual as performance, meditations on the lived experience(s), identities and cultural values of Black women in the diaspora. Enrollment is by permission of the instructor. For enrollment details, please see the Class Notes section in the Schedule of Classes Class Search when the course is offered, or contact the instructor or the Theater Arts program for information.

THEA 161C - Theater and Drama of the Renaissance (5)

Examines selected plays from the Renaissance (1580-1680, Italy, Spain, England, and France) from a theatrical viewpoint. Covers Renaissance theater buildings and related critical materials. (Formerly The Theater and Drama of Renaissance Europe.)

THEA 161D - Asian Theater: An Anthropological Approach (5)

Art serves simultaneously to educate its audience to the group's traditional values and to test new ideas. Indian, Indonesian, and Japanese forms are studied in relation to their cultural context. Through videotapes, lecture demonstrations, performances, and scenework, students explore the forms.

THEA 161E - Mass Performance (5)

Explores the phenomenon of mass performance--when thousand of people perform the same thing at the same time. From political festivals, such as those of the French Revolution, to flash mobs, and covering the 19th century craze of mass gymnastics as well as Olympic opening ceremonies, the course analyzes the ideas and techniques behind mass performance. Students sharpen their critical skills in analyzing performance by working with texts, videos, live performance, and archives.

THEA 161H - Shakespeare In Asia (5)

Shakespeare takes life in Asian reinterpretations that revivify languishing genres, duck political censorship, and explore new theatrical worlds. Indian, Japanese, Chinese, and Southeast Asian Shakespeares (1868 to the present) are introduced via lecture, critical reading, videos, and scene work.

THEA 161M - Sexuality, Gender, Drama, and Performance (5)

Exploration and analysis of the interrelationships between gender, sexuality, and performance on stage and on the page. Topics include gender and homosexuality in the history of performance and dramatic literature, drag, queer Shakespeare, closet drama, same-sex performance conditions (e.g., Greece) vs. dual-gendered (e.g., Restoration England). Combines study of theoretical texts and script with analysis and practice.

THEA 161P - Theater in the Chicano Power Movement (5)

Covers the rise of Teatro Chicano as a cultural-political force within the 1960's Chicano Power Movement starting with founding playwriter Luis Valdez and El Teatro Campesino and covering Chicana/o playwrights inspired by the movement, e.g. Cherrie Moraga, Luis Alfaro, and Josefina Lopez.

THEA 161Q - Queer Theatricks: Representations and Sensibilities (5)

An examination of the idea, form, and significance of queer/gay sensibility and representation in the English-speaking theater from the Renaissance to the present.

THEA 161R - Theatre of American Cultures: Fighting

Oppression (5)

Course uses theory and practice to explore Theater of the Oppressed (T.O.), a humanist theatrical form with its roots in social justice that breaks the boundary between audience and stage. Through audience participation as "spect-actors" everyone is invited to move from passive to active to imagine and embody social change. Led by jokers, who "difficultate" rather than "facilitate," T.O. has been used by groups around the world to explore, understand, and fight back against a wide range of oppressions. Students practice the games, techniques, methodology, and practical application of this activist theater form, explore the oxymoron of a T.O. class at UCSC, and discover what is possible when we become active creators of knowledge through theater. (Formerly Theater of American Cultures.)

THEA 161S - American Drama: Politics and Theater (5)

The dream of group theater, a long-term partnership of actors, directors, and playwrights, has fueled extraordinary and exciting change in the 20th-century American theater theory and practice. We examine ten exemplary manifestations of this dream.

THEA 161T - Women in Theater (5)

Explores female playwrights from textual, historical, and multicultural perspectives. Progresses from Trifles (1916) through the Harlem Renaissance, Broadway's Lillian Hellman, and today's post-feminist theatrical explosion in lectures, films, dramatizations, and award-winning playwrights' visits.

THEA 161U - Performance of Story in Theater and Film (5)

Examination of theory and practice of theater and film comparing and contrasting works having been adapted from one genre to another. Lecture, film, and video viewing. Discussions of materialist, psychoanalytic, and feminist approaches shared. Students cannot receive credit for this course and THEA 80X.

THEA 161X - Experimental Performance (5)

Investigates the world of experimental performance, sharpening critical skills in reading texts, videos, live performance, and archives. The focus will be on modes of performance that broke with their contemporary norms, including dance, theater, puppetry, and other gatherings.

THEA 161Y - Modern Ancient Drama (5)

Studies 20th- and 21st-century productions and adaptations of ancient Greek and Roman drama in theater, dance, music, and film, including Stravinsky, Graham, Pasolini, and Taymor. Discusses artists' goals, the sociopolitical context, ideas of authenticity and audience response.

THEA 163A - Shakespeare (5)

Focuses on selected plays of Shakespeare. Explores the range and variety of interpretations of the plays, both in critical writings and in performance. Also studies other writings and graphic art created on the subjects and themes of the plays.

THEA 163E - Chekhov and His Impact (5)

Delves into the work of Chekhov and the Moscow Art Theater. Stanislavski's acting techniques are related to the scripts through scene work. The impact on later Russian innovators, especially Meyerhold, and on the American theater is considered.

THEA 163G - Special Studies in Playwrights: Artaud (5)

Antonin Artaud through three critical lenses: influence on modern and contemporary theater, subject and site of psychoanalytic and social criticism, and theater practitioner. Exercises cultural, historical, and analytic approaches to his work. Prerequisite: THEA 160 recommended.

THEA 163H - Henrik Ibsen and His Impact: Ghosts of the Future (5)

Examines representative texts of Ibsen's work: early plays, realistic middle plays, and late plays. The cultural/historical context of Ibsen's oeuvre is considered as well as its impact, through contemporary translations and productions, on subsequent theater theory and practice.

THEA 163K - Special Studies in Playwrights: Euripides (5)

Examines the works of the classical Athenian tragedian Euripides. The class undertakes a thorough consideration of the playwright's plays in cultural, historical, theatrical, and literary context.

Prerequisite: Prerequisite(s): THEA 61A or permission of the instructor.

THEA 164 - Issues in Dance History and Theory (5)

A research seminar. Topics range from critical dance cultures, cognitive dance studies, problems in dance aesthetics, criticism, or theory to particular movements, periods, or the work of a choreographer. Discussions may be supplemented by a movement practice component.

THEA 165 - Dance Modernism (5)

An overview of 20th-century dance within the perspective of modernism. Topics may include romanticism, natural dance, Orientalism, Ausdruckstanz, U.S. modern dance and neo-classicism, chance procedure, postmodernism, the avant-garde commodity marketplace, and critical dance cultures. Discussions may be supplemented by a movement practice component.

THEA 166 - Ballet: A History (5)

Chronological critical and historical overview of ballet as a form of ethnic dance from its European origins to the present. Focus is on development of form in Americas and Asia as it crossed with other socio-culturally constructed categories such as race, gender, class, and sexual orientation. Discussions may be supplemented by a movement practice component.

THEA 167 - Africanist Aesthetics: Live Dialogues in the

Americas and Africa (5)

Examines the transnational currents in expressive culture and the performing arts among the peoples of Africa and Latin America, and Latinos and African Americans in the United States.

THEA 168 - Disability and Performance (5)

Examines key issues and artistic works related to disability and performance through an intersectional lens. Topics may include careworlds, access aesthetics, enfreakment, race, gender, sexuality, eco-crip embodiments, chronic illness and capitalism.

THEA 185 - Senior Seminar (5)

A required seminar for majors involving readings and discussions of important texts in dance, design, and drama.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

THEA 190 - Group Projects (5)

Prerequisite(s): petition required, approved by instructor and department.

THEA 192 - Directed Student Teaching (5)

Teaching a lower-division seminar under faculty supervision. (See THEA 42 and THEA 45). Petition required, approved by instructor and department.

THEA 193 - Proseminar (5)

Exposes students to an aspect of the theory or practice of theater arts. Visiting scholars share their area of expertise in lectures to a small group of students.

THEA 193F - Proseminar (2)

Exposes students to an aspect of the theory or practice of theater arts. Visiting lecturers share their area of expertise in lectures to a small group of students.

THEA 198 - Independent Field Study (5)

Provides for department-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students engaging in field study must complete application procedures for such study by the fifth week of the previous quarter. Petition required, approved by instructor and department.

THEA 198F - Independent Field Study (2)

Provides for department-sponsored individual study programs off campus for which faculty supervision is not in person (e.g., supervision is by correspondence). Students engaging in field study must complete application procedures for such study by the fifth week of the previous quarter. Petition required, approved by instructor and department.

THEA 199 - Tutorial (5)

Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency.

THEA 199F - Tutorial (2)

Individual study in areas approved by sponsoring instructors. Students submit petition to sponsoring agency.

Graduate

THEA 251 - Graduate Student Production (5)

Participation by a graduate student in a departmental production of a play, dance concert, or other performance event under supervision of the Instructor-of-Record. Rehearsals culminate in public performance. Enrollment is restricted to graduate students and determined by audition with the instructor and in consultation with the director of graduate studies.

THEA 290A - Research Methods for Performance and Practice (5)

Introduces the emergent professional artist-scholar into the discipline of what is called practice-as/practice-based/practice-led research in performance and new media. Explores the rationales, conceptual frameworks, and perils that underpin research based on the researcher's own creative endeavors, and that enable the researcher to place their own practice within larger artistic and theoretical paradigms in a written document. (Formerly offered as Text Analysis.)

Prerequisite: Enrollment is restricted to graduate students in theater arts.

THEA 290B - Practice of Theory (5)

Contextualizes major movement in performance. Students are exposed to a wide range of historical and visual material pertinent to the creation of theater and dance. A final paper is required. (Formerly offered as Performance Histories.)

Prerequisite: Enrollment is restricted to graduate students in theater arts.

THEA 290C - Performance Analysis (5)

Examines the production approaches of a range of performance practitioners, production companies, and performance traditions. Includes exercises in analysis and reconstruction of performance. A final reconstruction project is required.

Prerequisite: Enrollment is restricted to graduate students in theater arts.

THEA 291 - Field Study (5)

Student-designed and conducted research carried out in field settings. A brief prospectus must be filed with the department office before undertaking the research, and a brief final report of activities must be filed upon return. Course intended for students with graduate standing in theater arts. Petition required, approved by instructor and department.

THEA 292 - Teaching-Related Independent Study (5)

Directed graduate research and writing coordinated with the teaching of undergraduates. Course intended for graduate students in theater arts. Petition required, approved by instructor and department.

THEA 293 - Performance Research Project (10)

Internship with a professional theater company in the student's area of emphasis. This work will have a significant academic component supervised and assessed by a theater arts faculty member during the quarter it is taken. Enrollment restricted to graduate students.

THEA 294 - Future Stages (5)

Working in an experimental theater with access to new performance technologies, course explores how cross-media practice can expand on basic theatrical relationships in new and culturally relevant ways.

Prerequisite: Enrollment is restricted to graduate students.

THEA 295 - Group Critique (5)

Peer review and constructive assessment of works in progress. Students are required to give individual presentations to the group at least once a quarter. Educational objectives are to develop the ability to articulate themes and ideas in student's body of work; to strengthen critical skills in making, evaluating, and discussing theater art; to explore the role of the audience in context and criticism; and to investigate the ways artists construct, use, and maintain support communities.

Prerequisite: Enrollment is restricted to graduate students.

THEA 297 - Independent Study (5)

Independent study or research for graduate students in theater arts. Petition required, approved by instructor and department.

THEA 297F - Independent Study/Graduate (2)

Independent study or research for graduate students in theater arts. Petition required, approved by instructor and department. Enrollment restricted to graduate students in theater arts.

THEA 299 - Capstone Thesis (5)

Involves participation in a major collaborative performance project (either faculty-directed or graduate student-directed with faculty supervision) or a research project group. Includes a written thesis, though the length will vary depending upon the student's particular emphasis.

Prerequisite: Enrollment is restricted to graduate students.

TIM-TECHNOLOGY INFORMATION MANAGEMENT

To view planned offerings for the current academic year, please visit this page.

Lower-Division

TIM 50 - Business Information Systems (5)

Addresses the use of information systems (IS) within a business enterprise. Subjects include computer hardware and software concepts, system design and implementation, telecommunications, data management, transaction-based systems, management information systems, and the use of IS to compete. Intended for technology and information management and business management economics majors. (Formerly CSE 50.)

TIM 58 - Systems Analysis and Design (5)

Students learn how information technology is used to deal with business requirements and/or solve business problems. Provides an understanding of structured computer systems analysis and design methodologies and techniques and their application to business information systems. Intended for technology and information management and business management economics majors. (Formerly CSE 58.)

Prerequisite: Prerequisite(s): TIM 50.

TIM 80C - Starting a New Technology Company (5)

Focuses on the creation and management of technology start-ups and small companies, using case studies and team projects as the basis for learning and applying the course materials. (Formerly CSE 80C.)

Upper-Division

TIM 147 - Introduction to Data Mining for Business (5)

Introduces concepts, approaches, tools, methods for extracting useful knowledge and business value from data for business applications. Covers predictive models, descriptive models, model fitting, model overfitting, complexity, visualization, text mining, association mining, analytical thinking. Other topics may include social network mining, data science and business strategy. Students cannot receive credit for this course and CSE 145.

Prerequisite: Prerequisite(s): CSE 20 and CSE 30; and CSE 16; and MATH 22 or MATH 23A or AM 30; and STAT 5, or STAT 7 and 7L; and AM 10 or MATH 21; and AM 20 or MATH 24.

TIM 150 - Optimization for Management (5)

Introduction to optimization theory, numerical algorithms, and applications focused on operations research topics. The course content includes: linear programming, integer programming, non-linear programming, and an introduction to relevant simulations.

Prerequisite: Prerequisite(s): AM 10 or MATH 21, and AM 30 or MATH 22 or MATH 23A.

TIM 170 - Management of Technology Seminar (2)

Uses weekly talks by leading industry practitioners and university researchers to provide in-depth exposure to the

management of technology. Topics covered include product development, operations, strategy, finance, and marketing for technologies such as software and information systems. (Formerly CSE 170.)

TIM 172A - Introduction to Management of Technology I (5)

Addresses strategic, engineering, marketing, and financial processes and tools for the management, development, and commercialization of high-tech products. Declared TIM majors must concurrently enroll in TIM 172P to fulfill the capstone series. (Formerly CSE 171A.)

Prerequisite: Prerequisite(s): MATH 19B or MATH 20B or MATH 11B or AM 11B or ECON 11B.

TIM 172B - Introduction to Management of Technology II (5)

Addresses the development and application of processes and tools for the management, design, optimization, and operation of supply chain networks for high-tech products. Declared TIM majors must concurrently enroll in TIM 172Q to fulfill the capstone series. (Formerly CSE 171B.)

Prerequisite: Prerequisite(s): TIM 172A.

TIM 172P - Management of Technology Project I (3)

First of a two-course project sequence in which students apply the knowledge and skills gained in TIM 172A to complete the first part of a major quarter-long comprehensive team project in the management of technology. In this course, taken concurrently with TIM 172A, the team project focus is on the management, design, and commercialization of a new product within a high-tech company. TIM 172A and TIM 172P together form the first part of the required management of technology comprehensive requirement for the TIM B.S. major.

Prerequisite: Prerequisite(s): concurrent enrollment in TIM 172A. Enrollment is restricted to Technology and Information (TIM) majors.

TIM 172Q - Management of Technology Project II (3)

Second of a two-course project sequence in which students apply the knowledge and skills gained in TIM 172B to complete the second part of a major comprehensive team project in the management of technology. In this course, taken concurrently with TIM 172B, the team project focus is on the supply chain management for the new product developed in TIM 172P. TIM 172B and TIM 172Q together form the second part of the required management of technology comprehensive requirement for the TIM B.S. major.

Prerequisite: Prerequisite(s): TIM 172A and TIM 172P. Concurrent enrollment in TIM 172B is required.

TIM 173 - Financial Engineering and Management in High Technology Firms (5)

Addresses methods and tools for financing technology development and projects. Includes approaches for coordinating finance and accounting with strategy and operations of firms; discounted cash-flow analysis; activity-based costing; financial planning; and elements of financial account and investment science. (CSE 173.)

Prerequisite: Prerequisite(s): ECON 113 or STAT 131 or CSE 107 or by instructor permission.

TIM 175 - Business Strategy and Information Systems (5)

Analysis of effective use of information systems within a business enterprise, with emphasis on gaining a competitive advantage. Integration of information systems with business strategy, financial justification, personnel, and organizational considerations are highlighted. Intended for technology and information management majors or senior engineering majors who have a business interest. (Formerly CSE 175.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; and TIM 50 or permission of instructor.

TIM 193 - Field Study (5)

Provides individual programs of study with specific academic objectives carried out under direction of faculty member of Technology and Information Management and a willing sponsor at field site. Uses resources not normally available on campus. Credit based on presentation of evidence of achieving objectives by submitting written and oral presentation. Students submit petition to sponsoring agency.

TIM 193F - Field Study (2)

Provides individual programs of study with specific academic objectives carried out under direction of faculty member of Technology and Information Management and a willing sponsor at field site. Uses resources not normally available on campus. Credit based on presentation of evidence of achieving objectives by submitting written and oral presentation. Cannot normally be repeated for credit. Students submit petition to sponsoring agency.

TIM 194 - Group Tutorial (5)

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

TIM 194F - Group Tutorial (2)

A program of independent study arranged between a group of students and a faculty member. Students submit petition to sponsoring agency.

TIM 195 - Senior Thesis Research (5)

Intended for majors. Students submit petition to sponsoring agency.

TIM 195F - Senior Thesis Research (2)

Intended for majors. Students submit petition to sponsoring agency.

TIM 198 - Individual Study or Research (5)

Intended for majors. Students submit petition to sponsoring agency.

TIM 198F - Individual Study or Research (2)

Intended for majors. Students submit petition to sponsoring agency.

TIM 199 - Individual Study or Research (5)

Individual directed study for upper-division undergraduates. Enrollment is restricted to senior technology and information management majors. Students submit petition to sponsoring agency.

UCDC - UCDC

Upper-Division

UCDC 100 - UCDC Prep (Remote) (1)

Prepares and orients students to participate in UCDC the next quarter. Guides them through all the required steps needed to search out internships of interest, prepare application materials, hone interview skills, choose and be prepared for UCDC courses, and get the most out of their internships. Also informs students about the support services and other programming the UCDC program offers to ensure successful experiences in the program. Enrollment is by permission and is restricted to students accepted into the UCDC program for the following term. This course can be taken for Pass/No Pass grading only.

UCDC 194A - UCDC Core Seminar (5)

Seminar supplementing the UCDC internship experience taught by UCDC instructors, local Washington experts, and visiting UC professors. Students may choose the seminar that best suits their interests or internship. Seminars may have a topical focus, such as Congress, the Supreme Court, the media, the presidency, elections, and international relations, or may focus on the production of a research paper on a topic related to the student's internship. Required for, and enrollment is restricted to, students participating in the UCDC Program. (Formerly offered as UCDC Internship Research Seminar.)

UCDC 194B - UCDC Internship (7)

A 30- to 36-hour-per-week internship in a Washington, D.C., government, non-profit, or private institution. Required for and enrollment is restricted to UCDC program participants.

UCDC 199 - Tutorial (5)

A program of directed study arranged with a Social Sciences Division faculty member. Enrollment is restricted to participants in the UCDC program.

UCDC 199F - Tutorial (2)

A program of directed study arranged with participating faculty. Class time is proportionally less than a 5-credit course. Enrollment is restricted to participants in the UCDC program.

VAST-VISUALIZING ABOLITION STUDIES

For information on courses offered through the Visualizing Abolition Studies (VAST) program, see the catalog's VAST Certificate Program.

Courses Folder

VAST 188J - Curation and Justice (5)

How does cultural and political change happen? What role can cultural institutions play in meeting the social, political, and ecological challenges of our times? This interdisciplinary course explores curation as a place for critical engagement with pressing social and political issues including prison abolition and climate destruction, using the current exhibitions and programs at the Institute of the Arts and Sciences as a case study.

VAST 199 - Independent Study (5)

Students work with faculty to develop an agreement that outlines learning objectives, assignments, and assessment for an individual study. To enroll, students submit a petition to the faculty director of the Visualizing Abolition Studies Certificate Program that includes the student/faculty agreement.

WRIT - WRITING

Lower-Division

WRIT 1 - Introduction to Composition (5)

Provides declarative knowledge and procedural knowledge about writing, with a special focus on genre, rhetorical situation, revision, editing, and making connections between texts and one's own perspective.

Prerequisite: Prerequisite(s): WRIT 26; or AWPE score of 2-6 or AWPE for Multilingual Students (AWPE-MLS) score of 6; or course selection via Directed Self-Placement.

WRIT 1E - Introduction to Composition (5)

Provides declarative knowledge and procedural knowledge about writing, with a special focus on genre, rhetorical situation, revision, editing, and making connections between texts and one's own perspective. Designed to support multilingual learners.

Prerequisite: Prerequisite(s): WRIT 26; or AWPE score of 2-6 or AWPE for Multilingual Students (AWPE-MLS) score of 6; or course selection via Directed Self-Placement.

WRIT 2 - Rhetoric and Inquiry (5)

Provides declarative knowledge about writing, with a special focus on writing from research, composing in multiple genres, and transferring knowledge about writing to new contexts.

Prerequisite: Prerequisite(s): WRIT 1, WRIT 1E, satisfaction of the Entry Level Writing Requirement, or course selection via Directed Self-Placement.

WRIT 2GS - WRIT 2GS Rhetoric & Inquiry, Global Seminar (6)

Provides declarative knowledge about writing, with a special focus on writing from research, composing in multiple genres, and transferring knowledge about writing to new contexts. Taught as a Global Seminar in Ireland.

Prerequisite: Prerequisite(s): College 1 and satisfaction of the Entry Level Writing; or College 80A, 80D, or 80F and satisfaction of the C1 requirement. Enrollment is restricted to frosh, sophomore and junior students.

WRIT 2H - Rhetoric and Inquiry, Honors (5)

Provides declarative knowledge and procedural knowledge about writing, with a special focus on writing from research, composing in multiple genres, and transferring knowledge about writing to new contexts. Designed for advanced students.

Prerequisite: Prerequisite(s): WRIT 1, WRIT 1E, satisfaction of the Entry Level Writing Requirement, or course selection via Directed Self-Placement. Enrollment is restricted to College Scholars or by instructor permission.

WRIT 11A - Adjunct Tutorial in Writing (2 credits per quarter) (2)

A tutorial designed to provide follow-up assistance in writing for students who have passed the Entry Level Writing Requirement, but wish to continue to work on various aspects of their writing. Counts only for academic standing and financial aid purposes, but does not apply toward degree requirements (i.e., counts as workload credit only). Prerequisite(s): approval of the Writing Program; satisfaction of the Entry Level Writing Requirement.

WRIT 11B - Adjunct Tutorial in Writing (2 credits per quarter) (2)

A tutorial designed to provide follow-up assistance in writing for students who have passed the Entry Level Writing Requirement, but wish to continue to work on various aspects of their writing. Counts only for academic standing and financial aid purposes, but does not apply toward degree requirements (i.e., counts as workload credit only). Prerequisite(s): approval of the Writing Program; satisfaction of the Entry Level Writing Requirement.

WRIT 11C - Adjunct Tutorial in Writing (2 credits per quarter) (2)

A tutorial designed to provide follow-up assistance in writing for students who have passed the Entry Level Writing Requirement, but wish to continue to work on various aspects of their writing. Counts only for academic standing and financial aid purposes, but does not apply toward degree requirements (i.e., counts as workload credit only). Prerequisite(s): approval of the Writing Program; satisfaction of the Entry Level Writing Requirement.

WRIT 23 - Grammar and Rhetoric: Language for Writing (5)

Builds on writing skills gained in previous writing courses; focuses on effective language use in academic writing. Students reinforce their written English proficiency by reading, studying, practicing, and writing structures and patterns of written English.

Prerequisite: Enrollment is restricted to fourth-quarter students who have not passed the Entry Level Writing Requirement. Open to others by permission of instructor.

WRIT 25 - Writing About Place (5)

Students explore the UCSC discourse community including classroom culture, then widen their lens to include the larger Santa Cruz community. Writing moves beyond the paragraph level to include oral communication and presentation skills.

Prerequisite: Prerequisite(s): AWPE-MLS score of 2 or 3; or course selection via Directed Self-Placement.

WRIT 26 - Writing About Language (5)

Students explore language acquisition and how to best optimize their own language learning by engaging in a primary research project. Through the research project, students learn to use academic discourse conventions in their own writing.

Prerequisite: Prerequisite(s): WRIT 25, AWPE-MLS score of 4 or 5, or course selection via Directed Self-Placement.

WRIT 30 - Genre Study: STEM (2)

Engages students in an examination of the textual practices and products (genres) through which knowledge in science, technology, engineering, and mathematics (STEM) fields is created, documented, and disseminated. Enrollment is by interview only and restricted to Summer Academy, first-year participants.

WRIT 64 - Newswriting Workshop (5)

Introduction to the basic techniques of newswriting, including practice in leads, formats, and different kinds of news reporting. Emphasis on developing skills in research, interviewing, and shaping stories. Includes an examination of the contemporary media. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements, instructor determination at first class meeting.

WRIT 70 - Communication and Rhetoric: An Introduction (5)

This course introduces the field of contemporary communication studies, locating its roots in rhetoric and showing how key concepts play out in mass media and other settings as well as in everyday life.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing requirement.

WRIT 93 - Field Study (5)

For lower-division students: supervised study within commuting distance of campus. May include internships at

magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Prerequisite(s): satisfaction of the Entry Level Writing requirement; certification of adequate preparation; approval of Writing Program.

WRIT 93F - Field Study (2)

For lower-division students: supervised study within commuting distance of campus. May include internships at magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Students submit petition to sponsoring agency.

WRIT 99 - Tutorial (5)

Individual, directed study for lower-division students in expository writing, editing, or journalism. Students submit petition to sponsoring agency.

WRIT 99F - Tutorial (2)

Individual, directed study for lower-division students in expository writing, editing, or journalism. Students submit petition to sponsoring agency.

Upper-Division

WRIT 101 - Introduction to the History, Theory, and Practice of Rhetoric (5)

A survey of classical and contemporary ideas about rhetoric which explores, practically and theoretically, the best means of persuasion in any situation whatsoever and will consider the nature of human discourse in diverse areas of knowledge.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 102 - The Rhetoric of the Social Sciences (5)

Develops rhetorical facility in disciplinary writing for upper-division social science majors. Requires critical and disciplinary reading, writing in modes appropriate to social science disciplines, and a substantial research or critical paper within the student's own discipline.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 104 - Writing in the Arts (5)

A writing course focusing on the purposes and composition of various genres of writing about and in the performing arts, visual arts, and music such as reviews, program and exhibit notes, journal and magazine articles, grant proposals, and press releases.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 106 - Public Speaking (5)

Explores the theory and practice of rhetoric as it applies to writing for oral delivery. Students analyze and produce instances of public speaking in a variety of genres to different audiences.

WRIT 107 - Technical and Business Writing: An Overview (5)

An exploration of the conventions and formats of business and technical writing. Coursework involves writing effective resumes, proposals, letters, end-user manuals, and the fundamentals of Web site design.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 108 - Electronic Communication (5)

An introduction to the evolving conventions of effective Web site design as well as collaborative writing. Coursework includes evaluation of Web site content and structure and creation of hypertext.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 109 - Argument and Practical Reasoning (5)

An investigation of contemporary persuasive discourse with special attention to the elements and forms of argument, the nature of evidence, questions of validity and probability, and the workings of rhetorical reasoning. Emphasizes the analysis of arguments rather than their construction.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 110A - Writing in the Professions (5)

Study of writing required in the selected professions, including law, politics, and government. Considers the rhetoric of each discipline and relevant texts. Includes lectures from visiting professionals and a series of writing assignments based on reading and research. Topic may vary from year to year, focusing on the rhetoric of other professional divisions: medicine, engineering, economics, and so forth.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 120 - Editing English Prose (5)

This course offers extended, detailed instruction in editing one's own and other people's prose for accuracy, clarity, appropriateness, and effectiveness. It provides some history of theories of style and stylistic analysis, and instruction in prose variation according to social context.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 130 - Writing and Identity (5)

Explores how discourse (spoken and written) constructs, maintains, marginalizes, and contests our various and intersecting identities such as race and ethnicity, gender, sexual orientation, regionality, and social class. Using interdisciplinary theories and methods and drawing upon linguistic anthropology, semiotics, sociology, education, and

rhetoric, students explore the social processes of systemic identity formation. Students reflect upon, and write about, the social forces at work constructing their own identities and the identities of their various social and cultural communities.

WRIT 140 - Dangerous Rhetorics (5)

Explores rhetoric's role in shaping history and society, with a particular focus on texts and rhetorical activity that have disrupted societal norms and driven significant social transformations. Students examine rhetoric as a tool for understanding human cognition, emotions, and behaviors and use rhetorical methodologies to examine how rhetorical actions can influence public opinion and human interaction.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 150 - Composing Change (5)

Examines the use of writing as a tool for social change. Course features readings and assignments based around developing a biography of an activist, composing an autoethnography, and planning an advocacy-focused event. Overall, the course features various writing projects composed in multiple modalities. Students critique, and collaboratively produce, writing projects that facilitate social change.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing Requirement and Composition requirements.

WRIT 159 - Grammar for Tutors and Teachers (3)

English grammar from a pedagogical perspective, emphasizing structures, patterns, and conventions of written English that commonly challenge basic writers. Students learn strategies for helping multilingual and other writers improve their writing skills by increasing their awareness of grammar.

Prerequisite: Prerequisite(s): WRIT 169, or by instructor permission.

WRIT 160 - Writing, Design, and Technology (5)

Examines the use of writing as a technology that has fundamentally shaped the world, human cognition, human interaction with each other and the world. Topics covered include rhetorical concepts germane to the analysis of writing as a technology and corresponding rhetorical practices.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing Requirement and Composition requirements.

WRIT 161 - Academic Writing and Research Methods (5)

Combines rhetorical concepts and research methods commonly used in writing studies. Students design an original project using primary and secondary research methods, develop research questions, create data collection tools, analyze findings rhetorically, and produce scholarly writing contributing to the field.

WRIT 163 - Creative Rhetoric and Composition (5)

Course provides advanced study in composition, including analytical writing and university-level research, drafting and revising, and creative nonfiction. It continues the work of composition, building upon what is learned in WRIT 2. Course is appropriate for all undergraduates and may be beneficial for transfer students wanting more training in university research and writing. (Formerly Advanced Workshop in Expository Writing.)

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 166D - Minorities in Journalism (5)

Focuses on the minority press and how it has shaped journalism in the U.S. as well as viewing how the media has dealt with this segment of our society. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements and consent of instructor.

WRIT 166J - Online Journalism (5)

A course in using electronic sources to report articles for publication and in publishing journalistic pieces online. Prerequisite(s): WRIT 64 or journalism experience; instructor determination at first class meeting.

WRIT 166N - The Rhetoric of Radio (5)

Examines the theory and practice of radio. Students explore how the formats of radio create its meaning, and investigate radio's place in the landscape of the media, particularly in the U.S. and Mexico. Prerequisite(s): satisfaction of the Entry level Writing and Composition requirements and consent of instructor.

WRIT 169 - Theory and Practice of Tutoring Writing (5)

Course offers an introduction to the theories and practices of peer tutoring in writing with an emphasis on developing effective strategies for serving UC Santa Cruz's diverse undergraduate population. Students engage in service learning by conducting observations of tutoring sessions and, eventually, by leading tutoring sessions. This course is ideal for students interested in writing pedagogy, education, and tutoring. Prerequisite(s): C Requirement and enrollment by permission of the instructor. Satisfies the Process: Service Learning (PR-S).

WRIT 170 - Rhetoric, Language, and Power (5)

Examines the ways that language use shapes, influences, and reflects societal power structures. The curriculum moves beyond a singular perspective and encourages students to engage with a diversity of rhetorical practices and traditions.

Prerequisite: Prerequisites: satisfaction of the Entry Level Writing and Composition requirements.

WRIT 175 - Disability Rhetoric (5)

Course draws on disability studies scholarship and rhetorical theory to study textual representations of disability, how disabled people are often positioned as unqualified for

authorship, and approaches to making texts accessible to disabled audiences.

Prerequisite: Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements.

WRIT 180 - Seminar in Editing and Publishing (5)

A seminar in producing and evaluating writing for various news media with a critical and rhetorical approach. Learners focus on publishing research-informed and source-validated written pieces in multiple modes of communication.

WRIT 189 - Methods of Teaching Writing (5)

Examines scholarship from rhetoric, composition, and writing studies focused on the teaching of writing. Drawing on theoretical and applied research, students examine, and begin developing, pedagogical approaches to teaching writing at the K-12 and college levels. Attention is given to curriculum development, process pedagogy, linguistic justice, and related topics.

WRIT 191A - Internship in Writing (5)

Regular writing for newspaper or magazine. Students submit petition to sponsoring agency.

WRIT 191B - Internship in Editing (5)

Work in an editorial position involving critique and guidance of reporters. Students submit petition to sponsoring agency.

WRIT 191C - Internship in Publishing (5)

All phases of work for a publishing house, from manuscript reading to editorial. Students submit petition to sponsoring agency.

WRIT 191D - Internship in Broadcasting (5)

Writing, editing, scheduling, and/or broadcast work for television or radio. Students submit petition to sponsoring agency.

WRIT 192 - Directed Student Teaching (5)

Teaching of a lower-division seminar under faculty supervision. (See WRIT 42.) Students submit petition to sponsoring agency.

WRIT 193 - Field Study (5)

For upper-division students: supervised study within commuting distance of the campus. May include internships at magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Prerequisite(s): satisfaction of Entry Level Writing requirement; students submit petition to sponsoring agency.

WRIT 193F - Field Study (2)

For upper-division students: supervised study within commuting distance of the campus. May include internships at magazines, newspapers, publishing houses, or newsletters of corporations, and civic or service organizations. Students submit petition to sponsoring agency.

WRIT 194 - Group Tutorial (5)

A writing, editing, or publishing project undertaken by a small group of students under the direct supervision of a writing instructor. Students submit petition to sponsoring agency.

WRIT 195 - Senior Thesis (5)

Individual work on a thesis for any campus major or individual major. Faculty in the Writing Program help students on all phases of work, from selection and focus to development of bibliographies, research techniques, revision, and editing. Students submit petition to sponsoring agency.

WRIT 196 - Developing and Editing Field Documentation (2)

Helps students transform field documentation into fully developed, professional projects. Employs a weekly production schedule and teaches principles of rhetoric as a means of effectively selecting and arranging documentary materials. Prerequisite(s): satisfaction of the Entry Level Writing and Composition requirements; interview with instructor to review documentary materials.

WRIT 198 - Independent Field Study (5)

Individual study for which faculty supervision is possible only by correspondence. May include internships at newspapers, magazines, publishing houses, or the newsletters of corporations, and civic or service organizations. Prerequisite(s): satisfaction of Entry Level Writing requirement; students submit petition to sponsoring agency.

WRIT 198F - Independent Field Study (2)

Individual study for which faculty supervision is possible only by correspondence. May include internships at newspapers, magazines, publishing houses, or the newsletters of corporations, and civic or service organizations. Students submit petition to sponsoring agency.

WRIT 199 - Tutorial (5)

Individual, directed study for upper-division students in expository writing, editing, or journalism. Students submit petition to sponsoring agency.

WRIT 199F - Tutorial (2)

Individual, directed study for upper-division students in expository writing, editing, or journalism. Students submit petition to sponsoring agency.

Graduate

WRIT 202 - Writing and Learning Seminar (3)

Strategies for teaching assistants to help undergraduates become better learners and writers in disciplinary courses. Topics include using writing to improve reading and thinking, analysis of assignments, avoiding plagiarism, responding to and evaluating papers, ESL writers, peer response, and technological aids.

Prerequisite: Enrollment is restricted to graduate students.

WRIT 203 - Teaching Writing (5)

Prepares graduate students to teach first-year composition at UCSC and elsewhere. Development of a syllabus, teaching strategy, and class plans based on study of composition and rhetorical theories, research on students' writing development, and effective writing pedagogies.

Prerequisite: Enrollment is restricted to graduate students.

YIDD - YIDDISH

Lower-Division

YIDD 1 - First-Year Yiddish (5)

Introduces the Yiddish language. Students learn to speak and to ask others in Yiddish about themselves and about common situations (the classroom, work, family), and learn to read and write simple Yiddish texts.

YIDD 2 - First-Year Yiddish (5)

Follows YIDD 1, expanding vocabulary to include the weather, physical health and sickness, holidays, clothing, etc., and increasing student ability for self-expression using different tenses and grammatical cases.

Prerequisite: Prerequisite(s): YIDD 1 or by consent of instructor.

YIDD 3 - First-Year Yiddish (5)

Follows YIDD 2, expanding vocabulary to include food, travel, and academic life, with an emphasis on the expression of feelings and opinions, agreement and disagreement, making use of all tenses and all grammatical cases.

Prerequisite: Prerequisite(s): YIDD 2 or by permission of the instructor.

YIDD 99F - Tutorial (2)

Students submit petition to sponsoring agency.

UNDERGRADUATE INFORMATION

In this section:

Undergraduate Admission (p. 1406)

Undergraduate Expenses (p. 1412)

Undergraduate Academic Program (p. 1438)

The Colleges and Student Life (p. 1471)

UNDERGRADUATE ADMISSION

In this section:

Admission Procedures (p. 1406)

Admission as a Transfer Student (p. 1408)

Admission of U.S. Students from Outside California (p. 1409)

Admission of International Students (p. 1409)

Readmission (p. 1409)

Admission to Special Categories (p. 1410)

Nondiscrimination, Harassment, and Affirmative Action Policies (p. 1410)

Undergraduate admission to the University of California is based on multiple academic factors, as well as on personal achievements. The university has minimum admission qualifications, which are the same for each of the UC campuses, but when the number of minimally qualified applicants exceeds a campus's capacity for admission, additional faculty-approved selection criteria are applied.

If you are considering applying to UC Santa Cruz, the Office of Undergraduate Admissions wants to help you learn more about the campus, its distinctive educational programs, and its selection process for both first-year and transfer applicants. For more information, see Undergraduate Admissions.

The University of California, Santa Cruz encourages applications from a diverse range of students, including applicants coming from low socioeconomic backgrounds, first-generation students, students with disabilities, current members of the military, military veterans, and non-traditionally aged students. In addition, the campus welcomes students from throughout the U.S. and the world.

Admission by Exception. Admission by Exception is granted to a very small percentage of applicants who do not meet UC requirements. Such factors as academic accomplishments in light of a person’s life experiences and/or special circumstances, socioeconomic background, special talents and/or achievements, contributions to the community, and the applicant’s answers to the Personal Insight Questions are taken into consideration.

Campus Safety. UC Santa Cruz campus crime statistics can be viewed in the annual Clery Report, available at the UC Santa Cruz Police Department website.

Graduation rates. The following graduation-rate information is listed in compliance with the 1990 Title I: Federal Right-to-Know Act, Section 103. Sixty-one percent of the students who entered as first-year students in 2013 graduated in four years; 73 percent of those who entered in 2017 graduated in five years; and 77 percent of those who entered in 2016 graduated in six years. These graduation rates are well above the national averages. Among the most recent entering cohorts, those who entered as first-year students took an average of 4.2 years to graduate, and students transferring to UCSC as juniors averaged 2.3 years.

In accord with the Education Amendments of 1976, Section 493A, more detailed information regarding retention is available at the Institutional Research website.

Admission Procedure

The University of California Application for Undergraduate Admission and Scholarships becomes available beginning August 1 for the following academic year. Students may access applications online.

In addition, the Undergraduate Admissions website includes a wealth of information for prospective UC Santa Cruz students about undergraduate education, admission, financial aid, and various topics of interest.

APPLICATION FILING PERIODS

Applications for the fall quarter must be submitted during the filing period of Oct.1 through Nov. 30, and applications for winter quarter admission are accepted only for junior transfer students in certain majors, generally between July 1 and July 31. Check the Office of Undergraduate Admissions website in June to see details on winter quarter admission. UC Santa Cruz does not accept applications for spring quarter admission.

APPLICATION FEES

The application fee is $80 ($95 for international and nonimmigrant applicants) to apply to one campus of the University of California. For each additional campus you select, you must pay an extra $80 fee ($95 for international and nonimmigrant applicants). These fees are subject to change and are not refundable. The online application includes payment instructions.

FEE WAIVERS

The University of California will waive application fees for up to four campuses for certain students who otherwise would be unable to apply for admission. To qualify for the fee waiver, you must meet specific requirements related to your family income and size. The fee waiver is for U.S. citizens, permanent residents, and applicants eligible for AB540 benefits. We encourage students who qualify for a fee waiver

to take full advantage of the fee waiver by applying to the maximum of four UC campuses.

Students who qualify for fee waivers and who select more than four campuses must pay $80 for each additional choice. Methods of obtaining fee waivers are listed below.

An online fee waiver form is available to applicants as part of the application. If you enter your family size and income in the “About you” section, you will see if you’ve qualified for an application fee waiver when you select your campuses in the "Campuses & majors" section (a message will appear on that page with real-time feedback about how many campuses you can apply to for free).

High school students: Use the College Board fee waiver. It is available from your school counselor.

EOPS community college students: If you are enrolled in Extended Opportunity Programs and Services (EOPS) at a California community college, obtain a fee waiver authorization from the EOPS Office.

ADMISSION AS A FIRST-YEAR STUDENT

The university considers you a first-year applicant if you have graduated from high school and have not enrolled in a regular session at any college or university. If you attend a summer session immediately after graduating from high school, you are still a first-year applicant.

The admission and selection process to UC Santa Cruz reflects the academic rigor and preparation needed for admission to a major research institution. Meeting the minimum qualifications for the university does not guarantee you admission as a first-year applicant. Students are encouraged to achieve well beyond the minimum qualifications to enhance their chances for selection.

Using a comprehensive review process comprising 13 faculty-approved criteria, each application is thoroughly reviewed to determine the full spectrum of a student’s academic and personal achievements, viewed in the context of their opportunities.

Information regarding the admission and selection process for UC Santa Cruz can be accessed on the Undergraduate Admissions website. This site provides information on the minimum qualifications for the University of California for both residents and nonresidents of California, including international students (see also Admission of Students from Outside California and Admission of International Students).

HIGH SCHOOL PREPARATION FOR UNIVERSITY WORK

Carefully planned high school coursework provides you with the best preparation for your undergraduate university studies, and allows for advanced preparation for your chosen field of study. Most importantly, students who master certain basic knowledge and skills in high school substantially increase their chances of success at the university. (Requirements for transfer students are explained in the Admission as a Transfer Student section (p. 1408).)

The basic foundation of UC qualifications is the completion of college preparatory courses required for admission (see “A–G” Subject Requirements below). However, you should take courses beyond the minimum levels in reading, writing, and mathematics in order to be adequately prepared for basic university courses that you may be expected to take your first year.

A well-prepared student will have mastered the equivalent of four years of English composition and literature with a focus on expository writing; four years of mathematics, including a precalculus course in the senior year; two to three years of a language other than English; two to three years of laboratory science; two or more years of history and social sciences; and one or more years of visual or performing arts.

You should also give careful thought to the general field of study, and perhaps the specific major you want to pursue at the university. By making this decision in advance, you can plan to take additional courses in high school related to the field.

SUBJECT REQUIREMENTS

The “A–G” subject requirements are described in detail on the UC Office of the President website.

1. History/social science—two years required.
2. English—four years required.
3. Mathematics—three years required, four years recommended.
4. Laboratory science—two years required, three years recommended.
5. Language other than English—two years required, three years recommended.
6. Visual and performing arts discipline (VPA)—one year required.
7. College preparatory electives—one year required.

Senior-Year (12th-Grade) Program. The senior year should be used to prepare you for your first year at the university and should include honors and advanced courses, as well as courses that will strengthen overall preparation. A challenging, successfully completed senior-year program is a natural bridge between high school and university coursework in the intended major. A strong senior program is one of the selection criteria used at UC Santa Cruz.

HIGH SCHOOL PROFICIENCY EXAMINATION

While the University of California expects all first-year applicants to have graduated from high school/secondary

school, in lieu of the regular high school diploma (or its equivalent), the university will accept the following:

- Certificate of Proficiency, awarded by the State Board of Education upon successful completion of the California High School Proficiency Examination (CHSPE).
- General Educational Development (GED) Certificate
- Proficiency tests from other states and other countries

TRANSFER CREDIT

Transfer credit may be granted to a ffirst-year applicant for acceptable college courses taken while still in high school if an official transcript is received from the college where the coursework was completed.

Transfer credit is granted for specified College Board Advanced Placement Examinations completed with a score of 3, 4, or 5 and for specified International Baccalaureate Higher Level Exams completed with a score of 5, 6, or 7. A score of 30 or higher on the International Baccalaureate Diploma is also awarded transfer credit.

Transfer credit may also be granted for specified GCE and Advanced-Level Examinations.

Students should be advised that college courses taken before or after attending UC Santa Cruz may duplicate AP, IB, and/or A-Level Examinations. Additionally, exams may duplicate each other (for example, an AP or IB exam in the same subject area). If the student does duplicate an exam with another exam of the same subject content, and/or an exam with a college course, UC Santa Cruz awards credit only once.

Admission as a Transfer Student

The University of California defines a transfer applicant as a student who has been a registered student in a college or university, or in college-level extension classes following high school graduation. Summer session attended immediately following high school graduation is excluded in this determination. If you are a transfer applicant, you cannot disregard your college record and apply for admission as a first-year student.

The admission and selection process for transfers to UC Santa Cruz reflects the academic rigor and preparation needed for admission to a major research institution. Meeting the minimum qualifications for the university does not guarantee you admission as a transfer student. It is expected that students will have completed the lower-division courses required by their intended major prior to transfer.
See Screening Major Selection Criteria for a listing of all majors that currently require specific courses/grades prior to transfer to UC Santa Cruz.

Transfer applicants are thoroughly reviewed to determine their full spectrum of academic and personal achievements, including transfer coursework completed for their intended major. UCSC uses faculty-approved criteria to determine which transfer students will be selected for admission. UC Santa Cruz gives the highest priority to junior-level transfer students coming from California community colleges.

Information regarding the admission and selection process for UC Santa Cruz can be accessed at the Undergraduate Admissions website. This site provides information on the minimum qualifications for the University of California for students in California, in other states, and outside of the U.S.

UC SANTA CRUZ TRANSFER ADMISSION GUARANTEE (TAG) PROGRAM

UC Santa Cruz's TAG (Transfer Admission Guarantee) Program is designed for California community college transfer students at the junior level. The benefits of participating in UCSC TAG include informational mailings and invitations to events. All California community colleges participate in the UC Santa Cruz TAG program.

The UC TAG application must be submitted online between September 1 and September 30 for the following fall quarter. UCSC accepts transfer admission agreements for fall quarter only. Computer science is not an available major for TAG.

Further information may be found on the Undergraduate Admissions Transfer Admission Guarantee (TAG) Program page.

UC TRANSFER ADMISSION PLANNER (TAP)

The UC Transfer Admission Planner (UC TAP) is an online tool designed to help prospective UC students transferring from California community colleges track and plan their coursework, including those students who are seeking a Transfer Admission Guarantee (TAG) with one of the participating UC campuses.

Further information may be found on the UC Transfer Admission Planner site.

CREDIT FOR COURSES TAKEN ELSEWHERE

The university gives unit credit to transfer students for courses they have completed at other accredited colleges and universities, including courses taken at recognized institutions outside of the U.S. To be accepted for credit, your courses must be comparable to those offered at the university, as determined by the UC Santa Cruz Undergraduate Admissions Office, following UC transfer credit practices. The UC Santa Cruz department sponsoring your major decides which transfer courses may be used to satisfy major requirements.

A total of 70 semester units (105 quarter units) of lower-division credit toward a university degree may be earned at other colleges/universities. Only subject credit will be granted for courses taken in excess of that cap. Please note that credit from another University of California campus is exempt from this limitation.

Applicants will not be considered for admission if they have completed 90 semester units (135 quarter units) or more of UC–transferable upper-division and lower-division combined credit. If students have earned all of their credits as lower-division credits, they are not affected by this limit. All coursework completed at California community colleges is considered lower division. Advanced Placement (AP) or International Baccalaureate Higher Level (IBH) credit is permitted to exceed the 90-semester unit maximum by the number of AP or IBH units granted. For detailed information, please see UC's Transfer credit practices.

Opportunities to take courses at UC Santa Cruz as a non-matriculated student are available through Summer Session, Concurrent Enrollment through UC Extension, and Intersegmental Cross-Enrollment.

UC SANTA CRUZ TRANSFER SERVICES

The Office of Undergraduate Admissions provides information to all students who wish to transfer to UC Santa Cruz. Please see the Undergraduate Admissions website for information on admission requirements, the Transfer Preparation Program and peer mentors, the Transfer Admission Guarantee, and a multi-year transfer student timeline.

Student-led guided tours take place year-round and require advance reservations. Please see the Undergraduate Admissions website to make a reservation.

In addition, UC Santa Cruz Admissions counselors visit many community colleges in California. Check with your counseling department or transfer center to determine whether a UCSC counselor will be visiting your community college.

UC SANTA CRUZ OFFICE OF ADMISSIONS TRANSFER PREPARATION PROGRAM (TPP)

The UC Santa Cruz Transfer Preparation Program (TPP) supports prospective transfer students from California community colleges and assists them in enrolling at UC Santa Cruz, as well as at other campuses. TPP Admissions representatives work most closely with students who are attending one of the 13 community colleges in the local UC Santa Cruz region to plan a successful transfer program, but will assist any California community college student who has questions.

The Transfer Preparation Program also collaborates with programs and initiatives that strengthen the transfer process and support individual students in making a successful transition to a four-year institution.

Admission of U.S. Students from Outside California

UC Santa Cruz welcomes students from across the U.S. to enhance our vibrant campus community. Out-of-state applicants must meet the same admission qualifications as California students, but with a higher GPA. Detailed information for UC Santa Cruz is provided at our Out-of-State Students website. Information for all 10 general campuses of the University of California can be viewed at the University of California Admissions site.

Students who are not California residents are assessed nonresident tuition in addition to educational and registration fees. Residency for UC tuition purposes is determined based on documentation provided in a Statement of Legal Residency. See California Residence for Tuition Purposes.

Admission of International Students

The University of California welcomes students from countries throughout the world to enhance our vibrant campus community. The academic credentials of applicants from other countries are evaluated by Undergraduate Admissions specialists in accordance with UC faculty-approved regulations governing admission.

UC Santa Cruz accepts applications from international students for the fall quarter, and students should begin application inquiries a year before the quarter of desired enrollment. Openings for the winter quarter may be limited. If you are interested in applying for winter as a transfer applicant, check the Office of Undergraduate Admissions website in June for timeline and majors available.

If your native language is not English, you must certify proficiency in English. Further information is available on the Office of Undergraduate Admissions website.

A financial certificate and official academic records will be required if you are admitted to the university. Generally, nonimmigrant students must provide documentation that sufficient funds will be available to cover nonresident tuition, educational fees, and living expenses. The university does not offer need-based financial assistance to international students.

For information about services for international students, see the International Student Services & Programming website.

Request Return to UCSC (Readmission)

If you are an undergraduate student and you left UCSC without completing your degree, you may submit a Request to Return to UCSC eForm in my.ucsc.edu to resume your studies (help is available via help@ucsc.edu if you need to gain or restore access). Once in MyUCSC, find the "Prior Student eForms" tile and select "Request to Return to UCSC." This eForm must be submitted during the filing periods below:

Quarter of Attendance	eForm Filing Period
Fall quarter	January 1–March 31 (by *May 31 for late requests)
Winter quarter	July 1–September 30
Spring Quarter	October 1–December 31
Summer Quarter	January 1–March 31 (by *May 31 for late requests)

* Requests to return in fall that are submitted during the extended filing period between April 1 and May 31 are subject to additional scrutiny by the college and may be denied due to limited class selection and availability. To ensure timely processing and enrollment opportunities, we strongly recommend all fall return requests to be filed by March 31.

There is a $70 filing fee, which is nonrefundable and nontransferable. The filing fee will be billed to your student account. You are responsible for this fee even if you do not return to UCSC.

If you attended any other institutions (including other UC campuses) during your time away, transcripts will need to be sent (electronically or by mail) to the Office of the Registrar. If you left for health reasons, clearance from the Cowell Student Health Center may be required. You must pay all outstanding bills owed to the university before you will be permitted to register.

Admission to Special Categories

Admission to either of the categories described below is at the sole discretion of UC Santa Cruz, and only when enrollment allows. For information on applying for admission in the categories described below, please contact the Office of Undergraduate Admissions.

SECOND BACHELOR'S DEGREE

If your educational goals have changed substantially since receiving your bachelor's degree, you may be eligible to pursue a second undergraduate degree at UC Santa Cruz. Applications from students interested in pursuing a second baccalaureate program will be considered as campus enrollment allows.

You must meet regular university admission qualifications, and your experience or previous scholarship record must show potential for academic success in your proposed area of study. Additional selection criteria will be applied, and admission is subject to approval by the appropriate department.

Impacted majors, such as computer science and psychology, are not available for second baccalaureate applicants. Also, please note that certain majors have screening requirements that must be met, although non-screening majors are available as well.

For a second degree, you must fulfill UC systemwide requirements in American History and Institutions and the Entry Level Writing Requirement. You must enroll for at least three quarters and are usually restricted to six quarters total.

LIMITED STATUS

If you have already completed an undergraduate degree and you have a particular reason to take specific undergraduate university classes, you may be eligible to enroll in a non-degree program as a limited-status student. Applications from students interested in limited-status enrollment are permitted as campus enrollment allows. Priority is given to applicants who have not yet had the opportunity to complete a bachelor's degree.

Your proposed program of study must either prepare you for graduate or professional school or satisfy some definite educational need or interest. Participants generally enroll full-time for a specified period that does not exceed three quarters. You must meet regular university admission qualifications, and your experience or previous academic record must show potential for success in your proposed program. Additional selection criteria will be applied, and admission is subject to approval by the appropriate department.

Nondiscrimination, Harassment, and Affirmative Action Policies

The University of California, in accordance with applicable federal and state law and university policy, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy[1], physical or mental disability, medical condition (cancer related or genetic characteristics), genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services[2]. The university also prohibits sexual harassment.

This nondiscrimination policy covers admission, access, and treatment in university programs and activities.

Inquiries regarding the university's student-related nondiscrimination policies may be directed to the Dean of Students office, or email deanofstudents@ucsc.edu.

Inquiries regarding the university's affirmative action, equal employment opportunity, nondiscrimination, and harassment policies as they relate to student employment may be directed to the Equity and Equal Protection (EEP) Office, (831) 459-2462, or by emailing equity@ucsc.edu. You can also make a report to EEP using the online reporting form here.

Inquiries regarding the UC Policy on Sexual Violence and Sexual Harassment, reports of Title IX violations, needs related to pregnancy and lactation, and requests for safety and

supportive measures may be directed to Title IX Office by calling (831) 459-2462, or by emailing titleix@ucsc.edu. You can also make a Title IX report using the online reporting form here.

Student inquiries regarding disability or disability accommodations may be addressed to the Disability Resource Center, (831) 459-2089; or email drc@ucsc.edu.

Students with disabilities who are unable to resolve accommodation or discrimination concerns may contact the campus ADA compliance officer by phone, (831) 459-5087, or email roagarci@ucsc.edu.

[1]**Pregnancy** includes pregnancy, childbirth, and medical conditions related to pregnancy or childbirth.

[2]**Service in the uniformed services** includes membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services.

UNDERGRADUATE EXPENSES

In this section:

Expenses

In determining the cost of attending UC Santa Cruz each quarter, students should consider both required fees and personal expenses. The figures below are provided to help you draw up a realistic personal budget. If you then conclude you will need financial assistance in order to attend UCSC, you should read the Financial Aid section below. Fees and additional financial information for graduate students appear in the Graduate Studies (p. 1498) section. Tuition, fees, and other charges are subject to change without notice by the UC Regents. For the most current fee information, check Undergraduate Student Fees.

Required Fees

Required fees are due and payable before the start of each quarter. At the beginning of each quarter, you will need sufficient funds to cover tuition and fees, housing, books and supplies, and UC student health insurance (waivable). For many financial aid recipients who are enrolled at least half time, tuition and fees on the student account are paid automatically with approved student aid funds.

The Student Services Fee funds student services that provide a supportive and enriching learning environment and that are complementary to, but not part of, the instructional program. Programs include, but are not limited to, services related to the physical and psychological health and well being of students; social and cultural activities and programs; services related to campus life; and educational and career support.

Tuition helps support student financial aid and related programs; administration; libraries; operation and maintenance of facilities; the university's operating budget; and all costs related to instruction, including faculty salaries.

Santa Cruz Campus Fees help support a wide range of student services, including college and campuswide student government, extracurricular programs and recreation facilities, campus child care, community and public service projects, Educational Opportunity Programs and scholarships, and free-fare use of the local transit systems. Campus fees paid by graduate students are provided at Student Fees.

In addition, all students, including international students, are assessed a mandatory Health Insurance Premium. The Cowell Student Health Center provides the primary care services for the plan while a contracted insurance company provides major medical and hospitalization insurance. Dependent coverage is also available. Detailed information is available at the Health Center website or at the Student Health Insurance Office, (831) 459-2389.

Waivers from the mandatory health insurance premium are available if you can show that your private insurance provides coverage equal to or better than the student health insurance plan. Deadlines for applying for a waiver are listed in the Schedule of Classes.

Some courses charge an additional **Course Materials Fee.** These fees recover the cost of materials, supplies, equipment, and support services not covered by the normal instructional budget. The fees are reviewed and approved annually by the Miscellaneous and Course Materials Fee Advisory Committee. The list of specific courses charging fees is available in the quarterly Schedule of Classes and on the web at Course Fees.

Nonresident Tuition

If you are a resident of a state other than California or of another country, you must also pay nonresident tuition, the nonresident educational fee, and other required fees (university registration and Santa Cruz campus fees). The criteria for residency appear in California Residence and Nonresident Supplemental Tuition (p. 1515).

Non-U.S. citizens note: Regardless of how long you live in California, only U.S. citizens and holders of immigrant visas may become qualified for resident classification.

Undergraduate Budget 2025-2026

For information on undergraduate cost of attendance and associated budgets, please visit Cost of Attendance, hosted by the Office of Financial Aid and Scholarship.

UNDERGRADUATE STUDENT FEES BY ADMIT YEAR (PUBLIC)*

Beginning fall 2022, the University of California, Santa Cruz implemented the Board of Regents' Tuition Stability Plan. The plan helps students and families budget for a UC education by keeping UC tuition stable and predictable and providing new resources for financial aid. For more information, please visit UC Tuition Stability Plan.

This chart includes separate tables with student fees delineated by year admitted to the university. A student who started at UC Santa Cruz in academic year 2024-25, would use the Enrolled in Academic Year 2024-25 tab to determine their fees, while a student who started at UCSC in academic year 2023-24 would use the Enrolled in Academic Year 2023-24 or Earlier tab.

	Undergraduate Student Fees (2025-26 First Enrollment)	Annual	Fall 2025	Winter 2026	Spring 2026
	Student Services Fee (formerly University Registration Fee)	1,332.00	444.00	444.00	444.00
	Tuition (formerly Educational Fee)	13,602.00	4,534.00	4,634.00	4,534.00
	UCSA Fee	7.00	3.00	2.00	2.00
	Campus Programs Fee	6.00	2.00	2.00	2.00
	College Student Govt. Fee	30.00	10.00	10.00	10.00
	Student Programs Fee	153.00	51.00	51.00	51.00
	Campus Sustainability Prog Fee	18.00	6.00	6.00	6.00
	Engaging Education Prog Fee	12.60	4.20	4.20	4.20
	Community & Resource Empowerment	15.00	5.00	5.00	5.00
	Student Voice & Empowerment	2.25	0.75	0.75	0.75
	Student Media Council Fee	9.60	3.20	3.20	3.20
	Theater Arts Fee (Fee increase had not yet received final approval from the UC President as of publication of the General Catalog)	15.00	5.00	5.00	5.00

	Student Facilities Fee	90.00	30.00	30.00	30.00
	Student Life Facilities Fee	90.00	30.00	30.00	30.00
	Seismic/Safety Fee	120.00	40.00	40.00	40.00
	Free/Anonymous HIV Testing Fee	2.25	0.75	0.75	0.75
	Transportation Fee	531.00	177.00	177.00	177.00
	OPERS Fitness Facilities Fee	45.00	15.00	15.00	15.00
	Campuswide Student Govt. Fee	21.00	7.00	7.00	7.00
	Campus Childcare Fee	24.00	8.00	8.00	8.00
	Intramural & Sports Club Team Activities Fee	6.75	2.25	2.25	2.25
	Recreation Programs Fee	12.00	4.00	4.00	4.00
	Seymour Marine Discovery Center Fee	0.75	0.25	0.25	0.25
	Renewable Energy Fee	9.00	3.00	3.00	3.00
	Learning Support Services Fee	36.00	12.00	12.00	12.00
	Intercoll. Athletics Sports Team Fee	15.00	5.00	5.00	5.00

	Physical Education Program Fee	37.50	12.50	12.50	12.50
	Sustaining the Student Media Voice Fee	12.42	4.14	4.14	4.14
	Student Health Center Expansion Fee	81.00	27.00	27.00	27.00
	Student Health Center Green Building Fee	15.60	5.20	5.20	5.20
	Support GIIP Fee	3.99	1.33	1.33	1.33
	Sustainable Food, Health & Wellness Fee	11.25	3.75	3.75	3.75
	Cultural Arts and Diversity Fee	15.75	5.25	5.25	5.25
	Intercoll. Athletics and Athletics Activities Access Fee	115.50	38.50	38.50	38.50
	Support Student Governed Spaces	30.00	10.00	10.00	10.00
	Communities and Belonging (Fee increase had not yet received final approval from the UC President as of publication of the General Catalog)	60.00	20.00	20.00	20.00
	Research Pathways to Expand Student Opportunities (Fee increase had not yet received final approval from the UC President as of publication of the General Catalog)	3.75	1.25	1.25	1.25
	UC SHIP Health Insurance (waivable)	3,756.00	1,252.00	1,252.00	1,252.00
	Total California Resident	20,347.96	6,783.32	6,782.32	6,782.32

	Nonresident Supplemental Tuition (formerly Nonresident Tuition)	37,602.00	12,534.00	12,534.00	12,534.00
	Total Non-Resident	57,949.96	19,317.32	19,316.32	19,316.32
	Total Campus Fees *	1,650.96	550.32	550.32	550.32
	New Student One-Time Records Fee (paid in full at time of registration)	200.00			
	*Campus fees (a.k.a. campus-based or referenda fees) are charged to undergraduate and graduate students, including those in professional masters degrees programs.				

	Undergraduate Student Fees (2024-25 First Enrollment)	Annual	Fall 2024	Winter 2025	Spring 2025
	Student Services Fee (formerly University Registration Fee)	1,290.00	430.00	430.00	430.00
	Tuition (formerly Educational Fee)	13,146.00	4,382.00	4,382.00	4,382.00
	UCSA Fee	7.00	3.00	2.00	2.00
	Campus Programs Fee	6.00	2.00	2.00	2.00
	College Student Govt. Fee	30.00	10.00	10.00	10.00
	Student Programs Fee	153.00	51.00	51.00	51.00
	Campus Sustainability Prog Fee	18.00	6.00	6.00	6.00
	Engaging Education Prog Fee	12.60	4.20	4.20	4.20
	Community & Resource Empowerment	15.00	5.00	5.00	5.00
	Student Voice & Empowerment	2.25	0.75	0.75	0.75
	Student Media Council Fee	9.60	3.20	3.20	3.20
	Theater Arts Fee	6.00	2.00	2.00	2.00

	Student Facilities Fee	90.00	30.00	30.00	30.00
	Student Life Facilities Fee	90.00	30.00	30.00	30.00
	Seismic/Safety Fee	120.00	40.00	40.00	40.00
	Free/Anonymous HIV Testing Fee	2.25	0.75	0.75	0.75
	Transportation Fee	522.00	174.00	174.00	174.00
	OPERS Fitness Facilities Fee	45.00	15.00	15.00	15.00
	Campuswide Student Govt. Fee	21.00	7.00	7.00	7.00
	Campus Childcare Fee	24.00	8.00	8.00	8.00
	Intramural & Sports Club Team Activities Fee	6.75	2.25	2.25	2.25
	Recreation Programs Fee	12.00	4.00	4.00	4.00
	Seymour Marine Discovery Center Fee	0.75	0.25	0.25	0.25
	Renewable Energy Fee	9.00	3.00	3.00	3.00
	Learning Support Services Fee	36.00	12.00	12.00	12.00
	Intercoll. Athletics Sports Team Fee	15.00	5.00	5.00	5.00

	Physical Education Program Fee	37.50	12.50	12.50	12.50
	Sustaining the Student Media Voice Fee	12.42	4.14	4.14	4.14
	Student Health Center Expansion Fee	81.00	27.00	27.00	27.00
	Student Health Center Green Building Fee	15.60	5.20	5.20	5.20
	Support GIIP Fee	3.99	1.33	1.33	1.33
	Sustainable Food, Health & Wellness Fee	11.25	3.75	3.75	3.75
	Cultural Arts and Diversity Fee	15.75	5.25	5.25	5.25
	Intercoll. Athletics and Athletics Activities Access Fee	115.50	38.50	38.50	38.50
	Support Student Governed Spaces	30.00	10.00	10.00	10.00
	UC SHIP Health Insurance (waivable)	3,672.00	1,224.00	1,224.00	1,224.00
	Total California Resident	19,684.21	6,562.07	6,561.07	6,561.07
	Nonresident Supplemental Tuition (formerly Nonresident Tuition)	34,200.00	11,400.00	11,400.00	11,400.00
	Total Non-Resident	53,884.21	17,962.07	17,961.07	17,961.07

	Total Campus Fees *	1,569.21	523.07	523.07	523.07
	*Campus fees (a.k.a. campus-based or referenda fees) are charged to undergraduate and graduate students, including those in professional masters degrees programs.				

	Undergraduate Student Fees (2023-24 First Enrollment)	Annual	Fall 2023	Winter 2024	Spring 2024
	Student Services Fee (formerly University Registration Fee)	1,230.00	410.00	410.00	410.00
	Tuition (formerly Educational Fee)	12,522.00	4,174.00	4,174.00	4,174.00
	UCSA Fee	7.00	3.00	2.00	2.00
	Campus Programs Fee	6.00	2.00	2.00	2.00
	College Student Govt. Fee	30.00	10.00	10.00	10.00
	Student Programs Fee	153.00	51.00	51.00	51.00
	Campus Sustainability Prog Fee	18.00	6.00	6.00	6.00
	Engaging Education Prog Fee	12.60	4.20	4.20	4.20
	Community & Resource Empowerment	15.00	5.00	5.00	5.00
	Student Voice & Empowerment	2.25	0.75	0.75	0.75
	Student Media Council Fee	9.60	3.20	3.20	3.20
	Theater Arts Fee	6.00	2.00	2.00	2.00

	Student Facilities Fee	90.00	30.00	30.00	30.00
	Student Life Facilities Fee	90.00	30.00	30.00	30.00
	Seismic/Safety Fee	120.00	40.00	40.00	40.00
	Free/Anonymous HIV Testing Fee	2.25	0.75	0.75	0.75
	Transportation Fee	513.00	171.00	171.00	171.00
	OPERS Fitness Facilities Fee	45.00	15.00	15.00	15.00
	Campuswide Student Govt. Fee	21.00	7.00	7.00	7.00
	Campus Childcare Fee	24.00	8.00	8.00	8.00
	Intramural & Sports Club Team Activities Fee	6.75	2.25	2.25	2.25
	Recreation Programs Fee	12.00	4.00	4.00	4.00
	Seymour Marine Discovery Center Fee	0.75	0.25	0.25	0.25
	Renewable Energy Fee	9.00	3.00	3.00	3.00
	Learning Support Services Fee	36.00	12.00	12.00	12.00
	Intercoll. Athletics Sports Team Fee	15.00	5.00	5.00	5.00

	Physical Education Program Fee	37.50	12.50	12.50	12.50
	Sustaining the Student Media Voice Fee	12.42	4.14	4.14	4.14
	Student Health Center Expansion Fee	81.00	27.00	27.00	27.00
	Student Health Center Green Building Fee	15.60	5.20	5.20	5.20
	Support GIIP Fee	3.99	1.33	1.33	1.33
	Sustainable Food, Health & Wellness Fee	11.25	3.75	3.75	3.75
	Cultural Arts and Diversity Fee	15.75	5.25	5.25	5.25
	Intercoll. Athletics and Athletics Activities Access Fee	115.50	38.50	38.50	38.50
	Support Student Governed Spaces	30.00	10.00	10.00	10.00
	UC SHIP Health Insurance (waivable)	3,141.00	1,047.00	1,047.00	1,047.00
	Total California Resident	18,460.21	6,154.07	6,153.07	6,153.07
	Nonresident Supplemental Tuition (formerly Nonresident Tuition)	32,574.00	10,858.00	10,858.00	10,858.00
	Total Non-Resident	51,034.21	17,012.07	17,011.07	17,011.07

	Total Campus Fees *	1,560.21	520.07	520.07	520.07
	*Campus fees (a.k.a. campus-based or referenda fees) are charged to undergraduate and graduate students, including those in professional masters degrees programs.				

	Undergraduate Student Fees (2022-23 First Enrollment)	Annual	Fall 2023	Winter 2024	Spring 2024
	Student Services Fee (formerly University Registration Fee)	1,176.00	392.00	392.00	392.00
	Tuition (formerly Educational Fee)	11,928.00	3,976.00	3,976.00	3,976.00
	UCSA Fee	7.00	3.00	2.00	2.00
	Campus Programs Fee	6.00	2.00	2.00	2.00
	College Student Govt. Fee	30.00	10.00	10.00	10.00
	Student Programs Fee	153.00	51.00	51.00	51.00
	Campus Sustainability Prog Fee	18.00	6.00	6.00	6.00
	Engaging Education Prog Fee	12.60	4.20	4.20	4.20
	Community & Resource Empowerment	15.00	5.00	5.00	5.00
	Student Voice & Empowerment	2.25	0.75	0.75	0.75
	Student Media Council Fee	9.60	3.20	3.20	3.20
	Theater Arts Fee	6.00	2.00	2.00	2.00

	Student Facilities Fee	90.00	30.00	30.00	30.00
	Student Life Facilities Fee	90.00	30.00	30.00	30.00
	Seismic/Safety Fee	120.00	40.00	40.00	40.00
	Free/Anonymous HIV Testing Fee	2.25	0.75	0.75	0.75
	Transportation Fee	513.00	171.00	171.00	171.00
	OPERS Fitness Facilities Fee	45.00	15.00	15.00	15.00
	Campuswide Student Govt. Fee	21.00	7.00	7.00	7.00
	Campus Childcare Fee	24.00	8.00	8.00	8.00
	Intramural & Sports Club Team Activities Fee	6.75	2.25	2.25	2.25
	Recreation Programs Fee	12.00	4.00	4.00	4.00
	Seymour Marine Discovery Center Fee	0.75	0.25	0.25	0.25
	Renewable Energy Fee	9.00	3.00	3.00	3.00
	Learning Support Services Fee	36.00	12.00	12.00	12.00
	Intercoll. Athletics Sports Team Fee	15.00	5.00	5.00	5.00

	Physical Education Program Fee	37.50	12.50	12.50	12.50
	Sustaining the Student Media Voice Fee	12.42	4.14	4.14	4.14
	Student Health Center Expansion Fee	81.00	27.00	27.00	27.00
	Student Health Center Green Building Fee	15.60	5.20	5.20	5.20
	Support GIIP Fee	3.99	1.33	1.33	1.33
	Sustainable Food, Health & Wellness Fee	11.25	3.75	3.75	3.75
	Cultural Arts and Diversity Fee	15.75	5.25	5.25	5.25
	Intercoll. Athletics and Athletics Activities Access Fee	115.50	38.50	38.50	38.50
	Support Student Governed Spaces	30.00	10.00	10.00	10.00
	UC SHIP Health Insurance (waivable)	3,141.00	1,047.00	1,047.00	1,047.00
	Total California Resident	17,812.21	5,938.07	5,937.07	5,937.07
	Nonresident Supplemental Tuition (formerly Nonresident Tuition)	31,026.00	10,342.00	10,342.00	10,342.00
	Total Non-Resident	48,838.21	16,280.07	16,279.07	16,279.07

	Total Campus Fees *	1,560.21	520.07	520.07	520.07
	*Campus fees (a.k.a. campus-based or referenda fees) are charged to undergraduate and graduate students, including those in professional masters degrees programs.				

	Undergraduate Student Fees (2021-22 First Enrollment)	Annual	Fall 2023	Winter 2024	Spring 2024
	Student Services Fee (formerly University Registration Fee)	1,128.00	376.00	376.00	376.00
	Tuition (formerly Educational Fee)	11,442.00	3,814.00	3,814.00	3,814.00
	UCSA Fee	7.00	3.00	2.00	2.00
	Campus Programs Fee	6.00	2.00	2.00	2.00
	College Student Govt. Fee	30.00	10.00	10.00	10.00
	Student Programs Fee	153.00	51.00	51.00	51.00
	Campus Sustainability Prog Fee	18.00	6.00	6.00	6.00
	Engaging Education Prog Fee	12.60	4.20	4.20	4.20
	Community & Resource Empowerment	15.00	5.00	5.00	5.00
	Student Voice & Empowerment	2.25	0.75	0.75	0.75
	Student Media Council Fee	9.60	3.20	3.20	3.20
	Theater Arts Fee	6.00	2.00	2.00	2.00

	Student Facilities Fee	90.00	30.00	30.00	30.00
	Student Life Facilities Fee	90.00	30.00	30.00	30.00
	Seismic/Safety Fee	120.00	40.00	40.00	40.00
	Free/Anonymous HIV Testing Fee	2.25	0.75	0.75	0.75
	Transportation Fee	513.00	171.00	171.00	171.00
	OPERS Fitness Facilities Fee	45.00	15.00	15.00	15.00
	Campuswide Student Govt. Fee	21.00	7.00	7.00	7.00
	Campus Childcare Fee	24.00	8.00	8.00	8.00
	Intramural & Sports Club Team Activities Fee	6.75	2.25	2.25	2.25
	Recreation Programs Fee	12.00	4.00	4.00	4.00
	Seymour Marine Discovery Center Fee	0.75	0.25	0.25	0.25
	Renewable Energy Fee	9.00	3.00	3.00	3.00
	Learning Support Services Fee	36.00	12.00	12.00	12.00
	Intercoll. Athletics Sports Team Fee	15.00	5.00	5.00	5.00

	Physical Education Program Fee	37.50	12.50	12.50	12.50
	Sustaining the Student Media Voice Fee	12.42	4.14	4.14	4.14
	Student Health Center Expansion Fee	81.00	27.00	27.00	27.00
	Student Health Center Green Building Fee	15.60	5.20	5.20	5.20
	Support GIIP Fee	3.99	1.33	1.33	1.33
	Sustainable Food, Health & Wellness Fee	11.25	3.75	3.75	3.75
	Cultural Arts and Diversity Fee	15.75	5.25	5.25	5.25
	Intercoll. Athletics and Athletics Activities Access Fee	115.50	38.50	38.50	38.50
	Support Student Governed Spaces	30.00	10.00	10.00	10.00
	UC SHIP Health Insurance (waivable)	3,141.00	1,047.00	1,047.00	1,047.00
	Total California Resident	17,278.21	5,760.07	5,759.07	5,759.07
	Nonresident Supplemental Tuition (formerly Nonresident Tuition)	29,754.00	9,918.00	9,918.00	9,918.00
	Total Non-Resident	47,032.21	15,678.07	15,677.07	15,677.07

	Total Campus Fees *	1,560.21	520.07	520.07	520.07
	*Campus fees (a.k.a. campus-based or referenda fees) are charged to undergraduate and graduate students, including those in professional masters degrees programs.				

Estimated Personal Expenses

The figures given for estimated personal expenses are for a single undergraduate living on campus. Expenses will be higher for married students, students with children, and graduate students. The information is as current and as realistic as possible; however, expenses for students vary in accordance with lifestyles, priorities, and obligations.

Room and board (in college residences). Rates for room and board in the college residence halls depend on the type of accommodation and meal plan. The current rates may be found on the campus Housing Office website. The room and board amount in the Undergraduate Budget table above is the average cost for an on-campus student with the average meal plan and additional Flexi Dollars.

Personal Expenses. This budget item covers a broad range of expenses including clothing, laundry, personal grooming, recreation, and health maintenance. It also covers minimum expenses for modest travel to visit family.

Rates are paid quarterly. The rate ranges listed above do not cover periods of academic recess, nor does the budget above. Housing charges are normally payable at the beginning of each quarter. However, students may arrange with the Campus Housing Office to pay monthly.

More detailed information on room and board expenses for the individual colleges is available in the Undergraduate Housing Rates brochure distributed as part of the admission process or available from the Campus Housing Office, 104 Hahn Student Services Building, (831) 459-2394.

Fee Reversal

Students who cancel their registration before the first day of instruction in a given quarter are refunded all required fees minus a $10 service charge. New undergraduate students who cancel their registration before the first day of instruction are entitled to a refund of all required fees except the nonrefundable $250 undergraduate Statement of Intent to Register (SIR) Deposit (applied toward the registration fees).

Once the quarter has begun, students must petition for withdrawal. The percentage of fees refunded is determined by the effective date of the withdrawal, according to the schedule below. A student is not eligible for university services after the effective date of withdrawal.

A student entering the armed forces before the sixth week of the quarter is entitled to a full refund of the Student Services Fee—provided no course credit is received.

More detailed information on withdrawal and refund procedures is included in the quarterly Schedule of Classes and The Navigator, both online at the Registrar's website, and in the Graduate Student Handbook. Information on refunds of room and board charges is contained in the campus housing contract, provided to all applicants for on-campus housing. For more information on how withdrawing affects your financial aid, refer to the Financial Aid and Scholarship Office website at Financial Aid and Scholarships website.

Schedules of Refunds

All Continuing and Readmitted Students and New Students Not Receiving Federal Financial Aid

Number of calendar days	Percentage of fees refunded*
1st day of instruction	100
2-7	90
8-18	50
19-35	25
36 and over	0

New Students Who Receive Federal Financial Aid and Withdraw during Their First Academic Term

Number of calendar days	Percentage of fees refunded*
1st day of instruction	100
2-7	90
8-14	80

15-21	70
22-28	60
29-35	50
36-42	40
43 and over	0

* For new students, the Undergraduate Statement of Intent to Register (SIR) deposit that is paid will apply towards the University Registration Fees (Student Services Fee/ Tuition/ Non Resident Tuition/ Campus Fees). The SIR Deposit is non refundable. If the University Registration Fees are reduced/reversed, the SIR Deposit funds are forfeit. The schedule of refunds applies to the balance of fees. Percentages listed (days 1–35 or days 1–42) should be applied individually to Nonresident Tuition, the Educational Fee, the University Registration Fee, and Santa Cruz campus fees. The Health Insurance Fee is nonrefundable.

Deferred Payment Plan

The Tuition Deferred Payment Plan (TDPP) is a plan provided by Student Business Services (SBS) that will allow you to break your Registration fees (Student Services Fee/Tuition/Non-Resident Tuition/Campus Fees) for the term into 3 monthly installments. Review Details about the Plan for more information.

Financial Aid

The university maintains a robust financial aid program of grants, scholarships, loans, and part-time employment for undergraduate students who require financial assistance. The Financial Aid and Scholarships Office administers these resources to help bridge the gap between the cost of education and what parents and students can reasonably contribute.

If you are a dependent student, the contribution expected from you and your parents is determined through an analysis of your family's financial strength, considering such variables as income, number of dependents, living expenses, and savings and investments (excluding your primary residence). Federal, state, and university policies and procedures are applied. The same analysis is used for married and independent students with the exception of parent information. The federal definition of an "independent student" is used to determine your dependency when you complete the Free Application for Federal Student Aid (FAFSA).

The UC Blue and Gold Opportunity Plan is a Financial Aid Initiative that ensures that undergraduate California residents whose families earn a total income less than $80,000, meet application deadlines, and who demonstrate enough financial need are guaranteed to receive gift aid from all sources to cover UC systemwide tuition and fees. Qualified students must be in their first four years of attendance (first two for transfer students).

No student will receive more scholarship and grant support than the calculated financial need. All sources of scholarship and grant awards (federal, state, institutional, and private sources, including outside agency scholarships) will count toward covering fees and meeting the Blue and Gold Opportunity Plan commitment. The majority of students who meet the income eligibility standard receive much more grant and scholarship funding than the plan covers.

In addition to the minimum funding under the Blue and Gold Opportunity Plan, undergraduates with sufficient financial need will receive additional grant support to help defray other educational expenses (e.g., books, living expenses, and transportation).

Application Deadlines

The Free Application for Federal Student Aid (FAFSA) may be submitted online at the Federal Student Aid website on or after Oct. 1 of the year prior to the academic year you wish to receive aid (e.g., Oct. 1, 2020, for applicants for fall 2021). Students who are ineligible to complete the FAFSA, but who meet AB 540 criteria, may be eligible to file the Dream Application. Submit a financial aid application each year before the priority deadline of March 2 to be eligible for all types of aid.

Students admitted for fall quarter will receive an estimated financial aid award in April.

The Financial Aid and Scholarships Office may require additional documentation from applicants. These applicants will be sent an email instructing them to login to MyUCSC and view their "To Do List," where required documents are requested (e.g., copies of student and parent tax returns or other forms). They will be directed to review and submit documents through MyAid Verify. This link is also located in the MyUCSC portal in the Financial Aid Tile. Students can then click the "Financial Resources" link on that page and complete submission. These documents must be received by the deadline on the "To Do List" for a student to be considered for all sources of aid administered by UC Santa Cruz. The deadline is June 2.

Conditional awards for admitted students may change as a result of the review of documentation.

Applicants who submit verification documents after the deadlines will be considered for aid based on availability.

Students admitted for winter quarter must have submitted a FAFSA by their admission notification date. Items requested on your MyUCSC "To Do List" must be submitted by December 2. Award notifications will be made as soon as possible after you are admitted/readmitted and all requested financial aid documents are received.

Types of Aid

If you apply for financial aid and meet the application deadlines, you are considered for all types of aid described below. Based on your financial need, your financial aid package may include a combination of grants, scholarships, loans, and work opportunities.

Grants

- **UC Santa Cruz Grants** are awarded to students based on financial need.
- **Cal Grant A & B** (eligible California residents) are awarded by the California Student Aid Commission to California residents who meet eligibility requirements and who demonstrate financial need and academic achievement. In addition to submitting a FAFSA or Dream Application*, first time applicants must also complete and submit the Cal Grant GPA Verification Form no later than March 2. Cal Grant A and B awards pay Tuition and Student Services Fees at UC.
- **Middle-Class Scholarship Grants** are provided by the California Student Aid Commission to eligible California resident students with total family incomes under $184,000 and net assets less than $184,000. Grants are awarded on a sliding scale with a cap of 40 percent of systemwide tuition, after considering other forms of grant aid.
- **Federal Pell Grants** are offered to eligible undergraduate students who demonstrate significant financial need based on the expected family contribution (EFC). Awards are variable depending upon the EFC; the maximum Pell Grant for 2020-21 is $6,395.
- **Federal Supplemental Educational Opportunity Grants** are awarded to undergraduate students who demonstrate significant financial need. These grants supplement the UC Santa Cruz Grant program. Students must meet application deadlines to be considered. The maximum award is $4,000.

Scholarships

- **UC Santa Cruz Scholarships** range from $250 to $10,000 per year. (The average award is about $1,500.) Funding comes from private donors, alumni, and the university. Entering UCSC students are considered for scholarships based on responses to scholarship questions on the UC Application for Undergraduate Admission. Your application essay will serve as your scholarship essay. Selected students are notified throughout the academic year. All continuing students are automatically considered for scholarships based on various factors including cumulative GPA.
- **Regents Scholarships** are the most prestigious merit scholarships awarded to undergraduates. Freshman Regent Scholars receive a total of $20,000 paid over four years. New junior transfers and continuing students selected in the junior year receive the Regents Scholarship for a total of $10,000 paid over two years. The scholarship amount varies for continuing students based on the year in college and year appointed.
- **Other Scholarships:** Some campus scholarships are restricted to students from particular geographic areas or family backgrounds, or are limited to students in particular majors, classes, or colleges. The donors have different reasons for giving, and their varied interests are reflected in the wide range of scholarships available. Merit and restricted scholarship awards range up to $5,000.

Need-Based Loans

- **University Loans** are offered to first-year undergraduate students. Repayment begins nine months after a student falls below half time enrollment or graduates from the university. During repayment, the interest rate accrues at 5 percent annually.
- **Federal Direct Subsidized Student Loans** are funded by the federal government and can be borrowed up to the federal limits based on student status (please see Direct Loan Limit Chart below). Students pay an origination fee, which is deducted from the total accepted amount of the loan. Repayment begins six months after a student falls below half time enrollment.Interest rates and loan fees are updated annually and are hosted by Federal Student Aid.
- **CA Dream Loans** are provided to eligible undocumented AB 540 to help cover the cost of attending UC. The CA Dream loan program is funded by the state and UC, and aims to close that gap and provide eligible students with the opportunity to borrow student loans to help pay for their education. Repayment begins nine months after a student falls below half-time enrollment or graduates from the university. During repayment, the interest rate accrues at 5 percent annually.

Non-Need-Based Loans

The following loans are available to both undergraduate and graduate students:

- **Federal Direct Unsubsidized Student Loans** are funded by the federal government and can be borrowed up to the federal limits based on student status (please see Direct Loan Limit Chart below). Unsubsidized loans are offered to students who do not demonstrate financial need or who have exhausted all need based aid. Interest accrues on unsubsidized loans from the date the loan is disbursed. The student pays an origination fee which is deducted from the total accepted amount of the loan. Students may begin repaying principal and interest on Federal Direct Unsubsidized Student Loans immediately, pay only interest immediately, or defer both principal and interest until they are no longer enrolled in school at least half time.
- **Federal Direct Parent Loans for Undergraduate Students (PLUS).** Parents of dependent students can apply for a PLUS loan and may borrow up to the full cost of attendance as defined by the UCSC Financial Aid and Scholarships Office. Applicants must pass a modest credit check through the Department of Education for the loan to be approved. Repayment

begins six months after a student falls below half time enrollment. Interest rates and loan fees are updated annually and are hosted by Federal Student Aid. Loan repayments begin 60 days after the last disbursement for the academic year (the last disbursement is typically the first day of spring quarter). Parents do have the option to defer payment, similar to the student's ability to defer on their Federal Direct loan above. See your loan servicer for more information.

Annual and Lifetime Federal Direct Student Loan Limits

	Subsidized Loans	Unsubsidized Loans	Combined Subsidized and Unsubsidized Loans
Dependent Students			
Freshman	$3,500	$2,000	$5,500
Sophomores	$4,500	$2,000	$6,500
Juniors and Seniors	$5,500	$2,000	$7,500
Lifetime Loan Limits	$23,000	$31,000	
Independent Students[1]			
Freshman	$3,500	$6,000	$9,500
Sophomores	$4,500	$6,000	$10,500
Juniors and Seniors	$5,500	$7,000	$12,500
Lifetime Loan Limits	$23,000	$57,000	
Graduate Students	N/A	$20,500	$20,500
Lifetime Loan Limits		$138,500	

[1] Refers to students who answered "yes" to any dependency status question on the FAFSA. These loan limits also apply to dependent undergraduate students whose parents were denied a PLUS loan due to adverse credit history.

Other Loans

The University of California develops and publishes lists of private lenders who offer the most favorable terms for UC borrowers. Lender lists may be found on UCSC's Financial Aid and Scholarships website under Private Loans and are also available at www.elmselect.com.

Federal Work-Study

Federal Work-Study gives students who demonstrate financial need the opportunity to work part-time to earn money to help cover expenses while enrolled at UC Santa Cruz.

Some on-campus and community jobs are posted online at the Career Center website Career Center website. Not all campus jobs are posted with the Career Center. Another way to locate on-campus jobs is through networking. Examples include talking to students, staff, and faculty at your college, in your dorm and dining hall, and in the academic departments. The Career Center can help you with résumé writing and job-search strategies. Jobs are competitive, and this award does not guarantee a position.

Loan Forgiveness Programs

The federal government will forgive all or part of a student loan under certain circumstances. Examples of these include performing volunteer work or military service and practicing medicine in certain communities. For a summary of such exemptions, visit the Federal Student Aid website.

More Information

For more information about applying for financial aid, rights and responsibilities, and document deadlines contact the Financial Aid and Scholarships Office at (831) 459-2963 or visit us at 205 Hahn Student Services Building.

UNDERGRADUATE ACADEMIC PROGRAM

In this section:

Planning Your Academic Program

UC Santa Cruz is on the quarter system. Three quarters—fall, winter, and spring—constitute the regular academic year, and summer is an opportunity for all students. Most courses are five quarter credits, and require approximately 15 hours of work per week in each 10-week quarter. Students should estimate three hours per week, per credit.

Students are normally expected to enroll in 15 credits each quarter; enrolling in fewer than 12 or more than 19 credits may require approval. If you maintain a 2.5 grade point average, you may enroll in more than 19 credits without special approval.

Students who enter as frosh are expected to graduate in four years. To do so, you must pass an average of 45 credits per year, to reach a total of 180 credits, the minimum total credits for graduation. Transfer students generally enter with 90-105 credits, and may need more than two years to complete all requirements, depending on their major.

Undergraduate courses are classified as lower division or upper division. Lower-division courses (numbered 1–99) are designed for first-year and sophomore students but may be taken by more advanced students. Upper-division courses (numbered 100–199) are designed for junior and senior students, but may be open to first-year and sophomore students who have sufficient background, or instructor support.

Graduate courses (numbered 200–299) are generally restricted to graduate students. Some undergraduates may enroll in select graduate courses if they can show the instructor that they have completed sufficient preparation for the subject matter of the course.

Here is what to expect during four years at Santa Cruz:

Students who are admitted as frosh complete their orientation course, college core course, and satisfy the Entry Level Writing Requirement during their first year. They also begin taking foundation courses for potential majors, along with general education requirements. The composition (C) general education requirement must be satisfied by the end of your sixth quarter, or second year. Your advisors can help you plan a program that fulfills graduation requirements while meeting your educational goals (see Advising: From Course Selection to Careers (p. 1459)).

If you are exploring majors you may intentionally explore different fields of study (p. 27) during your first two years at Santa Cruz by taking foundation courses that will help you both identify whether a major is a good fit for you and will satisfy prerequisites for declaring the major (called "major qualification requirements).

Students who enter as frosh or sophomores are required to declare a major before enrolling in the equivalent of their third year. Most students who enter as junior-level transfers are required to declare their major in their second quarter at UC Santa Cruz. This means that students should be certain they start taking major qualification courses as soon as possible. The program statements in this catalog indicate for each major whether it is important to begin taking classes right away. Transfer students should complete any lower-division requirements for their intended major that are offered at their current campus, and should ensure they have completed any major preparation requirements for admission. Some students may also find it helpful to complete courses that fulfill general education requirements.

During your junior and senior years at UC Santa Cruz, you will concentrate on the upper-division and comprehensive requirements for your major, as well as completing your general education requirements. If you entered UCSC without having fulfilled the requirement in American history and institutions, you will also need to do so before you graduate.

Graduation Requirements

To qualify for a bachelor’s degree, you must meet the following conditions:

- Earn a minimum of 180 credits (courses confer credits with a grade of pass or D minus or better)
- Satisfy the university requirements in American history and institutions and in Entry Level Writing (English composition)
- Satisfy each of the campus general education requirements with a course grade of Pass, C (2.0 grade point average), or better
- Satisfy requirement of your UC Santa Cruz college
- Complete an approved major program, including its Disciplinary Communication and comprehensive requirements, with grades of Pass, C (2.0 GPA), or better in all courses satisfying major requirements. **Some majors require letter grades higher than C to qualify to declare the major.**
- Have an overall GPA of at least 2.0 in all letter-graded courses taken at UCSC and other University of California campuses
- Have no more than 25 percent of your UCSC credits graded on a Pass/No Pass basis. This includes any credits completed in the Education Abroad Program or at another UC campus in an intercampus exchange program. Departments may require that some or all courses used to satisfy the major must be taken for a letter grade.
- Meet the UCSC senior residence requirement

UC Santa Cruz students are responsible for selecting courses necessary to fulfill graduation requirements and prepare for advanced study or a career. It is essential that you consult regularly with academic advisors about course selection.

Transfer students may be able to use some of the courses they completed at other schools to help meet the 180-credit requirement. (Semester-system credits can be multiplied by 1.5 to derive equivalent quarter-system credit.) A total of 70 semester credits (105 quarter credits) of lower-division credit toward a university degree may be earned at other colleges/universities. Only subject credit will be granted for lower-division courses taken in excess of that cap.The Office of Admissions determines which courses are transferable.

University Requirements

UC Santa Cruz administers three requirements from the University of California: (1) American History and Institutions, (2) Entry Level Writing, and (3) UCSC senior residence.

American History and Institutions*

All University of California undergraduate degree programs require the completion of the American History and Institutions, (AH&I) requirement. Successful completion of AH&I ensures that every student graduates with a fundamental understanding of American history and the principles of American institutions under the federal and state constitutions.

Students may satisfy this requirement by completing qualifying courses or achieving a qualifying score on a standardized exam. Many students will have already fulfilled the AH&I requirement through a high school American history or government course.

This requirement may be satisfied in any one of the following ways:

Qualifying High School Coursework

- Completing a one-year high school course in U.S. history or a half-year course in U.S. history and a half-year course in American government.

Note: Transfer students may need to take additional action to send their high school transcript to UC Santa Cruz, as they are not always required for transfer admission.

Qualifying Test Scores

- score of 3 or higher on the College Board Advanced Placement (AP) Examination in United States History.
- score of 5 or higher on the International Baccalaureate Higher Level (IBH) Examination History of the Americas.

Qualifying Transfer Coursework

Transfer students who satisfy a community college's history and institutions requirement also fulfill the AH&I requirement at UC Santa Cruz. To receive credit, certification of completion must appear on an official transcript from an accredited California institution of higher education.

The AH&I requirement may be satisfied by completing a course in United States history or United States government at another college or university. The course must be 3 semester/4 quarter credits or more, and must be completed with a grade of C/P or better.

California community college courses that satisfy the UCSC AH&I requirement are listed on ASSIST.org:

1. On the ASSIST.org homepage, select the California Community College institution where you plan to enroll, and select "University of California, Santa Cruz" from the "Agreements with Other Institutions" pulldown menu. Select the "View Agreements" button.
2.
3. Select the "General Education / Breadth" agreement type, and then select the "University Requirements" agreement. The agreement will display the American History & Institutions (AH&I) courses available at that California Community College.

Satisfying AH&I at UC Santa Cruz

Students can search for courses that satisfy the American History and Institutions requirement in the "Class Search," under the General Education pulldown menu.

As of spring 2025, the following courses satisfy the American History and Institutions requirement:

Education 164
History 10A, 10B, 12, 15, 82, 90A, 110A , 110B, 110D, 110E, 110H, 116, 128
John R. Lewis College 135
Legal Studies 120A, 120B, 120C
Literature 81F
Politics 20, 120A, 120B, 120C
Sociology 170

Tracking AH&I Completion

Students can confirm completion of the AH&I requirement in their Degree Progress Report (DPR). Students who have completed a qualifying course or received a qualifying test score, but do not see this requirement satisfied in their DPR, can contact the Degree Progress Unit at transfercredit@ucsc.edu to request a review of their student record.

Entry Level Writing Requirement

Every candidate for a bachelor's degree must demonstrate an acceptable level of ability in English composition. Prior to enrollment in your fourth quarter, you must fulfill the Entry Level Writing Requirement (ELWR) in one of the following ways:

Qualifying Test Scores

- 30 or higher on ACT English Language Arts
-

63 or higher on ACT English + Reading
Note: *The ACT English alone will not fulfill the ELWR. For the ACT English + Reading scores, the combined scores must come from the same exam sitting.*

-

680 or higher on the Evidence-Based Reading and Writing section of the SAT
Note: *The digital SAT Reading and Writing section score has not been approved to meet the ELWR.*

- 3 or higher on the College Board Advanced Placement (AP) Examination in English Literature and Composition
- 3 or higher on the College Board Advanced Placement (AP) Examination in English Literature and Composition
- 3 or higher on the College Board Advanced Placement Examination in Seminar (for students entering Fall 2023 and later)
- 3 or higher on the College Board Advanced Placement assessment in Research (for students entering Fall 2023 and later)
- 5 or higher on the International Baccalaureate Higher Level (IBH) Examination in English A: Literature
- 5 or higher on the International Baccalaureate Higher Level (IBH) Examination in English A: Language and Literature
-

6 or higher on the International Baccalaureate Standard Level Examination in English A: Literature
Note: *The university does not grant unit credit for IB Standard Level exams.*

-

6 or higher on the International Baccalaureate Standard Level Examination in English A: Language and Literature
Note: *The university does not grant unit credit for IB Standard Level exams.*

Qualifying Transfer Coursework

Prior to enrollment at UCSC, students may satisfy the ELWR requirement by earning a grade of "C" or better in a transferable English composition course worth 3 semester/4 quarter credits or more.

Once enrolled, students who have not satisfied the ELWR via qualifying test score or transfer coursework should plan to complete the ELWR at UCSC as detailed below.

Satisfying the ELWR at UC Santa Cruz

Incoming students who have not satisfied the ELWR via qualifying test score or transfer coursework will follow a directed self-placement process to enroll in an appropriate writing course at UCSC: WRIT 25, WRIT 26, WRIT 1, WRIT 1E, or WRIT 2. Courses are offered in sequence depending on placement. Students who successfully pass WRIT 1 or WRIT 1E or students who place into WRIT 2 will satisfy the ELWR.

All students entering UCSC as frosh in 2020 or later must demonstrate their command of the English language by satisfying the ELWR before enrolling in their fourth quarter. Students placed into WRIT 25 have until the end of their fourth quarter of enrollment to satisfy the ELWR.

Students who are unable to satisfy the ELWR at UCSC before enrolling in their fourth quarter should consult the Writing Program website to identify options for completing the ELWR, including taking qualifying coursework outside of UCSC.

For additional information on the ELWR and fulfilling UCSC's writing requirements, please visit the Writing Program's website.

Tracking ELWR Completion

Students can confirm completion of the ELWR in their Degree Progress Report (DPR). Students who have completed a qualifying course or received a qualifying test score, but do not see this requirement satisfied in their DPR, can contact the Degree Progress Unit at transfercredit@ucsc.edu to request a review of their student record.

Senior Residence

Senior Residence

Every candidate for a bachelor’s degree must be registered at UCSC for a minimum of three quarters. In addition, of the final 45 quarter credits, 35 must be in regular courses of instruction taken as a registered student at UCSC (including during the summer session).

The credit requirement for residence is applied differently to students participating in one or more of the off-campus study programs approved by the Academic Senate or the division. Participating students may satisfy the requirement in either of two ways:

1. Complete 35 of their *final 45 credits before leaving the Santa Cruz campus* to participate in one or more off-campus approved study programs. In this scenario, students do not have to return to Santa Cruz for any additional coursework after they have finished the program(s).
2. Complete 35 of their last 90 credits at the Santa Cruz campus, with a minimum of 10 credits completed at UCSC after their return from the off-campus approved study program(s).

A student who takes courses outside UCSC, e.g., at community college, may choose at the time of graduation to

have only some of the credits completed outside counted toward the 180-credit graduation requirement in order to meet the residency requirement. Subject credit will still be given for lower-division courses and courses at other campuses of the University of California that are not counted toward the graduation requirement. This will not require a petition, and the credit will be reduced by the Office of the Registrar, in consultation with department or college advisors, or the Admissions Office, as needed.

Open campus / Concurrent Enrollment: For students who have been admitted and matriculated at UC Santa Cruz, but who have not yet graduated, the grades earned in Open Campus/ Concurrent Enrollment courses taken after their first matriculation at UCSC appear on the student's UC Santa Cruz transcript, are notated as Open Campus courses, count toward University of California and UC Santa Cruz Grade Point Average (GPA), and count toward senior residency requirements. For more information on Open Campus, see UCSC SIlicon Valley Extension.

General Education Requirements

UC Santa Cruz's General Education (GE) requirements are meant to accomplish several goals:

- Provide students with a base of knowledge and skills that future learning can build on.
- Expose students to a broad range of disciplines and methodologies, to better prepare them for a world of complex problems and rapid changes.
- Enhance the abilities of students to approach problems in appropriately analytical ways.
- Prepare students to function as responsible and informed participants in civic life, considering pressing societal issues (such as the environment, the economy) productively and from a variety of perspectives.

Each area has a general education code, and only courses with that code satisfy the requirement. Codes appear in the course descriptions in this catalog and in the "General Education" field on the MyUCSC Class Search page. Students can earn general education credit by successfully completing a GE=satisfying courses with a grade of Pass, C (2.0 grade point average), or better.

Students should review the requirements for their proposed or declared major(s) to ascertain whether some of their general education requirements will be fulfilled by completing their major.

General Education Requirements

Category	General Education Code	Number of Required Credits
Cross-Cultural Analysis (p. 1441)	CC	5
Ethnicity and Race (p. 1442)	ER	5
Interpreting Arts and Media (p. 1442)	IM	5
Mathematical and Formal Reasoning (p. 1442)	MF	5
Scientific Inquiry (p. 1442)	SI	5
Statistical Reasoning (p. 1442)	SR	5
Textual Analysis (p. 1442)	TA	5
Perspectives (choose one from the following three categories) Environmental Awareness (p. 1443) Human Behavior (p. 1443) Technology and Society (p. 1443)	 PE-E PE-H PE-T	5
Practice (choose one from the following three categories) Collaborative Endeavor (p. 1443) Creative Process (p. 1443) Service Learning (p. 1443)	 PR-E PR-C PR-S	2
Composition (p. 1444)	C	5
Disciplinary Communication (p. 1444)	DC	5*

*Students satisfy the Disciplinary Communication (DC) requirement by completing one to three upper-division courses required for their major, totaling a minimum of five credits. The DC requirement must be completed at UCSC—transfer and EAP courses do not apply to this requirement.

Cross-Cultural Analysis

CC code: one 5-credit course or equivalent. Courses that carry the CC GE designation aim to prepare students for a globalizing world, with increased interaction and integration among peoples, economies, and governments. These courses

aim to encourage a broader and deeper understanding of cultures and societies outside the United States. Such courses might provide an in-depth examination of one culture, or one aspect of such culture (for example, art, music, history, language). Alternatively, these courses might aim to help students develop skills of cross-cultural comparison and analysis. A third option is courses that explore topics that are inherently cross-cultural such as international relations or the processes of economic globalization. Whatever the approach, these courses all aim to help students develop the openness and critical perspective necessary for cross-cultural understanding. Although themes of privilege and oppression are centrally relevant to the history and current experience of many cultures, such themes are not required to be addressed in cross-cultural awareness courses.

Ethnicity and Race

ER code: one 5-credit course or equivalent. Courses that carry the ER GE designation prepare students for a state and a world that are increasingly multiethnic and multiracial. Beyond familiarizing students with the culture and/or history of one or more ethnic or racial groups, these courses also aim to develop theoretical and practical understanding of questions such as (but not limited to):

1. how categories of ethnicity and race are constructed
2. the role that ethnicity and race can play in identity formation
3. how ethnicity and race have historically been used to justify forms of enforced inequality
4. contributions of people of various ethnicities to society and to political change

Whatever the approach, these courses are particularly concerned with how ethnicity and race may intersect with other categories such as gender, class, or sexual orientation, to shape self-understanding and patterns of human interaction. While such courses may often adopt an historical perspective on the issues they consider, they will provide a critical perspective on race/ethnicity relevant to the present.

Interpreting Arts and Media

IM code: one 5-credit course or equivalent. Courses that carry the IM GE designation explore the complex ways in which information of all kinds is represented by visual, auditory, or kinesthetic means, or through performance. Contemporary life bombards us with visual and auditory media, often in the form of advertising or advocacy. These courses build an in-depth understanding of one or more forms of artistic media: that is, media in which non-textual materials play primary roles. They offer skills in the practice, analysis, interpretation, and/or history of one or more of these media, as well as the ability to analyze the means by which these media encode and convey information.

Mathematical and Formal Reasoning

MF code: one 5-credit course or equivalent. Courses that carry the MF GE designation emphasize university-level mathematics, computer programming, formal logic, or other material that stresses formal reasoning, formal model building, or the application of formal systems. These courses generally focus on one of the following:

1. mathematical reasoning and proof
2. formal logic
3. computer programming
4. other formal systems (e.g., generative grammars, economic models, formal music theory)

Whichever particular approach is used, these classes aim to teach students to think with rigor and precision, using formal or mathematical models to teach the value of logical reasoning and dispassionate analysis.

Scientific Inquiry

SI code: one 5-credit course or equivalent. Courses that carry the SI GE designation teach students about the essential role of observation, hypothesis, experimentation and measurement in the physical, social, life, or technological sciences. Students should acquire key concepts, facts, and theories relevant to the scientific method. By the end of the course they should be able to articulate an understanding of the value of scientific thinking in relation to issues of societal importance. Such courses would allow students to acquire key concepts, facts, and theories relevant to the:

1. physical scientific method
2. social science aspect
3. life sciences
4. technological method

Statistical Reasoning

SR code: one 5-credit course or equivalent. Courses that carry the SR GE designation focus on developing skills in approaching quantitative data and statistical reasoning. These courses help students interpret quantitative claims and make judgments in situations of statistical uncertainty. Such courses might include topics such as:

1. ways of presenting and misrepresenting data
2. statistical inference
3. experimental design and data analysis

Textual Analysis and Interpretation

TA code: one 5-credit course or equivalent. Courses that carry the TA GE designation have as their primary methodology the interpretation or analysis of texts. The aim of these courses is to develop higher-order reading skills and

to train students how to read attentively, to think critically and analytically, to produce and evaluate interpretations, to assess evidence, and to deploy it effectively in their own work. These abilities are not only necessary for academic success, but also for full participation in civic life at every level. Textual analysis is the examination of **how and whether** a piece of writing or speaking achieves its aims, whether these are rhetorical and persuasive or aesthetic. Such courses should pay substantial attention not only to what information a poem, political speech, or scientific essay conveys, but to how it goes about doing so (by mobilizing particular metaphors, through plain speaking, via flowery language, by calling on scientific authority, or other mechanism). Please note that close reading leading to summary does not on its own constitute textual analysis.

Perspectives (one 5-credit course or equivalent from any one of the three following categories)

Perspectives: Environmental Awareness (PE-E code). Courses that carry the PE-E GE designation teach students about the complexity of particular ecosystems and/or people's interactions with nature so that students will better understand the environmental issues and trade-offs that are likely to arise in their lifetimes. The interactions between people and the Earth's environment are subtle, complex, and influenced by a variety of natural, scientific, economic, cultural, and political factors. Courses deal with one or more of the following topics:

1. The study of particular ecosystems or environments
2. Natural forces, processes, and their effect on ecosystems
3. Climates, climate models, and climate change
4. Evolution and adaptation to the environment
5. Bio-diversity and/or the robustness of nature and its feedback mechanisms
6. How cultures relate to their natural environments
7. Human efforts to create, preserve, and modify environments
8. Management of natural resources (such as fossil fuels, forests, and fisheries)
9. Issues of sustainability (such as sustainable agriculture or renewable energy)
10. Pollution and its effect on ecosystems
11. Ecological impacts of non-native species and other ecological disasters

Perspectives: Human Behavior (PE-H code). Courses that carry the PE-H GE designation help students to prepare for a world in which many of the most pressing challenges (such as genocide, environmental degradation, poverty) are impacted by human thoughts, decisions, or practices. As well, they provide a kind of "owner's manual" for students to assist them in understanding themselves, their roles (for example, parent, partner, leader), and their social groups (family, workplace, neighborhood, nation). These courses impart specific knowledge about some aspect of individual human behavior or the operation of human groups. As well, they are likely to provide an introduction to one or more specific methodologies, such as ethnography, longitudinal analysis, or experimentation. A central aim, however, is to help students appreciate that better solutions to problems (whether global or personal) can often be found by incorporating information about how humans think, feel, and act.

Perspectives: Technology and Society (PE-T code). Courses that carry the PE-T GE designation focus on understanding technological advances, how they are developed, and their impacts on society. Imparting a basic understanding of the dynamic technological society in which we live is an essential goal of academic institutions. The study of technology helps satisfy the need of society for knowledgeable people able to understand, participate, and guide the rapid technological advances that play such a vital role in our world.

Practice (one minimum 2-credit course from any of the three following categories)

Practice: Collaborative Endeavor (PR-E code). Courses that carry the PR-E GE designation teach students strategies and techniques for working effectively in groups to produce a finished product. For example, students might learn specialized practical information, such as how to use change-management software to monitor and manage changes initiated by multiple group members. Alternatively, they might learn basic information about leadership, teamwork, and group functioning, which they can incorporate into their own group process. What is common to all courses that carry the PR-E general education requirement is that some instruction regarding the process of collaboration is provided in addition to instruction specific to the academic discipline and the products being produced. In other words, assigning group work is not sufficient; explicit instruction in techniques of collaboration is required.

Practice: Creative Process (PR-C code). Courses that carry the PR-C GE designation teach creative process and techniques in a context of individual or collaborative participation in the arts, including creative writing. For creative writing, students will publish an informal group collection or individual dossier of their successful writings. Courses may combine theory and experiment in the creation of a new artwork, or new interpretation(s) of an existing artwork. Creative Process courses include studies in individual or group creativity or improvisation, and/or ensemble rehearsal and performance. Students who elect to satisfy this requirement will take at least two credits of individual or group creative work; however, the requirement

may be satisfied within courses of greater than two credits. Where appropriate, sponsoring units may require a sequence of two or three 2-credit courses with the PR-C designation assigned to the final quarter. For sequences culminating in a semi-professional public performance, an audition at which students demonstrate aptitude and a foundation of skills will be required.

Practice: Service Learning (PR-S code). Courses that carry the PR-S GE designation provide supervised learning experiences where students reflect on, communicate, and integrate principles and theories from the classroom in real-world settings. Service learning provides students with an opportunity to integrate their academic coursework with community involvement. Students gain valuable practical skills while giving back to the community.

Composition

The general education writing requirements at UCSC consist of the Entry-Level Writing Requirement (ELWR), and Composition (C). Successful completion of ELWR is a prerequisite for students' enrollment in the C course (Writing 2). Students must successfully complete Writing 2 before the seventh quarter of enrollment.

Disciplinary Communication (DC) Requirement

The goal of this requirement is to ensure that students acquire the skills in writing and other forms of communication appropriate for their discipline. As such, the DC is automatically fulfilled by the completion of major requirements. Students satisfy the DC requirement by completing between one and three upper-division courses required for their major, totaling a minimum of 5 credits. The DC requirement must be taken at UCSC. Any exceptions or substitutions to the Disciplinary Communication requirement must be approved by the Committee on Courses of Instruction.

Disciplinary Communication requirements from 2019 onward are compiled here.

College Requirements

You must fulfill the requirements of your college in addition to those of your major and of the university. Each college has established a core course, which all first-year students are required to complete. Students admitted as transfer students are exempt from the core course requirement but may take the course at their option on a space-available basis. College requirements are outlined below.

COLLEGE NINE

- CLNI 1, Academic Literacy and Ethos: International and Global Perspectives, fall quarter

COLLEGE TEN

- JRLC 1, Academic Literacy and Ethos: Social Justice and Community, fall quarter

COWELL

- COWL 1, Academic Literacy and Ethos: Imagining Justice, fall quarter

CROWN

- CRWN 1, Academic Literacy and Ethos: Ethical and Societal Implications of Emerging Technologies, fall quarter

KRESGE

- KRSG 1, Academic Literacy and Ethos: Power and Representation, fall quarter

MERRILL

- MERR 1, Academic Literacy and Ethos: Reading Ourselves, Reading the World, fall quarter

OAKES

- OAKS 1, Academic Literacy and Ethos: Communicating Diversity for a Just Society, fall quarter

PORTER

- PRTR 1, Academic Literacy and Ethos: Arts of Reading, fall quarter

RACHEL CARSON COLLEGE

- CRSN 1, Academic Literacy and Ethos: Environment & Society, fall quarter.

STEVENSON

- STEV 1, Academic Literacy and Ethos: Self and Society, fall quarter

and

- STEV 2, Self and Society 2, winter quarter

Exam Credit

The University of California grants unit credit for College Board Advanced Placement (AP) Examinations on which a student scores 3 or higher, for International Baccalaureate Higher Level (IBH) Examinations on which a student scores 5 or higher, and for designated GCE or Singapore-Cambridge Advanced Level (A-level) grades of A, B, or C. Students must have official test score reports sent directly from the testing

service to UC Santa Cruz to receive credit. Note: not all AP, IBH and A-level exams have been approved by the University of California to grant unit credit.

Students who complete the International Baccalaureate (IB) diploma with a score of 30 or above will be awarded six quarter units toward their UC undergraduate degree, in addition to the units earned for scores of 5 or higher on designated individual Higher Level exams (usually 24 quarter credits). The university does not award unit credit for IB Standard Level or Advanced Subsidiary (AS) exams. Visit the University of California Admissions website for more information about exam credit.

Unit credit awarded for designated examinations may be applied toward UC Santa Cruz graduation requirements, including specific subjects and/or general education/breadth requirements. Refer to the UC Santa Cruz Exam Equivalency Chart listed below for more information. Some exams also satisfy the American History and Institutions (AH&I) Requirement (p. 1439)or the Entry Level Writing Requirement (ELWR) (p. 1439). Students who enter UC Santa Cruz with exam credit do not have to declare a major earlier than other students, nor are they required to graduate earlier. Exam credit does not count toward the maximum of 105 lower-division transferable units toward a degree.

Students will not receive duplicate credit for multiple exams in the same subject area, such as AP Biology and IBH Biology. Students may receive credit for exams and college courses in the same subject area, such as AP Biology and a college-level introductory biology course, but only if the exam is taken before the college-level course. Exams taken after college courses in the same subject area will not be awarded duplicate credit.

The current UC Santa Cruz Exam Equivalency Chart, and an archive of charts from previous years, can be found on the Degree Progress Unit website.

Credit for Transfer Students

General Education for Transfers

Transfer students may apply courses taken at other institutions toward lower-division general education requirements. The disciplinary communication course(s) (DC code) must be taken at UCSC.

If you are currently attending one of the California community colleges, see the ASSIST website, consult with the UC Santa Cruz Office of Admissions, or consult with your current counselor to determine which college courses satisfy UCSC requirements.

Transfer students who have satisfied the general education or breadth requirements of another UC campus prior to transfer will be considered to have completed the UCSC general education requirements, with the exception of the DC requirement. Students will need to request a Letter of Reciprocity from their former UC campus in order to have their general education requirements satisfied by completion of requirements at that campus. Completion of the Intersegmental General Education Transfer Curriculum (IGETC), or the California General Education Transfer Curriculum (Cal-GETC) prior to enrollment at UCSC will also be accepted in lieu of the campus general education requirements, with the exception of the DC requirement.

Intersegmental General Education Transfer Curriculum (IGETC)

The Intersegmental General Education Transfer Curriculum (IGETC) is a series of courses that prospective California community college transfer students may complete to satisfy the lower-division general education requirements at UC Santa Cruz, excluding the upper-division Disciplinary Communication (DC) requirement. The IGETC is intended exclusively for California community college transfers and is not an option for continuing UCSC students (including students who transferred to UCSC without having completed a full or partial IGETC before their first quarter) or for students transferring from four-year colleges or universities.

For more information about IGETC, visit the UC Admissions IGETC webpage.

Transfer students can be certified for full IGETC (completed the curriculum) or partial IGETC (missing no more than two courses) based on coursework taken prior to their first term of enrollment at any UC. Official certification for full or partial IGETC can only be obtained through a student's California community college. Certification should clearly notate full or partial UC IGETC completion and can be included on a student's official transcript or on the IGETC certification form. Partial IGETC certification must indicate exactly how many courses from each area are missing. Students who are partially certified will be contacted by the Degree Progress Unit after the official partial IGETC certification is received with further instructions. Courses used to satisfy IGETC must be completed with a grade of C (2.0) or better. A grade of Credit or Pass may be used if the community college's policy states that it is equivalent to a grade of C (2.0) or better.

IGETC is not recommended for majors that require extensive course preparation, such as any major in Baskin Engineering or the Division of Physical and Biological Sciences.

If you do not complete IGETC or partial IGETC prior to beginning at UC Santa Cruz, you are required to complete the UC Santa Cruz general education requirements.You may not return to your previous institution to complete full IGETC after entering a degree program at any UC campus,If you have been certified for partial IGETC you may take courses at UCSC or a community college to satisfy the remaining course(s). If you have neither full nor partial IGETC, you may take courses at UCSC or a community college to satisfy any remaining UCSC general education requirements.

California General Education Transfer Curriculum (Cal-GETC)

Beginning in fall 2025 Cal-GETC will be replacing IGETC as the singular general education pathway for students at the

California Community Colleges. For more information and updates refer to the UC Admissions website.

Major Requirements and Course Prerequisites for Transfer Students

Students who believe they have taken courses at other institutions that satisfy major requirements or UCSC course prerequisites should review ASSIST.org for existing transfer articulation agreements from California community colleges. If they have additional questions for courses from other institutions, they should contact their major advisor for review.

Major and Minor Requirements

To qualify for a bachelor's degree at UCSC, you must complete the minimum requirements for a major program, as well as satisfy university, campus, and college requirements.

At UCSC, you have the option of pursuing a single major, a double major, or a combined major. The minimum requirements for an established major program are set by the sponsoring department. (If you are a transfer student, the department will determine which of your transferable courses may be used to satisfy major requirements.) The major involves substantial work in the discipline and requires no fewer than 40 upper-division or graduate credits. Only courses in which you earn a grade of Pass, C (2.0 GPA), or better satisfy major or minor requirements.

Additional Majors or Minors

To complete multiple majors and minors, you must fulfill all of the requirements for all majors and minors declared, including the comprehensive requirement for each major. In general, a single thesis may not be used for more than one major.

Since double majors and minors require far more upper-division coursework than a single major, it is important to plan early. Advisers have found that many students overestimate the advantages of a two-major program, without considering that depth in one major is sacrificed for breadth in two areas. Talk to faculty and staff in the departments, your academic preceptors, and Career Center advisers, who will be happy to discuss the advantages and limitations of various programs with you.

Sharing courses: You may share some courses between more than one major or minor, as long as each major includes a minimum of 40 upper-division credits not used to satisfy the minimum upper-division credits of any other major or minor, and each minor includes a minimum of 25 upper-division credits not used to satisfy the minimum upper-division credits of any other major or minor. This is often referred to as the "Double Counting" requirement.

Restrictions on combinations: Some programs and/or majors have policies preventing specific double major and major/minor combinations. Review the program statement for your desired major(s) for details about possible restriction, or the feasibility of combinations. You are also highly encouraged to speak with advisors from the applicable programs before pursuing additional majors or minors.

Criteria: If you decide you want to pursue a double major/minor, you must:

- Demonstrate you can complete the double major or major/minor in 15 quarters, or in 9 quarters for junior transfer students.
- File for declaration of a double major or major/minor by the end of your sixth quarter of enrollment if you entered as a frosh, or second quarter of enrollment if you entered as a junior transfer. Exceptions: students who have transferred in with large numbers of advanced placement credits, and/or students who have taken 20 credits some quarters.
- If you decide to complete only one of the majors, you must file a Request for Drop of a Major/Minor with the adviser for the major you wish to drop.

Diplomas: The diploma of a student who has completed a double major in history and music, for example, would read "Bachelor of Arts with Majors in History and Music."

Declaring a Major

The field of interest you indicate on your application to the University of California, Santa Cruz, does not automatically place you in a major. You are advised to declare your major as soon as possible. Students who enter as lower-division students are required to declare a major before enrolling in the equivalent of their third year.* You will not be allowed to enroll in classes for the equivalent of your third year until you have declared a major. Junior transfer students must declare a major during their second quarter at UC Santa Cruz by the deadline printed in the Academic and Administrative Calendar.

Be sure you are aware of all the necessary criteria for qualifying for the major. Petition to declare a major as soon as you complete major qualification requirements, or reach your declaration deadline quarter, whichever comes first..

Determine the requirements for possible majors as soon as possible. Certain majors require substantial preparation, with many interlocking course sequences and qualifying grades in major foundation courses. If you intend to pursue such a major, start work toward it early in your undergraduate career, and review your progress toward qualification regularly. (Review majors that interest you in the Academic Programs (p. 27) section of the catalog). Academic advisors can offer assistance in selecting courses appropriate to your individual needs.

***Note:** This is the year you would become a junior given normal progress to degree. For example, if you transfer to UCSC as a beginning sophomore, it is your second year here.

Comprehensive Requirement

Every major at UCSC includes a senior exit requirement designed to integrate the knowledge and skills learned

throughout the curriculum. This capstone requirement may be a senior thesis, senior seminar, comprehensive examination, or some other integrative experience. Choices for satisfying this requirement are specified with the requirements for each major.

Minor Programs

See Fields of Study for undergraduate minors currently offered at UC Santa Cruz. Completion of a minor is optional. If you wish, you may complete more than one minor.

The sponsoring department establishes the course requirements for a minor. The minor involves substantial work in the discipline and requires no fewer than 25 upper-division or graduate credits. The minor appears on your official transcript but not on your diploma.

Combined Major

A combined major allows you to complete a course of study involving two disciplines offered as regular programs at UC Santa Cruz.

Examples of combined majors include environmental studies/economics and Latin American and Latino studies/politics. A combined major is designed by faculty representatives from both disciplines. In general, fewer courses are required than for a double major, and students complete the comprehensive requirements as specified for each combined major. Combined majors currently available are listed in the footnotes in the Fields of Study.

The diploma of a student who has completed a combined major in environmental studies and economics, for example, would read “Bachelor of Arts with a Major in Environmental Studies/Economics.”

Individual Major

Academically strong students have the option of developing an individual major. Individual majors must be vetted and approved by the Committee on Educational Policy (CEP), and must be distinct from any approved major program or possible combination of major programs. Regular deadlines to declare the major also apply to individual majors; students should declare their individual major by the end of their sophomore year.

Because the process of developing and proposing an individual major requires rigorous planning, and approval is not guaranteed, students are advised to pursue an existing major plan until a proposal has been submitted and approved by CEP. Make an appointment with your college academic advisor or preceptor as soon as possible if you are considering this option.

Forming an individual major can be challenging, since three faculty members in the discipline(s) must agree to serve on a committee to supervise the major, and the major must be approved by the Committee on Educational Policy. Guidelines, policies, and forms for individual majors can be found on the Academic Senate website: Individual Major Guidelines and Information, and in Academic Senate Regulation 10.4.5.

Individual majors must include at least 10 courses (50 credits), of which at least eight (40 credits) must be upper-division. No more than two of the required courses may be independent study courses. Students who cannot meet their original study plan for the major must consult with the committee chair, and in some cases, the Committee on Educational Policy, for approval of any changes. All students who complete an individual major are awarded a bachelor of arts.

Catalog Rights

Effective for all undergraduates who entered in fall quarter 1993 or after, students may follow the degree requirements from either the University of California, Santa Cruz General Catalog published at the time of entering UC Santa Cruz or subsequent catalog(s). Students need not follow a catalog in its entirety but may elect to follow different catalog years for their college requirements, university and general education requirements, requirements of their major(s), and requirements of any minor(s).

Catalog year will initially be set for the first year of enrollment at UCSC. Students may elect to follow requirements from other catalog year(s) when petitioning to declare their major, or by talking with their advisors. All requirements for graduation outlined in the catalog(s) selected must be met before graduation. Changing catalog year(s) is done by contacting your major advisor (for major or minor requirements) or your college advisor (for college, university, and general education requirements).

Students transferring from other collegiate institutions may elect to meet as graduation requirements one of the following:

- those in effect at the time of transfer to UCSC;
- those subsequently established; or
- those in effect when the student entered a previous collegiate institution, provided that entry was not more than three years prior to the time of transfer to UCSC.

Students who seek readmission to UC Santa Cruz after a break in attendance greater than two years (six fall, winter, or spring quarters) must adhere to the graduation requirements in effect at the time of readmission or those subsequently established.

Although general education requirements are determined by catalog year, the specific courses that satisfy a particular GE requirement can change from year to year. The Office of the Registrar annually publishes an updated list of courses that satisfy each GE requirement (except Disciplinary Communication). Since the GE status of a course may change, to fulfill a GE requirement, a student must take the course in a year in which its GE status is recognized.

The courses that satisfy the Disciplinary Communication GE requirement for each major are published in each year’s General Catalog. Students should consult the General Catalog

for the year in which they plan to take their DC course(s) to find out the courses that are needed.

Students who entered prior to 1993 should see an advisor. Their catalog year(s) for graduation, whether the year they entered UCSC or subsequent year(s), will be decided at the discretion of their major department and/or their college.

The policy and guidelines for catalog rights are overseen by the Academic Senate Committee on Educational Policy. To read the full policy text, please see CEP: Catalog Rights.

Institutional Responsibility

Undergraduate students who have made significant progress toward a degree in a specific major can assume that a degree will be granted if they meet all catalog degree requirements and maintain continuous enrollment and progress.

Should UCSC find it necessary to discontinue a specific major, every effort will be made to allow currently enrolled majors to complete their degrees within a reasonable period of time. This may include (1) movement to a similar or related degree track; (2) substitution of requirements; (3) development of an individual major proposal; or (4) completion of courses at another University of California campus through the Intercampus Visitor Program. Students with questions concerning this policy should contact their major and college advising offices.

In all cases, any financial obligations are the responsibility of the individual student involved.

Grade Types and Policies

UC Santa Cruz has one of the more comprehensive systems for evaluating students' academic performance of any research university in the United States. The evaluation system consists of two major components: the assignment of a final grade in the course and an optional evaluation of your performance.

Grades

For each course in which you enroll, you will receive a grade notation at the end of the term. Before the Grade Option deadline (the 15th day of instruction for graduate students; the ninth week of instruction for undergraduates), confirm your letter grade request for each course on the My.UCSC portal. If you complete the course, you will receive a final letter grade (A–F) unless you have elected the Pass/No Pass option for the course:

A excellent

B good

C fair

D poor

F fail

P passing

NP not passing

I incomplete

IP in progress

W withdrawal

If you withdraw from the course, you will receive a W notation. Under certain circumstances, when you have not completed all the requirements for the course, you may receive an interim grade of Incomplete (I) or In Progress (IP). The grades of A, B, C, and D may be modified by a plus (+) or a minus (-). You will not receive credit for graduation in any course in which you receive a final grade of F or NP. Courses in which you receive a grade of C-, D+, D, or D- earn credit toward graduation, but cannot be used to satisfy a major requirement or a general education requirement, and cannot satisfy a prerequisite for another course. The notation IP for graduate students is restricted to certain sequential courses that extend over two or three quarters of an academic year. The notation W indicates that you officially withdrew from the course before completing it. All grades, except I and IP, are final when submitted by the instructor. No change of grade may be made on the basis of re-examination or the completion of additional coursework with the exception of I and IP grades. Your official transcript contains a list of all of your courses and the grades that you receive.

Grade Points

Grade points are assigned to a letter grade as follows:

4.0 = A+

4.0 = A

3.7 = A-

3.3 = B+

3.0 = B

2.7 = B-

2.3 = C+

2.0 = C

1.7 = C-

1.3 = D+

1.0 = D

0.7 = D-

0.0 = F

The grades P and NP are not included in calculating your GPA and so are not assigned grade points. Courses in which the interim grades I and IP are assigned earn no grade points or credit until the interim grade is replaced by a final letter grade.

Grade Point Average (GPA)

Grade point average is determined by dividing the number of grade points earned by the number of credits attempted for a letter grade. There are three kinds of grade point averages: a current UCSC GPA, based on courses attempted in the current term; a UCSC GPA, based on all courses attempted at UCSC; and a summary GPA, calculated from all UCSC courses, courses taken through the Education Abroad Program, and courses taken at another UC campus as part of the Intercampus Visitor Program. Both UCSC GPAs are part of your official record and appear on your transcript.

Students are expected to maintain a GPA of at least 2.0, calculated from courses taken for a letter grade within the University of California system.

If you repeat a course in which you have received a C-, D+, D, D-, or F, only the last grade recorded shall be computed in your GPA for the first 15 credits of repeated work. After the 15 credit maximum is reached, the GPA will be based on all grades assigned and total credits attempted.

Undergraduates who entered UC Santa Cruz for the first time in or after fall 1997 and before fall 2001 have a UCSC cumulative grade point average only if they have elected letter grades in at least two-thirds of the cumulative credits attempted. Undergraduates who entered UCSC prior to fall 1997 cannot have an official UCSC grade point average calculated.

Pass/No Pass Option

Students in good academic standing may request to take specific courses on a Pass/No Pass basis up to the ninth week of instruction. Students receive a P (Pass) for work that is performed at C level or better. Work performed at below a C level receives a notation of NP on the student's transcript, and no academic credit is awarded for the course. Requests for Pass/No Pass grading must be submitted and confirmed by the Grade Option deadline printed in the Academic and Administrative Calendar. If you request P/NP grading in a course and you are later placed on academic probation, your P/NP grading request will be canceled.

No more than 25 percent of the UCSC credits applied toward graduation may be graded on a Pass/No Pass basis.* This includes any credits completed in the Education Abroad Program or on another UC campus in an intercampus exchange program, but does not include transfer work from community colleges or other institutions.

Students must be careful about the use of the Pass/No Pass option. Some courses may only be taken Pass/No Pass, and therefore count against the 25 percent Pass/No Pass limit. Several majors require all or most major requirements to be taken for a letter grade; read the major requirements section carefully before using the Pass/No Pass option for any course in a major you are considering.

The following courses are not available for a letter grade:
Student Directed Seminars: Courses Numbered 42
Anthropology 283
Biomolecular Engineering 281G, 281Y
Chemistry and Biochemistry 8N, 110N
Computational Media 15, 20
Cowell 10
Critical Race and Ethnic Studies 45
Earth Sciences 190
Ecology and Evolutionary Biology 75
Economics 93, 191, 193, 193F
Environmental Studies 83, 183, 184
Film 198, 198F
Global and Community Health 20
Graduate 215
History of Art and Visual Culture 198
Legal Studies 188A, 188B
Linguistics 190
Merrill 85B, 85C
Oakes 188A, 188B
Athletics and Recreation (all courses)
Psychology 193, 198
Stevenson 10
Theater Arts 45 (Student-Directed Production courses)
UCDC 194B
Writing 11A-B-C, 180, 191D

* Exceptions granted for 2019-2022 courses due to special circumstances: the Committee on Educational Policy has excluded Pass grades from the percent calculation for graduation (Spring 2020, Summer 2020, Fall 2020, Winter 2021, Spring 2021, Summer 2021, Fall 2022), due to emergency circumstances. In addition, UCSC courses graded P when a letter grade was requested by the student will not be included in the calculation of the 25 percent maximum P grades allowed for graduation.

Incomplete

The notation I may be assigned, at the discretion of the faculty teaching the course, when your work for a course is of passing quality but for which some specific required work has not been completed. You must make arrangements with the instructor before the end of the course in order to receive an Incomplete. If it becomes apparent that you will not be able to finish the final coursework before the last day of the quarter, let the instructor know as soon as possible. Because an I grade carries no credit, you should talk with your college adviser about the possible consequences on your academic progress. Students already in academic difficulty could jeopardize their progress by taking an Incomplete. To remove the Incomplete, you must submit the remaining coursework by the deadline and file a Petition for Removal of Incomplete by the deadline printed in the Academic and Administrative Calendar (generally the end of the following quarter; the instructor may require an earlier date). Once you have completed the coursework and the instructor has submitted the paperwork, the grade change will appear permanently on your academic record.

If the coursework and Petition for Removal of Incomplete are not completed by the specified deadline, or the instructor fails to submit a final grade, that course is treated as an F (Fail) or NP (No Pass), which will appear on your official transcript.

Grade changes (except for I as above) are allowed only to correct clerical or calculation errors by the instructor and must be submitted to the Office of the Registrar by the instructor in charge of the course within one year of the close of the quarter for which the original grade was submitted. Your instructor may require you to fill out a Petition for Removal of Incomplete. This form must be submitted to the Office of the Registrar by the instructor/department, not the student. However, your instructor can change an Incomplete grade to the final grade in the system without using this form.

Academic Senate Regulation 9.1.6 contains the general policy on Incomplete notations. The Graduate Student Handbook also contains information regarding receiving and removing an Incomplete grade notation.

Evaluations

In each undergraduate course for which you receive a grade of D or better (or P), you may receive an evaluation of your academic performance. Faculty may also write an evaluation for a course in which you receive an F, NP, or W, but the evaluation does not appear on an official transcript. An evaluation may:

- describe the strengths and weaknesses of your performance in the various areas of class activity (discussion, laboratory work, term papers, examinations);
- assess your general understanding of the course content;
- recognize additional or particularly outstanding work.

Evaluations may be used at UC Santa Cruz in academic advising, reviewing scholarship applications, and awarding honors in the major. Evaluations are a permanent part of your academic record. All students may request transcripts either with or without evaluations. An evaluation for your senior comprehensive examination or senior thesis also becomes part of your academic record.

You can view evaluations on MyUCSC.

Student Responsibility

Students are responsible for using the Academic Information Systems (AIS) to set and confirm choices for grading options and for ensuring timely completion of all requirements. Students view their schedule at MyUCSC.

Course Loads

Most courses at UCSC carry 5 quarter credits. The exceptions are described in the sections below. The usual course load for UC Santa Cruz undergraduates is 15 to 19 credits, most often as three 5-credit courses and associated laboratories and sections. After instruction begins, students with a UCSC GPA of 2.50 may enroll in up to 22 credits without special approval and may seek approval for higher loads from their college advising office. Students in their first quarter or with a lower GPA must seek approval from their college advising office for enrollment in more than 19 credits.

College approval is required to carry fewer than 15 credits unless the student is enrolled in the University Part-time Program.

Noncredit Courses

All physical education courses offered by the Athletics and Recreation Department and a few other courses identified in the UCSC General Catalog are noncredit. Noncredit courses do not count toward your 15-quarter credits program of study, and you may enroll in as many noncredit courses as you wish. Be sure to enroll; a record of these courses might be important to you at another institution, and your enrollment is used to justify the program's financial support.

Workload Credit-Only Courses

Courses offered at UCSC which are preparatory for university-level work count for "workload credit only." For example, the credits earned in Writing 11 are valid for financial aid purposes and academic standing, but do not count toward a baccalaureate degree. It is important that you officially enroll in these courses, because they affect your academic standing and/or eligibility for financial aid. These "workload credit only" courses are clearly identified as such in the catalog course descriptions.

One (1)-, 2-, and 3-Credit Courses

Some courses carry 1, 2, or 3 credits, because they require less work and meet for fewer hours than 5-credit courses (e.g., special interest seminars, laboratories, music lessons, and individual studies). The UCSC General Catalog shows the credit value for these courses after the course title, e.g., Music 9, Wind Ensemble (2 credits). The Schedule of Classes notes the number of credit hours for the course in the column immediately after the title: MUSC 9-01 Wind Ensemble 2.0.

If you are in the Part-Time Program, you are advised to pay special attention to the number of credits assigned for each course in which you enroll so that you do not exceed the 10-credit enrollment limit. Students in the Part-Time Program are assessed full fees if they enroll in more than 10 credits.

Credit by Petition

Regularly enrolled students may obtain full academic credit for a course by challenging the course. Challenging the course entails passing an examination or completing an appropriate body of work supervised by a regular instructor for the course. The petition for such credit must be approved by the instructor of the course, the chair of the department offering the course (or provost, if it is a course offered by a college), and the provost of the student's college. Some courses are not considered appropriate for credit by petition.

For foreign language students, credit by petition may not be used by students whose language ability greatly exceeds the course level proposed for challenge. Petitions for credit for

levels 4 and 5 cannot be filed in the same quarter. Contact the Language Program, 239 Cowell, 459-2054, for more information.

Academic Progress

Academic progress is a measure of the completion of courses with a D- or better, or Pass. Colleges monitor academic progress to ensure you are progressing toward your degree, which must be earned within 15 quarters of enrollment (five years). For full-time students that usually means completing the 180 credits needed for graduation in four years.

Your college will regularly check to ensure that you are making (at least) minimum progress toward completing your degree and, at the end of each term, will determine whether you are in good academic standing. You are required to make minimum progress toward your degree by maintaining total earned credits equal to or greater than the cumulative total of (a) 35 credits for the first academic year of full time enrollment, (b) 72 credits for the first two academic years of full-time enrollment (c) 36 credits for each additional year of full-time enrollment, and (d) four-fifths of the credits attempted in part-time enrollment. Credit transferred from other institutions upon enrollment at the UC Santa Cruz, is not included in minimum progress calculations.

If you do not pass enough credits with a grade of C or better (or P), you may be placed on academic notice. If your academic standing or progress falls below minimally acceptable levels, your college may require you to take higher course loads, complete Summer Session courses, or make other adjustments to your study plan. You may be disqualified from further enrollment in the university.

Part-time students are held to the same minimum progress standards as full-time students by treating each 15 credits attempted as the equivalent of one full-time term. Consult with your college academic adviser for assistance in this calculation if you have questions about the calculation of your academic progress.

Note: The Academic Standing and Minimum Progress Standards monitored by your college is not the same as the Financial Aid Satisfactory Academic Progress Policy.

Academic Standing

Academic standing is a measure of performance in completed courses. You must maintain a 2.0 UCSC GPA in both current and cumulative courses in order to remain in good academic standing.

If your UCSC term or cumulative GPA falls below 2.0 at the end of any term, you will be placed on a form of **academic notice** for the next term. The Office of the Registrar and your college will contact you if you are placed on academic notice. You will need to work with your college and major advisors to determine the best way to return to good academic standing. Be sure to take full advantage of the many learning support services available at UCSC.

If your UCSC GPA for any term falls below 1.5, or if you are on academic probation and your cumulative GPA at the end of a term is below 2.0, you are also **subject to disqualification**. This means that your enrollment at UCSC may be barred for a specific period of time, or you may be disqualified indefinitely from attending the University of California. In many cases, a specific study plan can be developed with your college that will enable you to remain enrolled at UCSC.

Financial aid's satisfactory academic progress policy (FASAP) is separate from the Academic Standing policy, and defines additional GPA and progress requirements for remaining eligible to receive financial aid. Information can be found on the Undergraduate Academic Progress and Financial Aid Information website.

Academic Notice

Academic notice is a serious call for you to take a careful look at your workload, study habits, choice of program of study, priorities, and motivation. The strategies for improving your academic standing differ depending upon the causes of your academic difficulty and whether the difficulty is a short-term problem in one term or whether it arises from a longer term pattern. Getting good advice from academic counselors will help you get back on the road to good academic standing. However, failure to actively address the problem may lead to a further decline in your academic standing to the point where you become subject to disqualification from the university.

Academic Disqualification and Barred Enrollment

If your academic standing declines to the point where you are subject to disqualification, your college will review your case and decide to take one of the following actions:

- to bar your enrollment for a specified period of time with conditions on your readmission;
- to disqualify you indefinitely from further enrollment in the university;
- to waive your barred enrollment or disqualification for a term, based upon indications that you may be able to improve your academic standing. In this case, your status is called “Academic Notice —Subject to Disqualification.”

Students who are given “Academic Notice — Subject to Disqualification” status may still enroll in classes, and live in university housing.

If you are barred or disqualified, that fact is entered on your permanent academic record. Your financial aid is cancelled, and you cannot continue to live in university housing. You are not eligible to audit or attend classes during the regular academic year. You may not receive a degree while you are on barred or disqualified status.

Appealing Disqualification or Barred

Enrollment

If you are subject to barred enrollment or disqualification, your college will notify you of the decision of the academic standing review committee regarding your status as soon as possible after the end of the term. The letter informing you of this decision will specify the time frame within which an appeal will be considered. If there is information relevant to determining your academic standing which you believe the academic standing review committee was not able to take into account, you may provide that evidence in a written appeal to your college provost. Students who appeal will receive written notification of the college's decision. If you do not appeal by the appeal deadline, the decision of the review committee will take effect immediately.

Readmission After Barred Enrollment or Disqualification

If your college bars your enrollment for a fixed period, it may also stipulate certain conditions on your readmission to UCSC. For example, students who are subject to disqualification at the end of their first year may be barred for one full year. In addition, the college may require the student to complete the equivalent of a year's coursework at another institution (for example, a community college) earning a certain GPA before the student can be readmitted to UCSC. In other cases, the readmission condition might not require additional coursework but would require a change of major or that personal or medical issues be addressed (courses taken outside of UCSC will not be used to improve your UCSC GPA).

Readmission after indefinite disqualification is more difficult. Generally students are indefinitely disqualified only after they have fallen into very serious academic difficulty. Readmission is approved for disqualified students only when there is reason to think that they have addressed the sources of their original academic difficulty and then only after more than one year has elapsed since their disqualification.

Readmission after barment or disqualification is not guaranteed, and will be carefully reviewed by the faculty at your college before being approved. In either case, you must make formal application to UCSC for readmission, observing the deadlines stated in the Academic and Administrative Calendar. Any conditions for readmission should be addressed in your application. See the section on Readmission.

Maximum Credits and Years

Students are expected to complete their degree objective(s) within four years, with maximum enrollment limits of at most 225 credits and five academic years (Advanced Placement and International Baccalaureate units are not counted). Upper-division transfer students are expected to complete their degree objective(s) within at most 135 UCSC credits and three academic years.

Colleges may make exceptions to the credit maximum for students in certain cases. Such exceptions are conditional on maintaining academic standing, minimal progress, and progress toward the degree objective(s).

Students in danger of exceeding the credit limit or the five-year or three-year limit may be required to modify their degree objective, such as by completing a major without a minor or double major, or completing a related major with fewer course requirements.

Repeating Courses

Some courses are marked "repeatable for credit", and may be taken multiple times. These are courses in which the course content varies from quarter to quarter. In general, however, a student cannot re-enroll in a course in which they received a grade of C (or pass) or better.

Undergraduates may repeat courses in which they earn a C-, D+, D, D-, F, No Pass, or W. For an undergraduate to repeat a course more than once requires approval of the student's college. A grade of W counts as an attempt. Courses in which a C-, D+, D, D-, or F is earned may not be repeated on a Pass/No Pass basis. Courses in which a grade of No Pass is earned may be repeated on the same basis or for a letter grade.

For the first 15 credits of repeated courses, the original grade is excluded from the GPA, and only the grade from the repetition is used. Repeating a course in which you got a C-, D+, D, D-, or an F (and getting a better grade) is an effective way of improving your GPA and perhaps your academic standing as well. Repetition of a course more than once requires approval of your college. After the 15-credit maximum is reached, all grades are included in the GPA, however, credit is not awarded more than once for the same course.

Final Examinations

Final examinations are required in all undergraduate courses unless the department or other agency sponsoring the course has obtained permission from the Committee on Educational Policy to evaluate students in another manner. Final examinations are only given during the examination-week period at the time announced in the Schedule of Classes, usually in the same room used for class meetings during the quarter. No change in the time or date of a final examination may occur unless the course sponsoring agency has obtained the approval of the Committee on Educational Policy. Requests must be received by CEP no later than the first week of the quarter in which the course is occurring. When finals are administered, they must be completed at the scheduled examination time and may not require more than the scheduled three-hour time block. If a take-home examination is not assigned until the week designated for final examinations, it cannot require more than three hours to complete.

To avoid three final examinations on the same day, students may want to consider the final exam schedule when enrolling in courses.

Instructors may bar students from taking the examination if they arrive late. If a student misses an examination due to an unavoidable emergency, the instructor may agree to give an Incomplete grade and schedule a makeup examination provided that the student's work is passing up to that point. When a final examination is one of the regular requirements in a course, no one taking the course may be individually exempted from it. Travel plans for vacation are not an emergency, and should not be made without checking the final examination schedule.

Closed Week

No examinations or tests other than laboratory examinations, quizzes, or individual makeup examinations may be given during the last week of instruction.

Examination Retention

An instructor may release to individual students the original final examinations (or copies). Otherwise, the instructor will retain final examination materials at least until the end of the next regular term. During that time students will be allowed to review their examinations.

Religious Observance

Given the diversity of religious practice within the campus community, academic and administrative units are encouraged to make reasonable accommodation when the schedule of a required campus event conflicts with an individual's religious creed. It is the official policy of the University of California, Santa Cruz, to accommodate, without penalty, requests for alternate examination times in cases where the scheduled time for the examination violates a student's religious creed.

Requests for accommodation for religious observance must be made directly to the faculty member in charge of the course within the first two weeks of the term or as soon as possible after an examination date is announced. Instructors are expected to make reasonable accommodation for such requests. Students who are unable to reach a satisfactory arrangement with an instructor should consult the head of the unit sponsoring the course.

Accommodations for Disability

Students with documented disabilities that require examination modifications will be accommodated in compliance with state and federal laws. Reasonable accommodations will be made based on recommendations from the Disability Resource Center.

Academic Integrity

The university is dedicated to the unhindered pursuit of knowledge and its free expression. It is essential that faculty and students pursue their academic work with the utmost integrity. This means that all academic work produced by an individual is the result of the sole effort of that individual and acknowledges the contributions of others explicitly.

It is the responsibility of students and faculty to be absolutely clear about what constitutes plagiarism, cheating, or other violations of academic integrity. Violations of academic integrity by students result in both academic sanctions (e.g., failing the course) and disciplinary sanctions (e.g., suspension or dismissal). Consult the campus's undergraduate academic misconduct policy for more information.

Undergraduate Honors

UC Santa Cruz awards several honors for outstanding academic achievement.

Dean's Honors

Full-time students will be eligible for quarterly Dean's Honors if they have earned a minimum of 12 credits that quarter, of which at least 10 are graded, with a term grade point average equal to or higher than that required for University Honors at graduation in their group for the current academic year.Students on the University Part-Time Program are eligible with 10 or fewer graded credits, with a term grade point average equal to or higher than that required for University Honors at graduation in their group for the current academic year. Dean's Honors are listed on student transcripts.

The notation "Dean's Honors" will appear on the transcript. GPA thresholds for Baskin Engineering majors are calculated separately from those of majors in all other divisions.

Honors at Graduation

Honors at graduation are awarded by the university and by the separate majors based on a review of their graduates' academic records. In general, honors are limited to 15 percent of the graduating class. University Honors are based on the cumulative UC GPA. Faculty review of major honors may involve additional criteria.

University Honors

To be considered for University Honors at graduation, students must have completed 70 or more credits at the University of California and have attained in their group* a UC GPA that places them in the rankings as follows: Summa Cum Laude, top 2 percent; Magna Cum Laude, next 3 percent; Cum Laude, next 10 percent. Each year and for each group, the registrar will calculate the GPA thresholds required for these levels of University Honors, based on the GPAs of recent graduates. The notation "University Honors" will appear on the diploma and

transcript.

* Note: GPA thresholds for Baskin Engineering majors are calculated separately from those of majors in all other divisions.

See Honors Criteria (p. 1454) for qualifying GPAs by graduation term.

Honors Criteria: Grade Point Averages by Term

Grade Point Average Criteria are based on the grade point averages of the top percentages of recent graduates, as follows:

- Summa Cum Laude: Top 2%
- Magna Cum Laude: Top 5%
- Cum Laude: Top 15%

Qualifying GPAs by term:

Quarters	School	Summa cum laude	Magna cum laude	Cum laude	Dean's Honors
Fall 2024-Summer 2025	School of Engineering	3.960	3.920	3.820	3.820
Fall 2024-Summer 2025	Divisions	3.980	3.950	3.850	3.850
Fall 2023-Summer 2024	School of Engineering	3.970	3.920	3.800	3.800
Fall 2023-Summer 2024	Divisions	3.980	3.950	3.860	3.860
2023 Fall 2022-Summer	School of Engineering	3.950	3.930	3.800	3.800
2023 Fall 2022-Summer	Divisions	3.980	3.940	3.830	3.830
2022 Fall 2021-Summer	School of Engineering	3.95	3.88	3.74	3.740
2022 Fall 2021-Summer	Divisions	3.97	3.92	3.80	3.80
2021 Fall 2020-Summer	School of Engineering	3.920	3.830	3.650	3.65
2021 Fall 2020-Summer	Divisions	3.950	3.900	3.740	3.740
Fall 2019 - Summer 2020	School of Engineering	3.920	3.850	3.730	3.730
Fall 2019 - Summer 2020	Divisions	3.950	3.880	3.730	3.730

Fall 2018 - Summer 2019	School of Engineering	3.930	3.850	3.670	3.670
Fall 2018 - Summer 2019	Divisions	3.940	3.870	3.710	3.710
Fall 2017 - Summer 2018	School of Engineering	3.920	3.820	3.640	3.640
Fall 2017 - Summer 2018	Divisions	3.920	3.830	3.660	3.660
Fall 2016 - Summer 2017	School of Engineering	3.910	3.840	3.650	3.670
Fall 2016 - Summer 2017	Divisions	3.940	3.850	3.660	3.710
Fall 2015 - Summer 2016	School of Engineering	3.920	3.840	3.650	3.650
Fall 2015 - Summer 2016	Divisions	3.920	3.830	3.650	3.650
Fall 2014 - Summer 2015	School of Engineering	3.87	3.80	3.57	3.57
Fall 2014 - Summer 2015	Divisions	3.93	3.87	3.69	3.69
Fall 2013 - Summer 2014	School of Engineering	3.91	3.80	3.64	3.64
Fall 2013 - Summer 2014	Divisions	3.92	3.84	3.67	3.67
Fall 2012 - Summer 2013	School of Engineering	3.98	3.86	3.63	3.63
Fall 2012 - Summer 2013	Divisions	3.92	3.84	3.65	3.65
Fall 2011 - Summer 2012	School of Engineering	3.88	3.83	3.60	3.60

Fall 2011 - Summer 2012	Divisions	3.91	3.84	3.64	3.64
Fall 2010 - Summer 2011	School of Engineering	3.85	3.77	3.55	3.55
Fall 2010 - Summer 2011	Divisions	3.92	3.84	3.67	3.67
Fall 2009 - Summer 2010	School of Engineering	3.94	3.75	3.53	3.53
Fall 2009 - Summer 2010	Divisions	3.91	3.83	3.65	3.65
Fall 2008 - Summer 2009	School of Engineering	3.91	3.68	3.54	3.54
Fall 2008 - Summer 2009	Divisions	3.91	3.84	3.65	3.65

Revised: 8/6/25

Honors in the Major

At graduation, the department sponsoring a student's major program may confer Honors or Highest Honors in the major. This notation appears on the transcript as well as on the diploma. In general, no more than 15 percent of the graduation class in a major will be awarded Honors at graduation.

Deadlines

To ensure consideration for honors in the major, students should apply to graduate by the Registrar's deadline.

Any student who has a reportable disciplinary sanction for a violation of academic integrity policies may be ineligible for any honors designation, at the discretion of the agency that awards the designation.

Undergraduate Honors Opportunities

Honor Societies

Many UC Santa Cruz students are members of departmental, professional, local, and national honor societies whose goals are to recognize and improve scholastic standing in an area of interest. Among these are Phi Beta Kappa, the oldest national society that advances scholarship and recognizes excellence in the liberal arts and sciences; Tau Beta Pi, the engineering honor society that recognizes students of distinguished scholarship, exemplary character, and dedication to service; and Psi Chi, which encourages, stimulates, and maintains excellence in scholarship, and advances the science of psychology. More information is available on the Honors Societies website.

Awards and Scholarships

For more information about scholarship and merit opportunities, please visit the Financial Aid and Scholarships Office website.

Transcripts

Academic records are maintained by the Office of the Registrar, which will issue an official transcript only on your authorized request.

For information on ordering transcripts, please refer to Registrar's Registrar's transcripts website.

If you have outstanding financial obligations to the university, a hold may be placed on your transcript. Students may access their unofficial transcript on MyUCSC.

Transcripts for UCSC Extension courses should be requested directly from UCSC Extension.

Privacy of Records

UCSC students are informed annually of the federal Family Educational Rights and Privacy Act (FERPA) and its provisions. This act, which the institution follows, was designed to protect the privacy of education records and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the Family Educational Rights and Privacy Act Office concerning alleged failures by the institution to comply with the act.

UCSC policy explains in detail the procedures to be used by the institution for compliance with the provisions of the act. FERPA guidelines are available at Privacy of Student Records. The full text of the University of California policies applying to the Disclosure of Information from Student Records is online: registrar.ucsc.edu/records/disclosure/index.html.

Questions concerning the Family Educational Rights and Privacy Act may be referred to the Office of the Registrar, email registrar@ucsc.edu.

Advising: From Course Selection to Careers

Academic Advising

Academic advising at UC Santa Cruz aims to partner with students to identify and pursue paths to graduation that support their educational goals and post graduation plans, and thereby make meaningful change for themselves, their families, and communities. The core of UCSC's advising system is housed in the colleges and academic programs and is supplemented by advising and support services throughout the campus.

College academic advisors (and also college assistant directors) are generalist professional advisors who help students understand campuswide requirements such as general education, academic progress, and time-to-degree policies. They can also help students identify majors that may be a good fit for them. Each college has an advising team that can provide students with individual and group advising and can refer you to resources and educational opportunities. You remain affiliated with your college advisors throughout your undergraduate career.

Program, major, or department advisors focus on a specific program. These professional advisors can help you understand major qualification and graduation requirements, and academic planning for the major (or minor). They help students identify appropriate faculty mentors, who can recommend courses and help you refine your educational goals, and enrichment opportunities within and related to the program. For transfer students and for students in many majors (such as those in the physical and biological sciences, engineering, and the arts), it is important to review information provided by major advisors prior to your first quarter on campus.

For help in assessing career interests and exploring and choosing career options, contact Career Success. The staff

also can assist you with résumé preparation, interviewing skills, applying for an internship, and job-search strategies.

If you plan to go on to graduate school, consult with faculty in your major. Faculty advisors are the best people to ask about the quality of graduate programs in your field of interest. In addition, Career Success offers guidance and workshops on applying to graduate school.

If you intend to pursue graduate study in a field not offered as a major at UCSC, you can often prepare for your intended program through one of the campus's regular majors. You must plan your studies carefully, however, and advising will be especially important. The Career Center has information that will help prepare you for graduate and professional programs. The following are some fields in which UCSC alumni have pursued graduate study and successful careers:

- Business
- Conservation
- Film
- Finance
- Guidance and counseling
- Health fields
- High-tech industry
- Human resources
- Industrial and labor relations
- International relations
- Law
- Marketing
- Museum administration
- Public administration
- Urban planning

Career Success includes staff with specialized expertise in preparing for careers in medicine or another health-related field (including dentistry, nursing, nutrition, occupational therapy, optometry, osteopathic medicine, pharmacology, physical therapy, public health, and veterinary medicine), and in preparing for careers in law.

A number of programs provide additional academic and comprehensive support services to students with specific needs. Educational Opportunity Programs (EOP), Services for Transfer, Re-Entry and Resilient Scholars (STARRS), and the Disability Resource Center are described below. Counseling on personal and family issues is available through Counseling and Psychological Services. If you need assistance that is not listed in this section, check with your college advisors.

Your first step in accessing advising at UCSC is to complete the online Slug Orientation courses.

Orientation

All new UC Santa Cruz students who enter in a fall quarter are expected to participate in an online "Slug Orientation" course, for which they earn 1 credit upon passing. This orientation course begins the process of academic advising and provides a comprehensive introduction to all aspects of UCSC. After participating in online orientation, students may choose and enroll in classes for their first term.

Summer Orientation is held over the course of the summer and includes separate programs for first-year and transfer students. Orientation is mandatory for all students, and is a gateway to enrolling in the first quarter's classes.

Fall Welcome Week, scheduled approximately five days prior to the beginning of fall quarter, is the next step in the orientation and advising process for new students entering fall quarter. It provides students with an opportunity to settle into life at UCSC, take advantage of important services, and continue their academic advising. Questions about Summer Orientation and fall Welcome Week can be directed to the Office of Campus Orientation Programs at (831) 459-5468, or via email to orientation@ucsc.edu. Information is also available at Campus Orientation.

International Orientation is required for all international students regardless of residency status. The mandatory International Orientation program eases students' transition to university life and introduces students to a research university's academic expectations, UC level writing norms, campus resources, and the UCSC and Santa Cruz communities. International Orientation is scheduled prior to Welcome Week and the beginning of fall quarter. For more information, please visit the International Orientation website.

Career Success

UC Santa Cruz graduates find success in many different career fields. Their superior education is the foundation for this success. The staff at Career Success will help you link your educational experience to the world of work. The center provides a variety of employment and career-development services to help students obtain rewarding and successful careers.

Both undergraduate and graduate students are encouraged to visit Career Success often throughout their time on campus. Undergraduates should check out the Career Planning Guide for additional career development activities suggested for students from first year through senior year.

Career Success— located at the Hahn Student Services Building, Room 125—can be reached at (831) 459-4420 or at csuccess@ucsc.edu.

Educational Opportunity Programs (EOP)

The Educational Opportunity Programs (EOP) provide a variety of academic and personal support designed to improve the retention and academic success of first-generation low-income and educationally disadvantaged college students. EOP helps ensure that these students successfully complete

their undergraduate education and acquire the skills to prepare for graduate and professional school, as well as for future leadership roles.

Building on the legacy of the Civil Rights movement, EOP's equity-minded staff team (students and professionals) advocate for and partner with each student and the larger campus community, from the first year and beyond graduation, to dismantle systemic barriers to their success, uncover the hidden curriculum, and cultivate a space where they can learn and belong at UC Santa Cruz.

Bridge Program

The Bridge Program is a first-year experience program that supports and guides students in their transition from high school to university. Participants are first-generation college students who may come from low-income backgrounds and under-resourced California high schools. The program is designed to prepare students for the academic rigors of the university by providing them with the tools and resources necessary to achieve academic excellence in their first year and throughout their undergraduate career.

Support Services for AB540 Students

AB540 Student Services provides a broad range of support services designed to address the needs of AB540 students. These services address the gaps that AB540 students face within the university and enhance student achievement. Services provided to students include mentoring, community-building events and programs, personal advising, and student-based support.

Textbook Lending Program

This program is designed to assist students in obtaining required textbooks that they would not be able to purchase on their own due to cost. To receive textbook assistance, students must demonstrate financial hardship and must have exhausted all other forms of financial aid available to them. This includes all forms of loans (subsidized and unsubsidized).

Pre-Graduate Programs

EOP also sponsors two pre-graduate programs designed to increase the placement of EOP students in professional and doctoral programs and to encourage the pursuit of academic careers.

- **The Graduate Information Program (GIP)** supports students seeking to pursue graduate and professional school education. Services include graduate and professional school advising; graduate school application and internship-related workshops; graduate school resource library and website; website to conferences and forums
- **Pathways to Research (P2R)** exposes undergraduate students to research opportunities and research-based graduate programs. With the assistance of their graduate mentor, participating students determine their short-term goals for the quarter and long-term goals for the school year related to exploration of and involvement in research. Students engage in bi-weekly meetings with their mentor to report on progress and plan next steps to reach their goals. P2R is a two-quarter commitment (Winter and Spring). Mentees will receive a $300 stipend upon successful completion of the program.

For detailed information about EOP's comprehensive resources, visit eop.ucsc.edu, drop by their office at 121 Academic Resources Center, Monday through Friday, email eop@ucsc.edu, or call (831) 459-2296 .

STEM Diversity Research Programs

The Division of Physical and Biological Sciences sponsors several programs designed to promote diversity in the sciences by providing direct services that support students, bolstering their science identity through STEM (Science, Technology, Engineering, and Math) research training, professional development, and academic support. STEM Diversity Programs support students from underrepresented and underserved backgrounds in achieving their educational and career goals by providing them with hands-on research experience and fostering a sense of inclusion, acceptance, and community.

For information on opportunities and programs, visit the STEM Diversity Programs website.

Academic Excellence Program (ACE)

ACE is a nationally recognized academic support program that is designed to increase the diversity of students who earn bachelor's degrees in science, technology, engineering, and mathematics (STEM). ACE offers active-learning problem solving sessions for selected mathematics and science courses.

Applications are accepted quarterly for the upcoming term. Enrollment in ACE is limited and priority is given to RISE scholars and EOP students who are planning to pursue a STEM major. For more information, visit the ACE website.

Multicultural Engineering Program (MEP)

Also known as the MESA Engineering Program, MEP is the university-level component of Mathematics, Engineering, Science Achievement (MESA), a statewide program of the University of California Office of the President. At UC Santa Cruz, MEP is supported by the Baskin School of Engineering. Its goal is to promote the retention and graduation of a diverse population of students, especially those from groups that remain the most underrepresented in engineering studies.

For further information, visit UCSC's MEP website.

Services for Transfer Re-entry and Resilient Scholars Students (STARRS)

Services for Transfer Re-Entry and Resilient Scholars guides students who disproportionately enter higher education through community colleges, including those who have

experiences with transferring, returning to school at an older age, military, being parents, foster care, homelessness, incarceration, or family trauma. STARRS provides counseling, drop-in advising, and a lounge with study space and free printing.

STARRS is located at the Bay Tree Campus Store, 2nd Floor. For more information visit the STARRS website.

Disability Resource Center (DRC)

The Disability Resource Center (DRC) is committed to promoting the full participation of students with disabilities in all aspects of university life. The DRC's team of professionals provides a wide range of services and accommodations to help ensure that students with disabilities have equal access to education and all aspects of campus life – whether they need accommodations for exams, assistance with note-taking, or access to assistive technology.

DRC staff also work closely with faculty and staff to create an inclusive and accessible campus environment, providing training and consultation on disability-related issues, and working with departments to ensure that all aspects of campus life are accessible to everyone.

The Disability Resource Center is located on the third floor of the Bay Tree Building and can be reached by phone at (831) 459-2089, or via email at drc@ucsc.edu. More information is available on the Disability Resource Center website.

Campus access for people with mobility impairments. Visit the campus Americans with Disabilities Act website for more information about accessibility maps, vehicles equipped with wheelchair lifts that can transport students throughout campus, and permits for accessible or medical parking spaces that are adjacent to all campus buildings. Most buildings on campus have wheelchair-accessible ramps, modified rest rooms, and other facilities. If necessary, classes are rescheduled to meet accessibility needs.

Questions and concerns can be directed as follows:

- Education/program accessibility should be addressed to the director of the Disability Resource Center, at (831) 459-2089 (voice).
- Facility or transportation access should be directed to Facilities Access Coordinator (831) 459-3759 (voice).
- Computing access to the campus should be directed to IT Accessibility Coordinator (831) 459-2410.
- Accommodating job applicants or current employees with disabilities should be directed to (Disability Management Coordinator, Benefits Office (831) 459-4602 or Assistant Director for EEO, Office for Diversity, Equity, and Inclusion (831) 459-3676.

ROTC and Military Affairs

Air Force Reserve Officer Training Corps (AFROTC) at UC Santa Cruz

UC Santa Cruz offers students the opportunity to join the Air Force Reserve Officer Training Corps (AFROTC) through a crosstown agreement with Detachment 045 at San José State University (SJSU). This program prepares cadets for commissioning into the U.S. Air Force (USAF) or U.S. Space Force (USSF). In tandem with fulfilling their degree requirements, AFROTC cadets cultivate both physical and leadership capabilities essential for various career paths in the military upon graduation. AFROTC is a four-year, 16-unit program divided into the General Military Course (GMC) and the Professional Officer Course (POC):

- General Military Course (GMC): In the first two years, cadets attend classes and leadership laboratories focusing on Department of the Air Force (DAF) history, customs, and leadership principles.
- Field Training (FT): Between the sophomore and junior years, cadets participate in a rigorous 3-week "bootcamp" training program at Maxwell Air Force Base in Alabama. Cadets must successfully complete Field Training to commission through AFROTC.
- Professional Officer Course (POC): In the final two years, cadets assume leadership roles within the detachment, mentor junior cadets, and prepare for commissioning as officers. Once contracted upon return from Field Training, cadets incur a minimum service commitment of four years on Active Duty.

As a UC Santa Cruz student, you can enroll in AFROTC courses offered at SJSU. This involves commuting to SJSU for weekly Aerospace Studies (AS) classes, Leadership Laboratories (LLAB), and Physical Training (PT) sessions. While this commitment requires additional time and coordination, it provides invaluable leadership experience and the opportunity to serve as a commissioned officer upon graduation.

Weekly Training Schedule

Participation in AFROTC requires a consistent weekly commitment, typically totaling 6-10 hours per week, across three core components: Aerospace Studies classes, Leadership Laboratory, and Physical Training. The time commitment typically increases each year as cadets take on greater leadership responsibilities within the Cadet Wing. These activities primarily take place at SJSU, which serves as the host campus for Det 045. In addition, cadets may have opportunities to participate in occasional off-campus training events at nearby military installations, local parks, or crosstown campuses, which provide additional leadership experiences and exposure to operational environments. Each component serves a distinct purpose—academic instruction, hands-on leadership development, and physical conditioning. Together, they form a structured training program that cadets follow throughout the academic year in preparation for commissioning.

The table below summarizes the typical weekly AFROTC training schedule by academic year and enrollment track,

providing an overview of class requirements, leadership labs, physical training, and total time commitments.

AFROTC Weekly Commitment Summary

	Freshman (AS 100/150)	Sophomore (AS 200/250)	Junior (AS 300)	Senior (AS 400)
Aerospace Studies (AS) Class	1x per week (50 min)	1x per week (50 min)	2x per week (1 hr 15 min each class)	2x per week (1 hr 15 min each class)
Leadership Laboratory (LLAB)	1x per week (2 hrs each)	1x per week (2 hrs each)	1x per week (2 hrs each)	1x per week (2 hrs each)
Physical Training (PT)	2x per week (1 hr each session)	2x per week (1 hr each session)	2x per week (1 hr each session)	2x per week (1 hr each session)

Detachment 045 Weekly Training Schedule by Cadet Year (AY 2-25-26)

Activity	Freshman (AS 100/150)	Sophomore (AS 200/250)	Junior (AS 300)	Senior (AS 400)
Aerospace Studies (AS) Class	Tues: 1:30-2:20 p.m.	Thur: 1:30-2:20 p.m.	Tues & Thur: 1:30-2:45 p.m.	Tues & Thur: 1:30-2:45 p.m.
Leadership Laboratory (LLAB)	Thur: 3:00-5:00 p.m.	Thur: 3:00-5:00 p.m.	Thur: 3:00-5:00 p.m.	Thur: 3:00-5:00 p.m.
Physical Training (PT)	Tues: 3:15-4:15 p.m.Thur: 6:30 - 7:30 a.m. or 12:00-1:00 p.m.	Tues: 3:15-4:15 p.m.Thur: 6:30 - 7:30 a.m. or 12:00-1:00 p.m.	Tues: 3:15-4:15 p.m.Thur: 6:30 - 7:30 a.m. or 12:00-1:00 p.m.	Tues: 3:15-4:15 p.m.Thur: 6:30 - 7:30 a.m. or 12:00-1:00 p.m.

Aerospace Studies (AS) Classes

AS classes are the academic foundation of the AFROTC curriculum. These courses are taught by trained and experienced military faculty selectively assigned to AFROTC and are designed to provide cadets with the knowledge and critical thinking skills necessary for effective leadership. The 16-unit curriculum is divided as follows:

Freshman (AS100): Heritage and Values (1 unit / semester)
Sophomores (AS200): Team and Leadership Fundamentals (1 unit / semester)
Juniors (AS300): Leading People and Effective Communication (3 units / semester)
Seniors (AS400): National Security and Preparation for Active-Duty (3 units / semester)

Leadership Laboratory (LLAB)

LLAB is a hands-on, cadet-led training component conducted once a week, typically lasting two hours. It focuses on practical leadership experience, military customs and courtesies, drill and ceremonies, and other activities that prepare cadets for Field Training, leadership roles, and development as future military officers. Upper-class (POC) cadets are responsible for planning and executing LLAB

sessions, providing them with valuable leadership experience while mentoring under-class (GMC) cadets. This structure allows cadets to take an active role in training and decision-making, with oversight and guidance from active-duty military professionals.

Physical Training (PT)

PT sessions are conducted twice per week and are designed to improve cadets' physical conditioning, endurance, and overall health. Activities may include running, calisthenics, and other exercises aimed at meeting the physical fitness standards required for commissioning. Regular PT sessions also help build camaraderie and teamwork among cadets. Cadets must take and pass the Department of the Air Force Physical Fitness Assessment every academic term to remain in good standing and continue progressing in the program.

CONTACT INFORMATION

To learn more about Detachment 045, AFROTC, the U.S. Air Force, and the U.S. Space Force, visit their official websites:

Air Force ROTC Detachment 045 at SJSU
Air Force ROTC
Space Force ROTC
U.S. Air Force
U.S. Space Force

For more details or to express interest in joining AFROTC, please contact:

Air Force ROTC Detachment 045 at SJSU

Phone: (408) 924-2960
Email: afrotc@sjsu.edu
Website: SJSU AFROTC
Instagram: https://www.instagram.com/sjsuafrotc/
YouTube: Air Force ROTC Detachment 045 Campus Tour at San Jose State University

UC Santa Cruz Army ROTC

The Army ROTC (Reserve Officers' Training Corps) is one of the best leadership courses in the country and can be part of your college curriculum. UC Santa Cruz students have the opportunity to take ROTC courses with cadets from other local campuses, including Santa Clara University, Stanford, and San Jose State University. During classes, leadership labs, physical training, and field training exercises, Army ROTC students will learn firsthand what it takes to lead others, motivate groups, and conduct missions as an officer in the Army. Upon graduation from Army ROTC, students will earn the bar of a second lieutenant and be commissioned into the Active Army, Army Reserve, or Army National Guard.

Army ROTC at Santa Clara University is a program that fosters the development of cadets' academic, athletic, professional, and mental strengths. Students attend class and physical training for three hours each week, along with a Wednesday lab session that features hands-on instruction regarding Army operations and leadership situations. This program is ideally designed as a four-year process. Cadets spend their first two years familiarizing themselves with the Army, and in their third year, they are expected to perform and improve as leaders in preparation for a summer leadership development camp at Ft. Knox, Kentucky. The fourth and final year of Army ROTC introduces cadets to the responsibilities of military staff, teaching them to plan, train, lead, and develop their junior cadets in preparation for their commission. A typical four-year education with Santa Clara University ROTC comes with a service obligation of four years in the Army.

Army ROTC also provides cadets with the opportunity to gain additional Army experience by earning appointments to Army training schools, where they can participate in parachute training from airplanes or rappel from helicopters. In addition, cadets are allowed a single quarter of study abroad, as well as the opportunity to participate in Army-funded immersion trips and internships to dozens of countries across the globe in the summer months.

Cadets who graduate from the program will compete for active duty, National Guard, and reserve positions across the Army. Active officers have a full-time position and serve for a minimum of three years (if Cadets receive an Army Scholarship, the minimum requirement is four years of active service). Reserve officers serve for eight years part-time in either the National Guard or the Army Reserve.

For more information about ROTC opportunities and scholarships contact Mario Morales by email at mcmorales@scu.edu or by phone at 408-554-6840, or visit the Army ROTC website at http://www.scu.edu/rotc/.

For more information regarding Army ROTC please visit the Army ROTC website at http://www.goarmy.com/rotc.html.

Undergraduate Research

At the best research universities, professors bring knowledge and creativity from their cutting-edge research into the classroom, integrating the canon of the discipline with its future directions. UC Santa Cruz takes this further with a special tradition of undergraduate research outside the classroom. UC Santa Cruz, its departments, and faculty offer undergraduates many ways to get involved in research and creative activities. These opportunities develop advanced skills and insights and provide an early introduction to the nature of graduate studies. Research projects can help students launch careers, secure admissions to top graduate schools, and truly make an impact on society.

Many majors incorporate research into their senior comprehensive requirement, with options or requirements of a senior thesis, capstone project, or other creative endeavor based on students' individual research. Other opportunities for undergraduates include structured internships or research programs, joining ongoing faculty research or creative projects, or developing their own projects under faculty supervision. The following sections discuss a sampling of UCSC's international education, field-study, and exchange programs, which enable students to deeply enrich their undergraduate experience and education as they learn by

doing. For additional information, see Undergraduate Research Opportunities.

UC LEADS

The University of California Leadership Excellence through Advanced Degrees (UC LEADS) program is designed to engage and educate California's future leaders by preparing promising students for advanced education in science, technology, mathematics, and engineering (STEM). UC LEADS is designed to identify upper-division undergraduate students with the potential to succeed in these disciplines but who have experienced situations or conditions that have adversely impacted their advancement in their field of study.

The UC LEADS program is headquartered in the STEM Diversity Programs office. To learn more about eligibility requirements and the UC LEADS program, visit the Undergraduate Research/UC Leads and STEM Diversity Programs website.

Chancellor's Opportunity for Research Experience (CORE)

Chancellor's Opportunity for Research Experience (CORE) is a campus initiative to support and retain undergraduates as they earn degrees in the biological sciences, physical sciences, mathematics, and engineering. By integrating research, undergraduate education, and professional development, CORE creates a cohesive set of experiences that fully prepares undergraduates for graduate education and influences career choices. CORE programs motivate participants through cooperative learning workshops, internships, faculty-mentored research.

To learn more about eligibility requirements and the CORE program, visit the CORE initiative website.

Koret Undergraduate Research

The Koret Scholars Program provides funding for a variety of undergraduate research projects and experiences, and supports scholarships for undergraduate research projects with faculty and graduate student mentors. Each year, 50 or more undergraduates pursue research and share their experiences at the Koret Undergraduate Research Slam during Student Achievement Week.

Global Engagement

The Division of Global Engagement facilitates international partnership agreements, international research opportunities for faculty, student global learning programs, international student and scholar support, and globally-focused programming. The units within the division include: Global Learning, International Student Services & Programming, International Faculty & Scholar Services, and Global Initiatives.

For more information, contact Global Engagement, 103 Classroom Unit Building, (831) 459-2858, or email global@ucsc.edu.

Global Learning

Global Learning provides students with the opportunity to graduate with global experience, promotes an internationalized campus that cultivates an understanding of our diverse global community, and encourages students to engage with other cultures to broaden their perspective and involvement in the world.

Embark on a transformative academic journey with our array of program types spanning study abroad, internships, and research opportunities across the globe. You can search global learning programs on the program's website.

UCSC Global Learning Programs

Faculty-led Global Seminars: Summer courses taught by UCSC faculty while abroad, coordinated by UCSC Global Learning.

Partner Programs: Immersion programs at universities abroad/away, coordinated by UCSC Global Learning.

Global Internships: Department-based internship program that allows students to explore career goals, expand their professional network and skills, and gain real work experience, coordinated by UCSC Global Learning.

Global Classrooms: UCSC courses designed to offer cross-cultural learning experiences, facilitating virtual engagement with students from another part of the world.

Other UC and Non-UC Programs

UCDC Washington: Academic internship program in Washington DC, coordinated by a central UC systemwide office for all 9 undergraduate campuses.

UC Sacramento (UCCS): Academic internship program in public policy, coordinated by UC Davis.

UC Education Abroad Program (UCEAP): Varying types of programs offered year-round, coordinated by a central UC systemwide study abroad provider for all UC campuses.

Other UC Study Abroad: Varying types of study abroad programs, coordinated by other UC campuses' study abroad offices.

Independent Programs: Varying types of study abroad programs, coordinated by organizations outside of the UC system.

International Student and Scholar Services and Programs

The International Student and Scholar Services (ISSP) office provides immigration advising and advocacy as well as cultural and academic programming. ISSP assists students in maintaining their legal status while in the United States, serving as UCSC's official liaison to U.S. government agencies related to immigration matters. ISSP also designs and facilitates orientation programming, events, and activities for international undergraduates, graduate students, and

scholars to foster increased intercultural learning, to build community, and to support cultural adjustment. ISSP administers mentorship programs for international students that also serves as leadership development for international student mentors, and offers international/intercultural events open to all.

Global Initiatives

Global Initiatives manages and tracks UCSC's growing portfolio of international partnerships through GlobalConnect and works with UCSC faculty and academic departments as well as institutions abroad to identify potential partnership opportunities and develop agreements that support student and faculty international mobility, research, and recruitment. Working across the division and with academic and support units throughout campus, Global Initiatives also facilitates the implementation of a variety of new and special programs led by the division.

Support for Nationally Competitive Fellowships

The Division of Global Engagement administers the application process and provides advising for graduate study and research abroad through Nationally Competitive Fellowships. These programs include the **Fulbright Program, Rhodes Scholarship, Marshall Fellowship**, and **Schwarzman Scholars Program**.

Students can secure their future with expert advising services designed to support their international academic and research pursuits after graduation. Most of these awards require a campus endorsement before the applications can be forwarded to the final levels of competition.

Advance preparation for these awards is essential. Eligible candidates should arrange an advising appointment with the assistant director early in the process.

Field and Exchange Programs

UCDC Program at the UC Washington Center

The UCDC Program supervises and supports students who pursue a quarter of academic study and internship work in the nation’s capital. Internship placements are geared toward student interests, including but not limited to government and public policy, science and the environment, education and the arts, advocacy and nonprofit organizations, law, and business and finance. Students live in the UC Washington Center with students from other UC campuses, which provides an intellectual and social community throughout the quarter.

The program is open through an application process to juniors and seniors (occasionally sophomores) **in all majors.** Students enroll for fall, winter, or spring quarter, earn 12 to 17 course credits, complete an internship, and continue to be registered as full-time students. Applicant selection is based on academic record, a written statement, letters of recommendation, and in some cases a personal interview. Financial-aid eligibility is maintained.

Interested students with strong academic records are encouraged to apply. For further information, visit the UCDC website.

Intercampus Visitor Program

UCSC students may take advantage of educational opportunities at other campuses of the University of California through the Intercampus Visitor Program. This program enables you to take courses not available at Santa Cruz, to participate in special programs, or to study with distinguished faculty at other campuses.

To qualify for participation in this program, you must be in good standing after completing at least three quarters in residence at Santa Cruz. Each host campus establishes its own criteria for accepting students from other campuses as visitors. You must also have the approval of your college. Consult with your department about how courses taken at the host campus may apply to your major requirements.

Applications are available at the Intercampus Visitor Program website. Additional information is available from the special programs coordinator in the Office of the Registrar, (831) 459-4412. The application form contains a great deal of useful information about the program and how and when to file; please read it carefully. A nonrefundable application fee of $70 is due when the application is filed.

Cross-Campus or Simultaneous Enrollment with Other University of California Campuses

During fall, winter, and spring quarters, undergraduate students enrolled at UCSC may enroll, without formal admission and without payment of additional university fees, in courses at another UC campus on a space-available basis at the discretion of the appropriate campus authorities on both campuses. Simultaneous enrollment refers to UC courses not offered through UC Online. Additional information about online UC courses is available through UC Online. During summer, students are welcome to take classes through UCSC or through other UC campuses' Summer Sessions. Students pay per-credit tuition for their courses.

Information and eligibility requirements for Cross-Campus Enrollment are available through UC Online. Applications for Simultaneous Enrollment are available on the Registrar's Special Programs website.

Part-Time Program

If you are unable to attend the university full-time because of family obligations, employment responsibilities, or a medical condition, or you are in your final quarter before graduation, you may qualify for the Part-Time Program. This program enables students to pursue a bachelor’s degree part-time in any major offered at UC Santa Cruz. To participate,

undergraduate students must file a Part-Time Program application by the appropriate deadline. Full-time students normally take three 5-credit courses per quarter; part-time students may enroll in a maximum of 10 credits.

Students approved for enrollment on a part-time basis pay the same fee as full-time students but pay only one-half of the tuition. Part-time nonresidents pay one-half of nonresident tuition. Financial aid awards may be affected by enrolling part-time. More information is available on the Part-Time Program website.

Domestic Exchange Programs

UCSC has exchange programs with the University of New Hampshire (UNH) and the University of New Mexico (UNM). UNH is located near the New Hampshire seacoast in the picturesque colonial town of Durham, a little more than an hour from Boston, Massachusetts. UNM is located in Albuquerque, a city of approximately half a million population, situated on the banks of the Rio Grande. Both schools give students the opportunity for an educational experience in an entirely different environment.

While enrolled in the exchange program, students maintain their status at UCSC, and they are expected to return to complete their studies following enrollment at UNH or UNM. Both universities are on the semester system and students may participate in one semester or the entire academic year.

Participants are selected from among students who are in good academic standing. Successful applicants will be expected to confirm their participation at the beginning of spring quarter. Each department of study determines the applicability of UNH and UNM courses toward requirements for the major. Letter grades earned while at UNH and UNM will not be calculated into the UCSC GPA or the UC GPA. Further information is available from the exchange program coordinator in the Office of the Registrar, sp-regis@ucsc.edu, and at the Domestic Exchange Programs website.

Intersegmental Cross-Enrollment

This program permits a student who is currently enrolled in a California community college or a California State University campus and who meets certain eligibility criteria to enroll in one undergraduate course at UCSC each term, on a space-available basis.

Applications are available online. The application form contains a great deal of useful information about the program and how and when to file. Please read it carefully.

Field Programs and Internships

Many UC Santa Cruz students complement their major programs with field experience or internships, which also provide opportunities to become involved in public service activities in the local community and throughout the world. Most of the field programs described below are open to students in a range of majors, although some are restricted to students pursuing a designated area of study. Students in all majors may also apply for internships sponsored by the Career Center.

In addition to the off-campus placements provided by the programs described below, independent field study opportunities are available through some UCSC colleges and departments.

Chancellor's Undergraduate Internship Program (CUIP)

The Chancellor's Undergraduate Internship Program (CUIP) provides full-time students the opportunity to learn valuable professional skills while supporting student resources. Interns work within programs and departments throughout the university, and attend a 2-credit leadership seminar during the academic school year. With direct support from mentors, they will conceive, develop, and execute a project applicable to their post. For more information please visit the CUIP website.

Community Studies Field-Study Program

Community Studies is the oldest interdisciplinary undergraduate degree program at UCSC. Its hallmarks are a focus on social justice and a distinctive pedagogy that integrates classroom learning and an extended six-month field study. Not only is full-time field study a requirement of the major, it is the centerpiece of a core curriculum through which students prepare for, then immerse themselves in a setting where they participate in and analyze the social justice work of an organization. Upon return from field study, students integrate topical and experiential learning in a capstone project (usually a senior essay) that uses their field notes as a key source for analysis.

The field study program is open to Community Studies majors only. For more information, see the Community Studies website.

Economics Field-Study Program

Economics field study provides economics students with a practical context in which they can start to integrate course material into work experience. Students work in a setting where they are trained and supervised by a professional in the business or organizational setting of their field study experience.

The Economics field study program is available every quarter for students to earn academic credit while working in an internship in the community and to earn credit for the Practice: Service Learning (PR-S) general education requirement here at University of California, Santa Cruz.

Further information is available from the Economics Field Study Office or by email at econintern@ucsc.edu.

Environmental Studies Field and Internship Program

Open to all UCSC students, the Environmental Studies Field and Internship Program is an integral academic component of

the environmental studies major, and it augments the research and professional development of undergraduate students (see Environmental Studies). Interns are placed, individually and in groups, in both on-campus and off-campus agencies, where their work often results in publications and resource documents, and in many cases serves as the primary basis for policy formation within a particular agency or organization. Placements have included research for small businesses; learning all aspects of running an organic farm; writing policy documents for state agencies, nongovernmental organizations, and planning departments; assignments as natural history interpretive guides for state and national parks; and apprentice positions with consultants, architects, solar-energy designers, agroecologists, and teachers.

Further information is available at envs.ucsc.edu/internships.

The Everett Program (formerly the Global Information Internship Program)

The Everett Program is focused on connecting the university to community partners on a global scale. It supports social change using the tools of technology, social entrepreneurship, and research.

The Everett Program recruits highly motivated and innovative students who are committed to developing social enterprises and contributing to social justice and environmental sustainability movements at the global and local levels. The program consists of three quarters of rigorous classes, practical technology labs, and project labs. It empowers students to focus their passion for social change by teaching them how to research, plan, design, fund, implement, and evaluate projects in collaboration with community change agents, using information and communication tools. Students are supported and encouraged to participate in outside-of-class trainings, competitions, outside grants, and opportunities to connect with the Everett alumni network.

Everett-sponsored students have worked with Muslim feminists in Malaysia, coffee farmer co-ops in Central America, democracy-advocating NGOs in Ghana, and aspiring high school students in Watsonville. For more information, see www.everettprogram.org. As managers of the program, past students who have become Everett Fellows also facilitate peer-to-peer technology and project labs throughout the year. These focus on training students in valuable skills such as participatory mapping, website and graphic design, digital video storytelling, social media campaigns, and robotic programming. The Everett Program's year-long series is interdisciplinary and counts as an upper-division elective for several social science majors. It also serves as a foundation for the major and minor in global information and social enterprise studies (GISES), which is sponsored by the Department of Sociology. For more information on the GISES and Intensive Sociology major and minor, please see Sociology Department Majors and Minors.

Fieldwork in Education Programs

The M.A. in Education/California SB 2042 Preliminary Teacher Credential program provides students with necessary credential preparation for K–12 teaching in the California public schools. Preparation is offered for the Multiple Subject Preliminary credential (typically Grades K–6), and the Single Subject Preliminary credential (typically Grades 7–12) in the following subject areas: English, math, social science, and science. Credential students may also pursue a Bilingual Authorization in Spanish. Students pursuing the Education M.A./California Preliminary Credential must complete a three-quarter student teaching course sequence. Student teaching placements are restricted to enrolled students. The student-teaching sequence consists of five courses: Education 200, 201, 202A, 202B, and 202C. Fall and winter quarters of the sequence involve part-time placements in public schools in Santa Cruz County, Monterey County, and Santa Clara County. Spring quarter is a full-time experience in which student teachers take over full responsibility for the daily instructional program of the classroom in which they are placed. Substantial fieldwork in K–12 classrooms is also incorporated in other courses required for the teaching credential.

The minor in education is an undergraduate program in which students explore the history of educational thought and philosophy; the politics and economics of education, learning theory, and pedagogy; and issues of cultural and linguistic diversity related to schooling. As a part of the six-course minor sequence, students engage in field study in local schools through Education 180, Introduction to Teaching.

For more information, contact the Education Department.

Health Sciences Internship Program

A requirement of the Human Biology major, the Health Sciences Internship Program (now discontinued) offers already-declared students a unique opportunity for personal growth and professional development. Paired with a professional mentor, students spend one quarter interning in a health-related setting. Placement opportunities cover a broad range, from individual physicians to community clinics and hospitals, hospices, non-profits, and public health agencies. The Health Sciences Internship coordinator works with students to prepare them for their internship and maintains a list of appropriate placements. Junior and senior human biology majors only are eligible to apply. Applications are due two quarters in advance. For further information, contact the Health Sciences Internship Coordinator at hsintern@ucsc.edu.

Latin American and Latino Studies Field-Study and Internship Opportunities

All Latin American and Latino Studies majors are strongly encouraged to undertake either (1) a field study in Latin America, the Caribbean, or a Latino/a community in the U.S.; or (2) formal academic study abroad through the UC Education Abroad Program (UCEAP). These paths are the best ways to improve language skills, explore the nature and direction of specific academic and career interests in relation to Latin American and Latino studies, and deepen cross-cultural understanding and relationships based on personal experience.

Field studies comprise independent, community-based study projects for academic credit, done under faculty sponsorship and arranged on an individual basis. Students should check the Latin American and Latino Studies Department website for further information regarding the field-study process and course credit.

For more information, contact the LALS office at lalsadvising@ucsc.edu.

Psychology Field-Study Program

The Psychology Field-Study Program provides qualified students an opportunity to integrate what they have learned in the classroom with direct service to a community agency.

For two consecutive quarters, students devote 10 hours a week to a community-based internship. Students are matched with a faculty member with whom they complete an academic project each quarter associated with the work they are experiencing in the field. Students are supported by attending group meetings, skill building workshops, and keeping a journal.

For more information, visit the Psychology Field Study Program website.

University of California Center Sacramento

The University of California Center Sacramento offers students a chance to spend a quarter fully immersed in legislative and/or community service programs in the state capital. Students intern a minimum of 24 hours per week in the Assembly, Senate, Governor's Office, and with state agencies and nonprofit organizations. They also enroll in related courses taught at the UC Sacramento Center one block from the Capitol Building. Students live with other UC campus participants in a living and learning community. This opportunity is available to students from any major and is open to undergraduate and graduate students. For information, see the UCSC Career Center website.

The University of California Center Sacramento offers students a chance to spend a quarter fully immersed in legislative and/or community service programs in the state capital. Students intern a minimum of 24 hours per week in the Assembly, Senate, Governor's Office, and with state agencies and nonprofit organizations. They also enroll in related courses taught at the UC Sacramento Center one block from the Capitol Building. Students live with other UC campus participants in a living and learning community. This opportunity is available to students from any major and is open to undergraduate and graduate students. For information, see the UCSC Career Center website

Summer Session Courses and Programs

The University of California, Santa Cruz, Summer Session provides students with the opportunity to accelerate their progress toward degree completion. It welcomes visitors from other colleges and universities, as well as members of the community, including high school juniors and seniors. Often significantly smaller than during the fall, winter, and spring quarters, Summer Session classes, both in-person and online, include major requirements, qualifying courses, lower- and upper-division courses, and general education courses. The 10-week summer quarter is divided into several sessions: a 10-week session, an eight-week session, and two five-week accelerated sessions. Students may enroll in multiple classes in one or all sessions, with a maximum of 20 credits total.

Tutoring, advising, and other academic and personal support services are available, as well as on-campus housing and dining, athletics and recreation, campus employment opportunities, and more. Special summer-only programs include the Summer Edge for new fall admits and the renowned one-week Dickens Universe. Please visit summer.ucsc.edu for courses and details or email summer@ucsc.edu.

UCSC Silicon Valley Extension

In April 2016, UCSC Extension opened its doors to the UC Santa Cruz Silicon Valley Campus. Located at 3175 Bowers Avenue in Santa Clara, the Silicon Valley Campus is a beautiful new facility outfitted with the latest educational technologies just a stone's throw from the Santa Clara Square. UC Santa Cruz undergraduates and graduate students, as well as community members seeking continuing education, have their choice of certificate programs in more than 40 disciplines and services designed to meet the needs of Silicon Valley and greater Bay Area.

UCSC Extension provides professional training that reflects the academic rigor of the University of California and the hands-on, roll-up-your-shirtsleeves practicality of Silicon Valley culture. Developed with guidance from key industry leaders and academic experts, UCSC Extension's certificate programs match the demands of a wide range of industries, including engineering, business, education, bioscience, and environmental safety. The Silicon Valley Campus is also home to the University of California Scout program, graduate programs affiliated with UCSC's Baskin School of Engineering, and an English language school designed to equip English language learners with the skills necessary to accelerate learning or take the next step in their careers.

Extension's career-oriented programs cover the latest best practices, tools, and technologies in engineering and technology, business and management, applied and natural sciences, and education. While most certificates can be completed within one year, coursework is graded and substantial, typically involving lectures, readings, presentations, and final projects or examinations.

Extension also has a robust international department, English language program, and Optional Training Program (OPT), and offers F1 visa guidance and internship opportunities.

Regularly enrolled UCSC students may obtain degree credit for Extension courses numbered 1–299. Lower division courses are numbered 1–099, upper division offerings are 100–199, and graduate-level courses are 200–299. Upon submission of the Extension transcript to the Office of Admissions, the course credit may be applied toward a bachelor's degree at UCSC. Many Extension courses are

recognized for graduate degree credit by other universities (acceptance of course credit is based upon approval by the accepting university).

Students can study in a few different ways: in classrooms or labs at our Silicon Valley location; online, via our dynamic learning platform; and in hybrid courses, which offer a combination of classroom meetings and online learning. Many courses have both online and classroom sections available each quarter to ensure that students with commutes, jobs, and family obligations can find courses that fit their schedules.

Visit UCSC Extension or call (408) 861-3700 to enroll or to learn more about courses and programs.

Open Campus/Concurrent Enrollment

Concurrent Enrollment Through Extension, or "Open Campus," is a cooperative arrangement between UC Santa Cruz and UCSC Silicon Valley Extension that enables members of the public to enroll in one or two regular UCSC undergraduate or graduate courses per quarter for credit. The program is administered by UCSC Silicon Valley Extension, and course credit granted appears on a UCSC Silicon Valley Extension transcript. Participants must meet certain criteria outlined in the Concurrent Enrollment application. An application fee is charged for each quarter of enrollment in addition to course fees.

Concurrent Enrollment through Extension may be used as a path toward a part-time or full-time degree program or as a way of studying subjects of personal or occupational interest. Credit earned through this program may be used toward degree requirements, when applicable, if participants subsequently seek admission to the university and are accepted.

Financial aid is not available to participants in the Concurrent Enrollment program.

For further information about enrollment and admission, please visit the Open Campus website, or email opencampus@ucsc.edu.

THE COLLEGES AND STUDENT LIFE

In this section:

The Colleges

About UCSC's Colleges

UC Santa Cruz combines the resources of a world-class public research university with a distinctive undergraduate experience characterized by our college system. Each college is a vibrant living/learning community supported by enrichment courses, advising and academic support, and faculty and staff who organize student activities and sponsor events to enhance the intellectual and social life of the campus. The colleges are committed to fostering a nurturing and academically thriving environment for students of all backgrounds. Each college strives to promote the attributes of a diverse and multicultural community in its own unique way.

In order of founding, the colleges are Cowell, Stevenson, Crown, Merrill, Porter, Kresge, Oakes, Rachel Carson College, College Nine, and John R. Lewis College. Self-contained and architecturally distinct, each college is a relatively small community of 30 to 110 faculty members and between 1,500 and 1,800 students, about half of whom live on campus. Each college has its own housing, as well as academic, social, and educational programming, and each is an integral part of the larger campus. The colleges have their own academic emphases and cultural traditions, although each seeks faculty and students from a variety of disciplines to foster broad intellectual interests. The colleges play a primary role in academic advising and are the center of student life. Students graduate from their college. At the same time, all university academic programs, resources, and student services are open to students of every college.

All undergraduate students are affiliated with one of our 10 colleges, their home within the larger university. During the process of accepting the offer of admission, entering students are asked to list several colleges in order of preference; whenever possible, students are assigned to one of their preferred colleges. The information students need to rank their college preferences can come from a variety of sources—personal acquaintance, a campus visit, literature available from the colleges, campus websites, and the descriptions in this section of the catalog. Students also have the option to indicate “no preference,” meaning they will be fine with any of our 10 colleges, and the Admissions Office will assign those students to one of the colleges.

Similarities and Differences

The colleges are small-scale residential communities, each providing an academically and socially supportive environment and offering special programs designed to help students transition to campus life, build a strong connection with the campus, and get the most out of their UCSC experience.

Each college provides academic advising as well as academic and general campus orientations to help you plan your academic program. College academic preceptors and advisers provide advice on general academic matters outside a student’s major, including general education, choosing a major, and strategies for academic success. Psychological and personal counseling is also available in each college. The faculty, or fellows, of each college come from a variety of academic disciplines; many faculty have their offices in the colleges.

Each college offers a distinctive academic College 1 course for entering frosh. The required course provides a significant bridge between academic and residential life, since all frosh, regardless of major, will be in the course, and most will be in residence as well. The colleges also offer selected courses in their area of interdisciplinary emphasis and host events and speakers that enhance this focus.

Architecturally distinct, each college was planned by a different architect who was encouraged to convey the distinct personality of that college through the design of its buildings and their placement in the natural environment. The particular style of housing varies among the colleges, ranging from residence halls, with a mix of shared and private rooms, to apartment-style housing, where students live together in small groups and may do some of their own cooking. Each college’s residential program is a team effort. Live-in student and professional staff members provide orientation and support services, organize activities and events, provide referral information about academic or personal concerns, and assist with roommate problems.

Changing Colleges

Most students develop friendships and intellectual attachments within their affiliated college, and remain members of that college throughout their undergraduate years. Some students find that changing academic interests draw them to a different college. During specified filing periods, students may request a change of college with the approval of both college administrations.

Cowell College

Cowell College inaugurated the Santa Cruz campus when it opened with a pioneer class of 600 students in 1965. The founding faculty shaped an educational program that challenged and enriched students through wide-ranging inquiry and disciplined study. Today, Cowell has more than 1,500 affiliated students and over 90 faculty fellows. Its motto—The Pursuit of Truth in the Company of Friends—expresses a continuing commitment to create a serious academic environment within a humane and broadly inclusive community. The college is named for the S. H. Cowell Foundation, which endowed the college at its founding.

ACADEMIC EMPHASES

Cowell's academic mission begins with the Cowell Core Course where students explore themes of justice with a focus on being an active participant of their community and society. Besides being the introductory course that anchors students' experience in a shared experience, the Cowell Core Courses launches the Cowell Curriculum. The entire suite of courses was designed to help students build the skills and the capacity they need to make an impact on society.

There are three prominent themes in the Cowell Curriculum. One theme provides opportunities for students to learn tangible skills to be the leaders within their communities. A second theme builds on these tangible leadership skills and gives students the opportunity to develop the capacity to build meaningful and sustainable relationships. Students are also practicing collaboration in a tangible manner with a global perspective which facilitates a student's movement between diverse groups and diverse ideas. The last theme closes the loop by showing students how to be resilient in changing times and to help them recognize the conditions that help them be successful.

Additional information about Cowell College academics, including Core Course requirements and other academic programs, is available here.

COLLEGE COMMUNITY AND FACILITIES

UC Santa Cruz combines the resources of a world-class public research university with a distinctive undergraduate experience characterized by our college system. Each college is a vibrant living/learning community supported by enrichment courses, advising and academic support, and faculty and staff who organize student activities and sponsor events to enhance the intellectual and social life of the campus. The colleges are committed to fostering a nurturing and academically thriving environment for students of all backgrounds. Each college strives to promote the attributes of a diverse and multicultural community in its own unique way.

Arranged around the college's central courtyard is the dining hall, the Page Smith Library, the Mary Holmes Fireside lounge, and the Cowell Coffee Shop: For the Peoples, a non-transactional Basic Needs cafe. It is student-run and committed to making healthy and sustainable food accessible to students facing food insecurity, as well as conference rooms and classrooms. The Cowell Press, where students can learn the fine technique of hand-operated letterpress printing, is not far away, attached to the Cowell Provost House. Also nearby is the Eloise Pickard Smith Gallery, including the Ann Dizikes Annex.

Community life is enlivened by many scheduled and impromptu intellectual, cultural, and social events.

The Cowell Senate meets weekly to discuss campus issues and student government. The Senate advises the college on the allocation of funds for student activities and programs. Members of the Senate are selected each year by lot, but any student may become a voting member by steady attendance at meetings. The college's student groups, staff, and faculty work together to create a supportive community for students from all ethnic groups, all religious traditions, and all sexual orientations and to increase awareness of the many dimensions of diversity in the community.

For more information on the college, see the Cowell College website or call (831) 459-2253.

COWELL FELLOWS AND STAFF

Cowell College faculty fellows are listed on the college's faculty directory.

College staff are listed on the college's staff page.

Stevenson College

Stevenson College is named after former statesman and U.S. Ambassador to the United Nations Adlai E. Stevenson. Our faculty, students, and staff take pride in intellectual critical inquiry, academic and civic leadership.

Stevenson College has a long-standing reputation for excellence in liberal education. The college strives to provide an academically, culturally, and socially supportive environment for all its members, fostering social responsibility and academic achievement. Stevenson alumni can be found in legal, political, educational, engineering, medical, computer and information sciences, business, and public administration careers, among others.

The college's faculty and staff offer professional and personal service for the diverse needs of students. Faculty and staff assist students in all areas of their academic and social experience at Stevenson College, and are committed to instilling respect for the diverse backgrounds of Stevenson students.

ACADEMIC EMPHASES

The faculty at Stevenson, drawn from a variety of disciplines in the social sciences, humanities, and physical and biological sciences, share a common concern for the study of social processes that shape modern society and determine the quality of our individual lives throughout various global regions and periods of world history.

Additional information about the Stevenson College academics, including Core Course requirements and other academic programs, is available here.

COLLEGE COMMUNITY PROGRAMS

- College Nights
- Stevenson Student Council
- Social and Multicultural Programs/Activities
- Cultural Arts and Diversity Rainbow Theater

- Stevenson College Undergraduate Research Apprenticeship Program

The Stevenson Student Council meets weekly. This group is responsible for allocating college membership fees to student activities. The council also serves as a forum for the discussion of college and campus-wide issues and appoints student representatives to college and campus-wide committees. Students have a wide variety of opportunities to engage with interactive and meaningful programs and activities outside the classroom.

Facilities

- Eight small residence halls, three of which are themed houses:
- LGBTQIA+
- Diversity and Social Justice House
- The Rosa Parks African American Theme House (R. PAATH)
- Three apartment buildings
- Stevenson Coffee House
- Wagstaff Fireside Lounge
- Writers' Center
- Stevenson Library
- Stevenson Event Center
- Silverman Conference Room
- Recreation Room
- Stevenson Garden
- Stevenson Music Practice Rooms

Stevenson has a wide variety of facilities and activities to appeal to many tastes. The college, designed by San Francisco architect Joseph Esherick, has won many architectural awards. The buildings are situated amid redwood trees and sprawling lawns, and the main quad overlooks Monterey Bay. Stevenson is situated close to the campus bookstore, restaurants, McHenry Library, gym, and pool. There are eight small residence houses at the college providing a choice of single-gender or mixed-gender floors; each house accommodates about 90 undergraduates. The apartments provide space for continuing students. Nearby are a picnic area, playing fields, and a garden. Stevenson is also the home of the Rosa Parks African American Theme Housing (R.PAATH), which is a student-initiated living-learning space for students whose interests span historical, present-day, and future experiences of predominantly African American, Black, and Caribbean peoples.

The Stevenson Coffee House, which has become the gathering place in the college, is a friendly and inviting spot to enjoy lunch or an espresso and pastry—indoors or out on the patio. It is the scene of lively conversation, occasional musical entertainment, and chess matches. Adjoining the Coffee House is the recreation room, with Ping-Pong, a pool table, and televisions. This area is also the site of much socializing and spontaneous group activity.

In contrast, the Stevenson Library is a striking building designed for quiet reading and study. The Wagstaff Fireside Lounge, a retreat for relaxed discussion, is also used for recitals, special lectures, meetings, and residence house activities. Art exhibits (both student and professional) are on display throughout the year in the lounge, library, and coffee house.

For more information on the college, see the Stevenson College website or call (831) 459-4930.

STEVENSON COLLEGE FELLOWS AND STAFF

Stevenson College faculty fellows are listed on the college's faculty directory.

Stevenson College staff are listed on the college's staff page.

Crown College

Crown College Administration Building
831-459-2412
https://crown.ucsc.edu

ACADEMIC PROGRAMS

Academic Literacy Curriculum

College Scholars Program

CROWN COLLEGE

Crown College seeks to provide students with a living and learning environment in which they can positively develop intellectually and socially. Crown is traditionally viewed as the “science college,” and it does have a strong presence of engineering, biology and other STEM (Science, Technology, Engineering, and Math) students but a large number of students majoring in the social sciences and some arts and humanities students call Crown home as well.

Crown is located on a hilltop surrounded by a redwood forest. The award-winning architecture with its white walls and high-pitched tiled roofs suggests a hillside Mediterranean village. The college's residential facilities, which were built through a partnership of public funds and a gift from the Crown Zellerbach Foundation, house approximately 800 students.

We enjoy the strong support of generations of Crownies that have maintained alive the connection they formed when they were students here. Alumni participate in advisory capacity in the college's governance and their generous contributions have allowed Crown to renovate Crown's Library and its Fireside Lounge, enrich our student's Core experience, and develop an extensive curriculum of elective classes.

For more information on the Crown's academic and social environment please visit Crown's website and also see this feature article: Crown College: Science Minded, Socially Mindful.

ACADEMIC EMPHASES

From the time of its founding in 1967, issues pertaining to the role of science and technology in society have been a focus of special interest at Crown College. We approach these issues from an interdisciplinary perspective that recognizes the influence of social and cultural factors on the scientific enterprise, as well as the ways in which science and technology influence our society.

ORIENTATION

All new frosh and transfer students who start fall quarter are required to enroll in one of two online orientation courses. Frosh enroll in CRWN 1A, Crown 1A: *Introduction to University Life and Learning.* Transfer students enroll in KRSG 1T, Kresge 1T: *Introduction to Research Universities and the Liberal Arts*. Crown 1A and Kresge 1T integrate introductions to academic skills with the online Slug Orientation process and begin student preparation for their studies at UC Santa Cruz.

CRWN 1A Introduction to University Life and Learning (1 credit)

Offered online in summer quarter

KRSG 1T Introduction to Research Universities and the Liberal Arts (1 credit)

Offered online in summer quarter

Students who are admitted to winter quarter will take an orientation course during their first term.

CORE COURSE

CRWN 1, Academic Literacy and Ethos: Social and Ethical Implications of Emerging Technologies

Offered fall quarter

Crown College's entering frosh enroll in our core course, CRWN 1, which explores Crown's theme, *Social and Ethical Implications of Emerging Technologies*. This class is taught by an interdisciplinary Core faculty team. Students work individually, in small groups of four to five students, and in sections of 25 to 30 students, thereby building strong connections with their peers and instructors. CRWN 1 looks at technological revolutions and their implications both locally and globally. CRWN 1 also explores issues of inequality and the ethical dilemmas involved and what we can do as responsible citizens to address the challenges facing our society. Deeper goals of this course include fostering a sense of belonging, and ensuring that our students develop the analytical reading, critical thinking, and effective communication skills that they need to succeed in their studies.

A central component of the course is a group research project, in which students study the impact of a technology of their choice, while learning strategies for effective group work. Crown's core course is enhanced through our plenary series, which gives students opportunities to hear intellectual leaders speak and to interact with them, while getting to know our team of Core faculty. We also organize a science-fiction short story contest. In winter of their frosh year, our students have additional opportunities to build on their Core experience by performing a play connected to the theme of *Core Digital Theater Workshop* (CRWN 96), or by engaging with Crown's Center for Applied Ethics and Values of Emerging Technologies, which provides opportunities to explore the ethical implications of emerging technologies and to develop tools for ethical assessment.

OTHER ACADEMIC PROGRAMS

Complementing its focus on science and technology, Crown's entrepreneurship curriculum is integrated into UC Santa Cruz's Innovation & Entrepreneurship (I&E) Certificate, which combines academic training with hands-on experience in developing solutions to real-world problems. This certificate is offered in partnership with UCSC's Center for Innovation and Entrepreneurial Development, Cowell College, and the Departments of Biomolecular Engineering and Economics. The goal is to equip students with practical, transferable skills while strengthening UCSC's connections with employers and community organizations. The I&E certificate is open to students completing any major and it has a modular design, requiring the completion of four elements in any order: (1) introductory classes, i.e. foundational courses in ideation, prototyping, finance, and customer discovery; (2) operational classes, which focus on the practical aspects of launching and managing ventures; (3) experiential learning opportunities—including internships, consulting projects, and roles beyond the founder track; and (4) participation in a public-facing business pitch competition.

Crown offers the following certificate classes:

Introductory classes: CRWN 90, *Start-up Entrepreneurship Academy*, and CRWN 92, *Social and Creative Entrepreneurship*.

Operational classes: CRWN 100, *Building and Scaling Ventures*.

Practical classes: CRWN 95, *Get Virtual Business Assistance*; CRWN 91, *AI & Marketing*, and CRWN 191, *Marketing for Good* series; CRWN 152, *Start-up Deal Sourcing and*

Investing; and CRWN 194, *Ecoentrepreneurship in the World*.

This certificate is being piloted for the 2025-26, 2026-27, and 2027-28 years, after which it will be reevaluated for permanent status.

Crown provides experiential learning opportunities and supports the development of transferable skills to help our students' career development. This includes providing funding for materials needed for class projects (Crown College Fellowships and Funding / Crown Student Project Funds) and an extensive curriculum of elective classes. The list of instructors and their bios can be found at Crown College elective faculty. These classes are open to all majors and focus upon two areas: entrepreneurship and communication skills.

Crown College also offers a Corporate Innovation Laboratory (CRWN 102).

Opportunities to pitch and access to incubator space and to funding opportunities are facilitated through Crown's partnership with the Center for Innovation and Entrepreneurial Development.

Crown offers a variety of classes supporting multimodal communication and artistic expression. This includes two concurrent enrollment classes offered by the KZSC FM radio station: *Introduction to Broadcast Media: Radio* (CRWN 70) and *Broadcast Production: Radio* (CRWN 70L), and also a Sci-Fi drama class tied to Core, *Digital Theater Workshop* (CRWN 96), a videography class, *Storytelling in a Digital Age* (CRWN 86), a podcasting class, *Podcasting: Digital Storytelling* (CRWN 98), and a Sci-Fi class, *Science Fictions* (CRWN 80F).

STUDENT WELL-BEING

Crown offers a two-class series aimed at promoting student resiliency, namely CRWN 81, *Theory and Practices for a Purposeful Life*, and CRWN 181, *Theories and Practices for a Purposeful World*. In CRWN 81 students explore their identity and ways to experience and create meaning and value in life while managing and letting go of stress, anxiety, and depression. This class also covers how we process our thoughts and feelings and how society (family and friends) and culture impacts us. CRWN 181 builds on concepts and practices acquired in CRWN 81 to dive into sociological, psychological, and political theories for leadership and change.

SUMMER CLASSES

Crown College will offer a great curriculum in Summer 2025. These classes are offered through Summer Session, Summer UCSC, and are open to any and all colleges and majors as well as students from other universities or high schools. They are delivered in 5-week, 8-week, or 10-week periods. Many of these classes are offered onlline to maximize accessibility.

Summer Classes

CRWN 80F *Science Fictions* (in person)

CRWN 90 *Start Up Entrepreneurship Academy (SEA)*

CRWN 100 *Building and Scaling Ventures* (operational aspects class)

CRWN 95 *Get Virtual Business Assistance* (online) (internship class)

Enrollment opens May 1, all students are welcome.

Global Seminars

Netherlands: CRWN 92 *Social and Creative Entrepreneurship* and CRWN 194 *Ecoentrepreneurship in the World*

Ireland—Travel Writing and Podcasting in Ireland, combining two classes: CRWN 98B *Podcasting: Digital Storytelling,* in conjunction with WRIT 2 *Research and Travel Writing.*

By application only - see website for details, info sessions, and deadlines.

Through Summer Session Summer UCSC, Crown offers a large part of its curriculum in the summer.

These classes are open not only to all UCSC students but also to students from other higher education institutions and are delivered in 5-week, 8-week or 10-week periods.

COLLEGE ADVISING

Crown Advising is located in the Crown Administration Building and is staffed by the college assistant, professional academic advisors, and a team of peer advisors. Crown Advising offers appointment advising (phone, in-person, or remotely via Zoom) every weekday in fall, winter, spring, and summer. To schedule an appointment, students should use Slug Success (https://ucsc.campus.eab.com). For quick questions or completion of most forms, students are encouraged to email crownadvising@ucsc.edu. Please visit our website for the most up to date information about advisor availability.

Crown Staff Directory

Crown College Core Faculty Core Faculty

Crown College Fellows Fellows

Merrill College

Merrill College seeks to expand students' awareness of their own heritage and of the diversity of cultures around the world, past and present. The college makes a special effort to create a

home for students from different cultural backgrounds and for international students.

Merrill houses the departments of Politics, Legal Studies, and Latin American and Latino Studies. It also hosts KZSC, the campus radio station; the Dolores Huerta Research Center for the Americas; UCSC's Cantú Queer Center; the student-run Pottery Co-op (the only one of its kind at UCSC); and the Ming Ong Computer Center.

ACADEMIC EMPHASIS

The Merrill College ethos is "cultural identities and global consciousness." This pairing signals the college's commitment to drawing on the funds of knowledge brought by individual college members and understanding these identities in a global context.

Additional information about Merrill College academics, including College One requirements and other academic programs, is available here.

COLLEGE COMMUNITY AND FACILITIES

At Merrill College, we believe that the experience of living in our on-campus residence halls and apartments offers students not only support for their academic experiences, but also unique opportunities for building relationships and learning about the concept of community. When college students feel connected to a community during their studies, they experience a smoother transition to university life, greater academic success, and higher satisfaction. The Merrill Residential Education team understands community not as a product we can deliver to our students, but as an experience that students themselves are responsible for creating for and with each other. The Residential Education team partners with students, serving as good companions on their journey by facilitating experiences that help them to cultivate and apply the knowledge, skills, and abilities needed to create, participate in, and lead caring and socially just communities.

The Merrill Programs and Leadership Office (MPLO) and Merrill Student Government (MSG) create space for student voices and experiences that lead to personal and academic growth and development.

Located on a hilltop between UCSC's famed Chadwick Garden and Santa Cruz's Pogonip Open Space, Merrill's award-winning buildings nestle at the edge of the redwood forest. Four residence halls house approximately 600 students in two high-rise structures and two smaller buildings. There are all-female floors and trans-inclusive housing options among Merrill residence halls; the remainder offer a coed environment (single-gender bedrooms with all-gender bathrooms).

Merrill's plaza and central lawn make excellent use of the ample sunshine and provide common space for students living in the residence halls and other housing options.

The apartments, located a short distance from the central area of the college, house approximately 200 continuing Merrill students. Grouped amid winding pathways and redwood trees, these three-story buildings have two or three apartments per floor. Each apartment houses four to six students in a combination of single, double, and triple rooms and comes fully equipped with a kitchen and a bathroom, a large living area, and an outside deck. Residents of the apartment complex share a large community room, two laundry rooms, and plenty of outdoor space.

Facilities at Merrill include the Cultural Center, where large gatherings, cultural and musical events, and celebrations take place; the Baobab Lounge, which provides study space, informal gathering space, a piano, and a television; and Casa Latina/Charles E. Merrill Library and Merrill Academic Success (MAS), which provide Merrill students with quiet places to study. The Ming Ong Computer Center offers access to desktop computers and printing. Finally, at the student-run pottery co-op, students can throw, fire, and glaze their pieces in the workshop space.

The physical facilities of Merrill College were provided through a partnership of public funds and gifts from the Charles E. Merrill Trust and the fOng family, in commemmoration of Ming Ong, a student who passed away in 1986.

For more information, visit the Merrill College website or call (831) 459-2144. For residential information, call the Housing and Residential Education Office at (831) 459-5689.

MERRILL COLLEGE FELLOWS AND STAFF

Merrill College faculty fellows are listed on the college's faculty directory on the college's faculty website.

Merrill College staff are listed on the college's staff page.

Porter College

Porter College was founded in 1969 as the fifth of UC Santa Cruz's residential colleges and on Nov. 21, 1989, was renamed in honor of a generous grant from the Porter-Sesnon family and adopted the motto, "Ars Longa, Vita Brevis." Its mission is to foster achievement in all areas of study. Porter is especially dedicated to achievement in the arts, believing that creative inquiry is an essential part of a rigorous and broad-minded education, a flourishing society, and a happy life.

ACADEMIC EMPHASES

The Porter campus is the administrative home of the Arts Division and the History of Art and Visual Culture Department, but Porter College faculty fellows hail from every academic division on campus and from many non-academic professions. All of them share the philosophy of education that the college's curriculum embodies: first, discover how to learn; then, learn by doing; and finally, let your learning make a difference in the world.

The Porter College curriculum encourages students to explore unusual topics and provocative ideas, to test and revise hypotheses about the meaning of their experiences, to learn from the failures that are an inevitable part of new learning and discovery, and to assume responsibility for the decisions they make in their studies.

Additional information about Porter College academics, including Porter 1 Course requirements and other academic programs, is available here.

COLLEGE COMMUNITY AND FACILITIES

The traditional residence halls and apartments play an important role in bringing the college community together. The residence halls are divided into smaller units or “halls,” with 35 to 40 students sharing a wing and restroom facilities. Theme or hall options include Single Gender, LGBTQIA+, Creative Expression and Mindfulness and Well-being (just to name a few). The six-person apartments are reserved for upper-division students

Porter College is also home to the Transfer Community. The majority of on-campus incoming transfer students reside at Porter regardless of their college affiliation. Special programs are designed to help new transfer students adapt to life at UCSC.

In addition to traditional classrooms, Porter has many specialized facilities, such as student art galleries, a study center, and a dining hall that converts to a theater and programming space. Porter College also features a MakerSpace Co-op, dedicated to promoting Porter’s creativity, building community, and providing a constructive positive outlet. Additionally, the MakerSpace has tools and materials available to use for personal crafting projects or even class assignments. The Arts Instructional Computing Laboratory is located at Porter College and is a high-end lab oriented toward the arts.

Porter provides many opportunities for relaxation and recreation to balance the intellectual demands of a university education. The Residential Life and Activities Office staff organize formal and informal events, including open-mic nights, dances, craft activities, and the mural painting program.

Many students and faculty perform or exhibit their work at Porter. The Sesnon Gallery, the Porter/Kresge Dining Hall, the Porter Quad, and the faculty gallery host a wide range of artistic, cultural, and academic events each year.

For more information, call (831) 459-2273 or visit the Porter College website.

PORTER COLLEGE FELLOWS AND STAFF

Porter College faculty fellows are listed on the college's faculty directory.

Porter College staff are listed on the college's staff page.

Kresge College

ACADEMIC EMPHASES

Kresge’s academic life is centered on the integration of living and learning in a community that values self-determination, consensus-building, intellectual freedom, sustainability, and justice. These principles take shape in a curriculum that emphasizes participatory learning, hands-on experience, and conscientious academic inquiry that transcends the walls of traditional classrooms. Ranging from media studies to food justice, writers' workshops to natural history, and journalism to service learning, Kresge’s courses offer varied ways for Kresge students to fulfill GE requirements while broadening their educational experience in the company of dedicated and imaginative faculty.

Additional information about Kresge College academics, including Core Course requirements and other academic programs, is available here.

RESIDENTIAL LIFE

In 2023, Kresge began housing firs-year students in newly built residence halls. Once finished, the newly renovated Kresge Proper apartments will be reserved for upper-division students. J and K Buildings’ three-person apartments are reserved for continuing upper-division students. These two-bedroom apartments have a kitchen and combination dining and living area.

Kresge is home to the Writers House, a living/learning community for students interested in creative writing and journalism (regardless of major), and the Ecovillage, a community for students who want to actively create a new world based on cooperation and sustainable living.

The Residential Life and College Programs staff at Kresge work to bring students of similar interests together academically and socially by designing fun and unique programs based on student interest. Programs that focus on celebrating the diversity of the residential community, and on enhancing academic success through music events, art and food-centered events are common.

COMMUNITY LIFE

A wide variety of events and activities shape community life at Kresge. Lectures, workshops, crafting, dances, and concerts are a regular part of student life at the college. The nature and tenor of these events are a reflection of the diverse interests of students and staff, who are committed to fostering voice, space, and opportunity for all community members.

Students actively shape the college community through participation in Kresge Parliament, an openly structured student organization responsible for voting the allocation of

all college membership fees in support of activities and events. Parliament and Town Meetings also serve as a forum for the discussion of college and campus-wide issues with college staff and faculty.

The Kresge Garden is home to a community of students who share a common interest in gardening. It is a space where students empower themselves to learn how to grow their own food from seed, dig beds, create a functional compost system, and work together cooperatively.

TRANSFER STUDENTS

In recognition of the wealth of diversity that transfer students bring to the community—in terms of culture and experience—Kresge works closely with the STARRS program (Services for Transfer, Re-entry and Resilient Scholars). This is a staffed facility where students can gather to relax, socialize, hold meetings, and obtain campus information and resource support in a central location regardless of college affiliation. The resource center (located in Quarry Plaza) offers workshops, social evenings, and special events tailored to meet the needs of transfer students. STARRS also offers special advising workshops and two- and three-credit courses designed to help transfers in the process of entering the university and moving forward in their careers.

FACILITIES

Kresge College is undergoing a four year redevelopment project. As a part of Phase I, three new residence halls for first-year students and a large academic building with a 600-seat lecture hall have been constructed. Currently, now in Phase II, the Kresge Proper apartments, which will house upper-division students and a new Kresge Town Hall, has begun. More details and updates about the Kresge Project can be found on the Kresge web page.

For more information, call (831) 459-2071 or visit the Kresge College website.

KRESGE COLLEGE FELLOWS AND FACULTY

Kresge College faculty fellows are listed on the college's faculty directory.

Kresge College staff are listed on the college's staff page.

Oakes College

Oakes was founded in 1972 to provide high-quality education to students from diverse cultural and social backgrounds. Students, staff, and faculty associated with the college believe that learning takes place not only in the classroom, but also in residential settings. For that reason, they work hard to create a multicultural community whose members strive to achieve ambitious goals—including equal access to educational opportunity and freedom from oppression—while simultaneously affirming and celebrating their distinctive cultural backgrounds.

ACADEMIC EMPHASES

As a result of their experience at Oakes College, students will cultivate equity and justice. This is what drives Oakes College. The broad learning outcomes are for Oakes students to understand the self, community, systemic oppression, and action for change.

The Oakes College faculty represents a wealth of expertise from the natural sciences to the humanities, and we are proud to have some of the top scholars in the world among our faculty fellows. Our students major in nearly every discipline at UCSC—from economics and computer science, to theater arts and Latin American and Latino studies—and they are well supported by the depth and breadth of the Oakes College faculty and the extensive knowledge of our advising team. Oakes graduates have gone on to successful careers in fields such as medicine, law, education, medical research, and community service. Oakes Academic programs include a Community-based Action, Research, and Advocacy (CARA) program, and the Oakes Science Community, led by our scientist in residence at Biko House.

Additional information about Oakes College academics, including Core Course requirements and other academic programs, is available here. (p. 884)

COLLEGE COMMUNITY AND FACILITIES

Oakes College, located on the west side of the UCSC campus, commands a sweeping view of Monterey Bay. Students may choose between apartment and residence hall living. The residence halls have attractive courtyards, and views of the ocean and the city of Santa Cruz. Students can also share an apartment-style living space, which includes a common living area and small kitchen. Full-time coordinators for residential education and neighborhood assistants help residents develop cooperative ways of living together. As one student put it, “Oakes is a community where people of many different backgrounds, interests, and goals form a friendly neighborhood. We share our cultures and adapt to the different lifestyles of our neighbors.” The residential program is designed to assist all students in integrating their academic and social lives. The residential staff host activities sponsored through its wellness, academic success, leadership, and social justice and diversity committees.

The college staff seek to nurture and sustain a community in which mutual respect, understanding, and concern for others are the norm. Within that atmosphere of community expectations, students are also supported and encouraged to find room for their own creative personal expression.

The other facilities at Oakes further support the special programs of the college and provide recreational opportunities for the students. College facilities include the Learning Center, a multipurpose room for lectures, movies, and small

theater productions; a college study center that is a quiet space for individual study, and a dining facility shared with Rachel Carson College. Adjacent to the Oakes Café is the Guzman Room, a social and group study space. Students and staff have worked together to create the Oakes Garden, which gives Oakes affiliates an opportunity to connect with each other and the earth to support sustainability and food security. Oakes is also home to the Underdome, a small outdoor basketball court great for friendly three-on-three competition. Additional recreational facilities located close to the college include tennis courts, a large recreational field, and an indoor basketball court.Oakes is named after Roscoe and Margaret Oakes in recognition of their generous philanthropy through the San Francisco Foundation.

For further information, call (831) 459-2558 or visit the Oakes College website.

OAKES COLLEGE FELLOWS AND STAFF

Oakes College faculty fellows are listed on the college's faculty directory.
Oakes College staff are listed on the college's staff page.

Rachel Carson College

Rachel Carson College is dedicated to environment and society, and the college has organized a vigorous intellectual life around this theme. The college examines environmental issues from multiple perspectives, through the social and natural sciences, engineering, public policy, and science and technology studies. Rachel Carson College offers students a sense of community and opportunities to augment academic work with a wide range of extracurricular activities. These include events such as Earth Week, sustainability internships, and a minor in sustainability studies.

Rachel Carson College students major in nearly every discipline offered at UCSC, while sharing a strong commitment to environmental stewardship. We teach our students and graduates to become environmentally aware green citizens, with the capacity to evaluate sustainability policies and strategies and with the skills needed for hands-on engagement in the many projects and activities that will be required to ensure the future of the planet and human civilization.

ACADEMIC EMPHASES

Rachel Carson College's academic classes focus on the theme of environment and society. The college sponsors a number of educational initiatives and courses aimed at furthering its theme and mission, as well as programs offering experiential learning for students.

Additional information about Rachel Carson College academics, including Core Course requirements and other academic programs, is available here. (p. 887)

COLLEGE COMMUNITY AND FACILITIES

Rachel Carson College is located on a sunny, terraced hillside on the west side of the UCSC campus, offering a spectacular view of Monterey Bay and the coastline as well as the redwood-covered hills. The college is designed to encourage interaction among resident and commuter students, with outdoor spaces for relaxing and informal opportunities to socialize. These include small residence hall patios, grass quadrangles, and a large plaza—the heart of the college—where pedestrian traffic converges. Adjacent to the college are recreational facilities that include the West Field House, tennis courts, basketball and sand volleyball courts, and playing fields. The Theater Arts and Music Centers, McHenry Library, and Porter and Oakes Colleges are a short walk from the college. Other parts of the university are easily accessible by foot, bicycle or frequent shuttle buses.

Rachel Carson College's facilities include an academic building that accommodates the college and faculty offices, the Sociology Department, associated research centers, classrooms, and a computer lab with printers. Approximately 500 students live in the college's community of two-and three-story residence halls, which provide single, double, and triple rooms as well as suites. The residence halls include laundry facilities and lobbies that serve as living rooms—favorite places where residents gather to relax, watch television, and catch up on the news of the day. A number of these are themed residences that focus on special programming related to the respective theme. Another 300 students are housed in Rachel Carson College's two-, three-, and four-bedroom apartments.

The college's residential staff includes both coordinators for residential education, who are full-time live-in professionals, and undergraduate resident assistants. The residential staff plans a variety of educational and recreational events, including community barbecues, outdoor movies, and student-initiated events that celebrate the diversity of our community. More intimate gatherings include study breaks, coffee talks, and potlucks. The residential staff is available to ease the transition to college life, making the college a comfortable new home for our residents.

The Student Commons building contains the Student Life Office, the office of Rachel Carson College's college programs coordinator, the office of the Student Environmental Center, and a large meeting room for student use. A study center is located across the plaza. The Rachel Carson College Café is a favorite haven and gathering place for students, faculty, staff, and other members of the campus community.

In conjunction with the student government and student organizations, the Rachel Carson College Student Programs Office plans social, multicultural, and educational events for the college community. Weekly programs including open mics, music, art shows, and guest speakers accommodate the diverse spectra of cultural and artistic interests of the students. College Night, a quarterly cultural event, provides an opportunity for students to learn about a variety of cultures through entertainment, education, and delicious cuisine. In addition, the Student Programs Office works closely with the

Student Environmental Center to bring programs that educate and build long-lasting networks, which aim to address the environmental issues affecting our world today.

Above all, Rachel Carson College seeks to create a community of inclusion, in which each person is encouraged to share and explore beliefs, worldviews, values, and ideas in an atmosphere of mutual support and trust.

For more information, contact the college at (831) 459-2361, email carsonhousing@ucsc.edu, or visit the Rachel Carson College website.

RACHEL CARSON COLLEGE FELLOWS AND STAFF

Rachel Carson College faculty fellows are listed on the college's faculty directory.

Rachel Carson College staff are listed on the college's staff page.

College Nine

ACADEMIC EMPHASES

College Nine's theme of International and Global Perspectives emphasizes the causes and consequences of our increasingly interconnected world where responses to threats like climate change and COVID-19 require large-scale collective action. Our academic and co-curricular programs analyze economic and cultural globalization, immigration, ethnic conflict, genocide, and human rights, among other issues. Students interested in these issues either as their major focus or as part of their general education are invited to join the College Nine community.

Additional information about College Nine academics, including Core Course requirements and other academic programs, is available here.

COLLEGE COMMUNITY

Founded in 2000, College Nine is one of the newest colleges at UCSC. College Nine creates an integrated living and learning environment through engaging academic and extracurricular programs focusing on the theme of International and Global Perspectives. Student leaders, faculty, and staff collaborate to develop an array of programs exploring the many aspects of the college's theme. Some of the programs include faculty presentations, guest speakers, conferences, debates, films, courses, arts events, and interactive workshops. These programs unite community members in an atmosphere of mutual respect, in which important contemporary and controversial issues are discussed.

College Nights

College Nights are community programs that feature a special dinner menu, entertainment, educational displays, and activities that often relate to the college theme of International and Global Perspectives. College Nights provide an opportunity to gather as a community several times a year to enjoy a meal and share conversations. Planned by students and staff, past College Nights have focused on Earth Day and sustainability; music and dance from around the world; and popular culture. College Nights are held in the Dining Commons and are open to all students.

Student Government

The College Nine Student Senate serves as the student government for College Nine and represents its students to the college and campus administrations and to the Student Union Assembly (SUA), the campuswide student governance board. The Senate appoints representatives to campus and college committees, provides monetary support to student organizations, hosts community programs, and consults with college administration on policy development.

International Living Center

The International Living Center (ILC) at College Nine offers a unique living environment fostering understanding, cooperation, and friendship among upper-division students from different nations, cultures, and backgrounds. With a portion of the residents joining the community as domestic students from the United States, and the other portion of students joining from various countries around the world the ILC truly embodies the College Nine theme of international global perspectives. ILC students reside in the Colleges Nine and Ten Apartments as they live together and learn from one another in this culturally immersive experience. Based out of the International Living Center, the International Affairs Group (IAG) offers all Colleges Nine and Ten community members the opportunity to engage in lively discussions about important current international issues with one another through guest speakers, film, literature, media, and personal experience.

iFloor

The iFloor is a combination of international first-year students and U.S. first-year students who apply to live in this intentional intercultural community housed within the College Nine residence halls. This unique community offers residents opportunities to make meaningful, lifelong friendships and connections that extend beyond borders.

Co-Curricular Programs and Opportunities

College Nine and John R. Lewis are the only colleges, so far, on UCSC's campus with a dedicated Co-Curricular Programs office. The CoCo, as it is affectionately known, has been providing dynamic involvement and leadership opportunities for students for more than two decades. Through these student leadership opportunities, and more, The CoCo seeks to provide academic and social spaces that embody and blend the themes and curriculum of our colleges. Getting involved in co-curricular activities is a predictor of college success. Not only do college activities help students make friends, they foster leadership and group cooperation and build the key skills that are needed to build a more peaceful,

knowledgeable, and empathetic society as we trek deeper into the 21st century. There are many opportunities at College Nine for student involvement. These include the following groups as well as many other programs, activities, and clubs. The CoCo is located on the ground floor of Social Science Building 1, next to the College Nine mailroom/package pickup. Follow @ucsc9_jrl on Instagram to see what's going on at The CoCo.

(H)ACER

The (H)ACER Program at College Nine and John R. Lewis College integrates experiential learning with community engaged research opportunities to train undergraduate students in community-engagement and envision themselves as knowledge producers. Students can participate in anywhere from one-day critical service learning experiences to yearlong research apprenticeships. In collaboration with our community partners, students engage in projects that address pressing issues such as social, economic, educational, and environmental injustice through an approach that pushes against deficit and damage-centered frameworks and honors the knowledge of community members.

Practical Activism: Tools for Local and Global Change

The annual Practical Activism Conference is a daylong, student-led conference featuring keynote speakers, multiple workshops, various on- and off-campus organizations, performances, and a variety of hands-on activism activities. Students interested in planning the conference enroll in the JRLC-120 course in the fall and winter quarters to gain valuable leadership and organizing skills which aid in developing and planning this exceptional program, which involves collaboration among faculty, staff and the local community. Visit practicalactivism.ucsc.edu for more information. Follow the Practical Activism Conference on Instagram @practicalactivism.

The annual Practical Activism Conference is a daylong, student-led conference featuring keynote speakers, multiple workshops, various on- and off-campus organizations, performances, and a variety of hands-on activism activities. Students gain valuable leadership and organizing skills through developing and planning this exceptional program, which involves collaboration among faculty, staff, and the local community. Visit practicalactivism.ucsc.edu for more information.

Community Garden

The Community Garden Club meets weekly to discuss sustainability issues, integrate the themes of our colleges into the garden design and practice, and work together on soil preparation, planting, and harvesting. Members of the Garden Club learn about opportunities to work with our sister garden at Calabasas Elementary School in Watsonville. The Community Garden Club raises grant funding to support four staff positions to sustain the garden and run the Garden Club.

Intercultural/Social Justice Community Weekend

This two-day retreat provides international and U.S. students from diverse backgrounds the opportunity to explore various components of intercultural communication. The theme of this yearly retreat rotates between the College Nine theme and the John R. Lewis College themes, which share a lot of overlap. Through a series of structured exercises and small-group discussions, students share perspectives on intercultural issues, values orientation, and cross-cultural communication. The goal of the workshop is to build community and friendship between international and U.S. students as well as to increase students' understanding of the complexity of communicating across cultures.

PHYSICAL SURROUNDINGS

College Nine is situated in a redwood grove next to the Social Sciences 1 and 2 Buildings near the heart of campus. One of the campus's Instructional Computing Labs is conveniently located in the Social Sciences 1 Building. A nature preserve serves as College Nine's "backyard." College Nine students have immediate access to hiking, running, and mountain bike trails in the adjacent forest.

Residence halls offer approximately 600 single and triple bedrooms. These fully furnished residence halls include adjacent student study spaces, recreational areas, and WiFi. In addition, there is a state-of-the-art dining hall with an adjoining multipurpose room and recreation lounge for both College Nine and John R. Lewis College.

College Nine and John R. Lewis College also house approximately 400 upper-division students in apartments, with single, double, and triple bedrooms. All apartments have full kitchens, living rooms, bathrooms, and WiFi. Ground-floor apartments have decks, and most upper apartments have private balconies.

For more information about academic or general college programs, call (831) 459-5034, email 910capc@ucsc.edu, or visit the College Nine website.

COLLEGE NINE FELLOWS AND STAFF

College Nine faculty fellows are listed on the college's faculty directory.

College Nine staff are listed on the college's staff page.

John R. Lewis College

ACADEMIC EMPHASES

John R. Lewis College's theme of Social Justice and Community addresses a range of social, political, and economic inequalities--from racism and xenophobia to incarceration and educational inequity--and their impacts on society. In particular, our academic and co-curricular programs consider the injustices that many people confront in

their lives, and situate them in historical, political, and structural contexts, informing possible pathways for resistance and change. John R. Lewis College provides students with opportunities to make their own positive contributions to social change through community involvement and/or scholarly research.

Additional information about John R. Lewis College academics, including Core Course requirements and other academic programs, is available here.

COLLEGE COMMUNITY

College Ten, the newest college at UC Santa Cruz was founded in 2002. On May 6, 2022, it was dedicated as John R. Lewis College, a naming that was made possible by the generosity of anonymous donors who are inspired by the life and legacy of the Civil Rights Leader and member of Congress. John R. Lewis College creates an integrated living-and-learning environment through engaging academic and extracurricular programs focusing on the theme of Social Justice and Community. Student leaders, faculty, and staff collaborate to develop an array of programs exploring the many aspects of social justice. Some of the programs include faculty presentations, guest speakers, debates, films, arts events, courses, and interactive workshops. These programs unite community members in an atmosphere of mutual respect, in which contemporary and controversial issues are discussed.

College Nights

College Nights are community programs that feature a special dinner menu, entertainment, educational displays, and activities that often relate to the college theme of Social Justice and Community. College Nights provide an opportunity to gather as a community several times a year to enjoy a meal and share conversations. Planned by students and staff, past College Nights have focused on Earth Day and sustainability; music and dance from around the world; and popular culture. College Nights are held in the Dining Commons and open to all students.

Student Government

The John R. Lewis College Governing Cooperative serves as the student government for John R. Lewis College and represents its students to the college and campus administrations and to the Student Union Assembly (SUA), the campuswide governance board. The Governing Cooperative appoints representatives to campus and college committees, provides monetary support to student organizations, hosts community programs, and consults with college administration on policy development.

Rumi's Field

Named after a renowned peace-seeking Sufi poet, Rumi's Field offers an opportunity for students who wish to learn, live, and interact using the skills of Nonviolent Communication (NVC) and exploring social justice through the lens of nonviolence. Nonviolent Communication strengthens one's ability to inspire empathy from others and respond compassionately even under difficult circumstances. This community of John R. Lewis College first-year and continuing students offers the opportunity to engage in dialogue and resolve conflict using NVC consciousness as a tool for personal and societal transformation.

Co-Curricular Programs and Opportunities

College Nine and John R. Lewis are the only colleges, so far, on UCSC's campus with a dedicated Co-curricular Programs office. The CoCo, as it is affectionately known, has been providing dynamic involvement and leadership opportunities for students for more than two decades. Through these student leadership opportunities, and more, The CoCo seeks to provide academic and social spaces that embody and blend the themes and curriculum of our colleges. Getting involved in co-curricular activities is a predictor of college success. Not only do college activities help students make friends, they foster leadership and group cooperation and build the key skills that are needed to build a more peaceful, knowledgeable, and empathetic society as we trek deeper into the 21st century. There are many opportunities at John R. Lewis College for student involvement. These include the following groups as well as many other programs, activities, and clubs. The CoCo is located on the ground floor of Social Science Building 1, next to the College Nine mailroom/package pick up. Follow @ucsc9_jrl on Instagram to see what's going on at The CoCo.

Practical Activism: Tools for Local and Global Change

The annual Practical Activism Conference is a daylong, student-led conference featuring keynote speakers, multiple workshops, various on- and off-campus organizations, performances, and a variety of hands-on activism activities. Students interested in planning the conference enroll in the JRLC-120 course in the fall and winter quarters to gain valuable leadership and organizing skills which aid in developing and planning this exceptional program, which involves collaboration among faculty, staff and the local community. Visit practicalactivism.ucsc.edu for more information. Follow the Practical Activism Conference on Instagram @practicalactivism.

(H)ACER

The (H)ACER Program at College Nine and John R. Lewis College integrates experiential learning with community-engaged research opportunities to train undergraduate students in community engagement and envision themselves as knowledge producers. Students can participate in anywhere from one-day critical service learning experiences to yearlong research apprenticeships. In collaboration with our community partners, students engage in projects that address pressing issues such as social, economic, educational, and environmental injustice through an approach that pushes against deficit and damage-centered frameworks and honors the knowledge of community members.

Intercultural Community Weekend

This two-day retreat provides students from diverse backgrounds the opportunity to explore aspects of College Nine and John R. Lewis' themes through a series of exercises and discussions. The theme of this yearly retreat rotates between the College Nine theme and the John R. Lewis College theme as they share much overlap. Participants explore issues impacting our individual identities (e.g., race, class, gender, sexual orientation, ability, religion); increase their understanding of the complexities of communicating across diverse experiences and backgrounds; build communication skills; and share in celebrating and deconstructing the diversity of our community. Students apply for this opportunity in the fall.

Terry Freitas Commons

Located at John R. Lewis College, the Terry Freitas Commons is a student-run lounge with a long legacy as a favorite gathering place among students. It is open daily for study and socializing, periodically hosts events, and is home to a basic needs pantry. The Commons is named after former UCSC student Terry Freitas, who worked closely with the U'Wa people of Colombia. Terry dedicated his life to making the world a more socially just place. Follow us on Instagram @tfc_ucsc.

Community Garden

The Community Garden Club meets weekly to discuss sustainability issues, integrate the themes of our colleges into the garden design and practice, and work together on soil preparation, planting, and harvesting. Members of the Garden Club learn about opportunities to work with our sister garden at Calabasas Elementary School in Watsonville. The Community Garden Club raises grant funding to support four staff positions to sustain the garden and run the Garden Club.

PHYSICAL SURROUNDINGS

John R. Lewis College is situated in a redwood grove next to the Social Sciences 1 and 2 Buildings near the heart of campus. One of the campus's Instructional Computing Labs is conveniently located in Social Sciences 1. A nature preserve serves as John R. Lewis College's "backyard." John R. Lewis College students have immediate access to hiking, running, and mountain bike trails in the adjacent forest.

Residence halls offer approximately 600 single and triple bedrooms. These fully furnished residence halls include student study spaces, recreational areas, and WiFi. In addition, there is a state-of-the-art dining hall with an adjoining recreational lounge and Terry Freitas Café, a coffee lounge for both Colleges Nine and Ten. Colleges Ten and Nine also house approximately 400 upper-division students in apartments, with single, double, and triple bedrooms. All apartments have full kitchens, living rooms, bathrooms, and WiFi. Ground-floor apartments have decks, and most upper apartments have private balconies.

For more information about academic or general college programs, call (831) 459-5034, email 910capc@ucsc.edu, or visit the John R. Lewis College website.

JOHN R. LEWIS COLLEGE FELLOWS AND STAFF

John R. Lewis College faculty fellows are listed on the college's faculty directory.

John R. Lewis College staff are listed on the college's staff page.

Student Life

Campus life is all about learning, discussion, and debate; meeting people from diverse backgrounds; making new and lasting friendships; attending cultural celebrations and artistic and musical performances; and getting involved with student organizations and clubs. UCSC provides a wealth of opportunity for personal growth within the context of a rich and meaningful academic experience. Students live, study, and socialize with others from their college as well as with students from the other colleges. UCSC's colleges (see The Colleges (p. 1471)) and various campus units provide a wide range of student services to respond to individual needs, interests, and levels of personal development. In addition, students can take advantage of the campus's stunning natural setting, the friendly and engaging local community, and easy access to the Monterey and San Francisco Bay areas.

Santa Cruz Community

Located on the northern tip of Monterey Bay, Santa Cruz is famous for its Mediterranean climate, forested state parks, and miles of scenic beaches. Recreational opportunities abound—hiking through redwood forests, bicycling along mountain roads, and surfing, sailing, and scuba diving. The Santa Cruz Mountains are minutes away; the majestic Sierra Nevada is a four-hour drive to the east.

The metropolitan centers of the San Francisco Bay Area are easily accessible. By car, Berkeley and San Francisco are less than two hours from campus. San José, Monterey, and Carmel are one hour away.

The city of Santa Cruz, with a population of about 65,000, was originally founded as a Spanish mission. Santa Cruz is a small community with cosmopolitan appeal and a strong awareness of environmental and political issues.

Housing

At UC Santa Cruz, students are housed in small-scale residential communities, which provide close-knit living environments within the larger university. Each community provides an academically and socially supportive environment and offers special programs designed to help students transition to campus life, build a strong connection with the

campus, and get the most out of their UCSC experience. A space in university housing is guaranteed to all new undergraduate students entering in the fall quarter who submit all forms and required fees by stated deadlines.

After accepting the UC Santa Cruz offer of admission, all undergraduate students become affiliated with one of our 10 colleges. Once affiliated with a college, all students are sent information about the housing options available, and instructions for completing the online housing application/contract process. The housing options available to you will differ depending on whether you are a freshman or a transfer student. All students have access to campus dining facilities. Housing application periods open in mid-May for new freshmen and mid-June for new transfers entering in the fall.

College Residences

The colleges differ in academic focus, environment, location, architecture, and programs offered. However, all 10 colleges are dynamic, engaging learning communities that offer opportunities for students to help build and shape their experiences.

Freshmen are generally assigned to live in residence halls at their college. Residence hall floors are typically shared by 30 to 50 students and have common bathrooms. Students can request to live in a mixed-gender area (students of any gender live on the same floor or apartment, though bedrooms are single-gender) or single-gender area (students of a single gender live on the same floor or apartment). Room assignments allowing transgender and gender-nonconforming students and their allies to live together in the same room regardless of gender or legal gender are also available by request. Apartments, typically shared by four to seven students, have common living/dining rooms, kitchens, and bathrooms, and a combination of shared and private bedrooms. Each community provides accessible housing for students with disabilities. Incoming transfer students reside at the Transfer Community, or the University Town Center, regardless of college affiliation.

A variety of theme-housing options are available for those who are interested. Based on academic pursuits, hobbies, individual backgrounds, and lifestyle preferences, these options serve to complement a student's experience in residence.

Each college's residential program is a team effort. Live-in student and professional staff members provide orientation and support services, organize activities and events, provide referral information about academic or personal concerns, and assist with roommate problems.

All students living in campus residence halls (including the transfer community) have a meal plan included in their housing contract. Meal plans are optional for apartment residents. Students with meal plans may use their student ID cards or the GET Mobile app to access any of the dining halls on campus and to purchase menu items at UCSC Dining-operated cafes, coffee bars, and markets. More information on the colleges, including videos, can be found here and at the Housing website.

Redwood Grove

Located on the west side of campus, the Redwood Grove apartments are an extension of the transfer community at Porter College, and provide an apartment living environment for a limited number of incoming transfer students who are age 23 or older at the time they apply for housing. Each apartment has private and shared bedrooms, a living room, kitchen, dining room, and bathroom. Information is available at Redwood Grove and by email at redwoodgrove@ucsc.edu.

The Village

Located in the Lower Quarry, The Village is a unique community for continuing students. Each of the 17 houses features single and small double bedrooms, three bathrooms, and a kitchenette. A meal plan is optional. A manager's apartment, office, laundry facility, community kitchen, and community lounge are located on site. Information is available at The Village and by email at village@ucsc.edu.

University Town Center

The University Town Center, located at the corner of Pacific and Cathcart in downtown Santa Cruz, houses continuing and transfer students in two- and three-person studio apartments. A meal plan is optional. Information is available at UTC and by email at utc@ucsc.edu.

Family Student Housing

Family Student Housing has apartments for students and their families. Students must reside with at least one eligible family member on a permanent, full-time basis. Eligible family members include children, a spouse or adult partner, a parent, or a sibling. The apartments are unfurnished, and each has two bedrooms, a bathroom, a small study, a combined living/dining area, and a kitchen. Several apartments are accessible to people with mobility impairments. Also, see information on child care and youth programs, below. Information is available at Family Student Housing, and by email at fsh@ucsc.edu.

Camper Park

A 42-space Camper Park is located on the north side of campus and includes university-owned single-occupant recreational vehicles that are rented to students. The park includes a community building with restrooms, showers and laundry facilities, and a lounge/study room. Information is available at Camper Park and by email at camperpark@ucsc.edu.

Graduate Student Housing

Conveniently located adjacent to "Science Hill," home to many of UCSC's main academic facilities, each apartment offers four single bedrooms, a living room, kitchen, dining room, and bathroom. Ground floor apartments have decks,

while upper apartments have private balconies. Information is available at grad housing and by email at gradhsg@ucsc.edu.

Campus Housing Office

The Housing Office is responsible for the application and contract records for all single students living in campus residence halls and apartments, The Village, University Town Center, and Graduate Student Housing. Advisers are available to assist students with any questions regarding housing contract policies and procedures, housing and dining charges, payment plan options, meal plans, and more. For questions about room assignments, or other housing or residential life questions, students should contact their community Residential Life and Housing Office.

Information is available at housing and by email at housing@ucsc.edu.

Community Rentals Office

Students interested in finding their own accommodations in the off-campus community are encouraged to use the rental listings and other helpful online resources available through the UCSC Community Rentals website. Community Rentals maintains online rental listings to assist students in locating rental housing and serves as an information and advising resource.

Location: 104 Hahn Student Services (8 a.m. to 5 p.m., Monday through Friday). Information is available at community rentals and by email at communityrentals@ucsc.edu.

Athletics and Recreation

Athletics & Recreation provides a variety of interesting programs, activities, and developmental opportunities in which all students from any background or skill level are invited to participate. The department strives to develop skills and habits related to fitness and wellness that last a lifetime for students to enjoy athletic and recreational activity.

You can obtain further information about the programs described below from Athletics and Recreation located at the East Field House, (831) 459-2531. Visit the Athletics & Recreation websites at goslugs.com or recreation.ucsc.edu.

Athletics and Recreation Courses

Athletics and Recreation offers students an opportunity to learn and improve skills in a variety of areas while gaining knowledge about the relationship between fitness and wellness. With these experiences, students are more equipped to make important choices leading to healthy lifestyles.

Regularly scheduled courses, which carry no academic credit but are recorded on your transcript, are available in a broad range of physical activities (see Athletics and Recreation (p. 1314)). Many classes are small, and all offer expert instruction and welcoming environments. While many of the courses are for students at the beginning level, some are designed for the more advanced student.

Subjects offered include swimming, scuba, sailing, rowing, kayaking, basketball, tennis, volleyball, ballet, jazz dance, modern dance, fencing, soccer, strength training, yoga, aikido, and more. See the Athletics and Recreation website for more information.

Intramural Sports

Intramural Sports offers a wide variety of traditional and niche recreational sports opportunities designed to encourage participation for all enrolled students to play together on campus. The program prides itself on sportsmanship, inclusion, community, and fun.

Intramural Sports are structured for all skill levels and are conducted in a safe, supervised environment. You do not need to be an experienced athlete to play! **Intramural Sports are open to all UC Santa Cruz students and staff/faculty with current memberships.** Intramural Sports are a fun way to play, meet friends, learn new sports, and relieve the stress of daily routines. Most activities allow you to select the days and times you play, as well as the people on your team. Check out the Intramural Sports website to learn how and when to register.

Sport Clubs

UC Santa Cruz Sport Clubs are student-driven and student-managed organizations that strive for skill building in leadership, problem-solving, collaboration, and financial management. These organizations participate in a variety of active-lifestyle activities that compete with other university club organizations. Sport Clubs also hosts recreational clubs for those less inclined for competition. Please visit the Sport Clubs website to see learn more about Sport Clubs at UC Santa Cruz.

Intercollegiate Athletics

UC Santa Cruz offers the only National Collegiate Athletic Association (NCAA) Division III program in the University of California system. As a Division III member, the program offers no scholarships or grants in aid that are based on athletic ability. UC Santa Cruz sponsors the following intercollegiate sports: men's and women's basketball, soccer, swimming and diving, tennis, volleyball, cross country, track, and women’s golf. For schedules, rosters, and more information on Athletics at UC Santa Cruz please visit goslugs.com.

Adventure Rec

The Adventure Rec program within the Athletics & Recreation department is designed to provide the UC Santa Cruz community with an opportunity to develop skills, have fun, be challenged, and make healthy social connections through outdoor, recreational, and hands-on learning experiences. Adventure Rec offers a wide range of programs that provide opportunities for beginners as well as more experienced participants. Students can expect well-organized activities as well as informal experiential learning led by Adventure Rec UC Santa Cruz professional staff and student

leaders. Much like the rest of the Athletics & Recreation department, student leaders make up the foundation of the Adventure Rec, bringing experience and enthusiasm to all that participate.

Athletics & Recreation also offers outdoor equipment rental. From surfboards to wetsuits, tents to sleeping bags, UC Santa Cruz has all the high-quality backpacking and camping gear a student could need. Students interested in planning their own outings should contact the Adventure Rec staff for assistance or sign up for one of the available adventure preparation program offerings. Adventure Rec also offers a free, weekly drop-in bicycle maintenance program. Please visit the Adventure Rec website for more information.

Sammy Slug

The Banana Slug, a bright yellow, indigenous gastropod found in the redwood forest on campus and around Santa Cruz County, has not always been the official mascot for UC Santa Cruz. In fact, the University didn't initially have formal, organized, and campus-supported athletics for enrolled students when founded in 1965. By 1980, students had made it clear there was a sincere desire for more organized and University-supported participation in intercollegiate competition. That is when UC Santa Cruz became an institutional member within DIII of the NCAA.

Institutional membership with the NCAA requires an official team name, yet for the first 15 years of its existence, the University did not have one. Chancellor Robert L. Sinsheimer gathered a focus of student-athletes and from that, made a decision to name the University's new mascot: the Sea Lions. The new name was soon challenged by a grassroots effort by students on campus, which led to publicity in local and national media as more UC Santa Cruz students campaigned to officially become the Banana Slugs. Even after a Sea Lion was painted on the West Field House hardwood, students continued to cheer and chant for the Banana Slugs. Bronze statues of sea lions in the heart of campus were vandalized with yellow paint and antenna glued to the top of the sea lion heads to transform them into Banana Slugs. After years of relentless effort and stalemate a student-led, campus referendum was organized in 1986 to decide the UC Santa Cruz mascot once and for all. The vote was overwhelmingly in favor of the Banana Slugs and the rest is history.

Be on the look out this fall to participate in the #EvolveSammy campaign and help campus decide how Sammy Slug evolves into the next era!

Facilities

UC Santa Cruz Athletics & Recreation hosts a variety of facility spaces for students, faculty/staff, and community to participate in athletic and recreational activities. The East Field House (EFH) complex is one of the most popular areas of campus with over half of the student population visiting the complex at least once during the year. There you will find our 50m pool, six tennis courts, multiple dance studios, indoor and outdoor basketball courts, two sand courts, nine acres of recreational field space, an outdoor strength-training and cardiovascular-fitness installation, a ½ mile jogging path, one natural grass competition surface, and a 6,500 square foot fitness center complete with cardio and strength training equipment as well as incredible vistas of the Monterey Bay. The EFH complex is also home to our personal training and group fitness classes offered by the Athletics & Recreation FitLife program. More information is available on the FitLife website. More information is available on the FitLife website.

The West Field House is home to our basketball and volleyball teams and is a great place to enjoy the Banana Slugs compete against Coast to Coast Athletic Conference members or other NCAA DIII opponents. There are also 6 tennis courts, 2 sand courts, outdoor basketball, and a smaller recreational field space for students to enjoy within the Rachel Carson College area of campus.

UC Santa Cruz Athletics & Recreation also leases additional facility spaces for students in Santa Cruz, including Kaiser Permanente Arena downtown for select basketball and volleyball games (visit goslugs.com for game schedules) and the Santa Cruz Harbor. The UC Santa Cruz Community Boating Center is located on FF Dock at the Santa Cruz Small Craft Harbor. Our Boating Center is home to Physical Education courses, a community boating club, and our competitive Sailing Club which operates as a Sport Clubs student organization. Summer sailing courses are also available for those interested. Boating courses are offered for dinghies, 24'–32' keel boats, sea kayaks, and rowing shells. Please visit the Boating Center website for more information.

Sustainable Living Center Programs

The Friends of the Community Agroecology Network (FoCAN) is a student led-organization that celebrates cultural identities, works on transborder community initiatives centered on justice in the agro-food system, food sovereignty, solidarity and just solidarity economies. We form part of an international network with small-scale farmers and rural youth to sustain rural livelihoods. FoCAN members work with UC Santa Cruz students, Community Agroecology Network (CAN) and UCSC staff members in community outreach, educational material development, promotion of fair trade/solidarity economies principles, food sovereignty workshop planning, event coordination, and international youth network collaborations. FoCAN participates in CAN's AgroEco Coffee, a solidarity supply network, and CAN's Youth Network, Red Internacional de Agroecología Comunitaria (RIAC), along with several youth organizations in Mexico and Nicaragua. For more information see: http://focan.weebly.com and www.canunite.org, or contact agroeco@canunite.org.

FoCAN facilitates hands-on learning activities that engage students with all aspects of a sustainable food system—from growing organic food that supports local communities to conscious consumerism on a global level.

Student ID Cards

STUDENT IDENTIFICATION CARDS

The Student ID card (which carries the student's picture, name, student ID number, college affiliation, validation sticker, card access proximity number, and library bar code) is issued to new students during their first quarter on campus. Students who start out living in University housing (and have a signed housing contract) pay $25 for their cards as part of their contract. New students who have not signed a housing contract will have their Student Billing Services account charged $25 during their first quarter on campus.

New students receive their card validated with a quarterly sticker (if all their fees have been paid). Continuing students should go to their college office or housing office for their validation sticker. The sticker is available to you once you've paid your fees, and serves as proof that you are registered. Your college/housing office will be able to issue a sticker the business day after you have paid your fees at the Cashier's Office. Please see the ID Card Services website for more information about quarterly validation stickers.

The validated ID card allows you access to various campus offices and services, including the library, health center, field house, dining halls, and all Santa Cruz County Metro buses. Presentation of your student card is required by the Office of the Registrar for access to records and services. If your card is not functioning properly, please bring it to ID Card Services to be examined. Visit the ID Card Services website for information on replacement cards and their pricing, and their customer service hours.

STUDENT ID PHOTOS

Photos can be submitted following the instructions on ID Card Services' photo submission page. Their customer service hours, and other information, can be found on the IDCS website.

Student ID card photos are also included in the My.UCSC system, and can ony be seen by faculty using the faculty center class roster or by staff members with appropriate security. Student photos within the class roster are defined as confidential, intended to assist instructors and authorized staff in identifying students and for no other purpose.

Student-Run Cooperatives

Bike Co-op

The Bike Co-op is student owned and operated, run cooperatively, and nonprofit. Whether you need to purchase a bike, repair a bike, or want to learn, the co-op can accommodate your needs. People are encouraged to attend meetings, learn more about cooperatives, and get involved. The Bike Co-op is located at the Redwood Building, next to the Student Union.

Transportation and Parking Services (TAPS)

All information subject to change.

Transportation and Parking Services (TAPS) provides and manages access to the UC Santa Cruz campus, with a focus on sustainable transportation modes. By providing alternatives to bringing a car to campus, TAPS helps reduce the demand for on-campus parking, reduce greenhouse gas emissions, and mitigate the impacts of travel on the surrounding community. These efforts support the UC Carbon Neutrality Initiative and the Campus Sustainability Plan, and are one of the reasons that UC Santa Cruz regularly ranks as one of the “greenest” colleges in the nation.

Gift cards, raffles, and other prizes are some of the rewards possible for using a sustainable transportation choice. Sign up at Cruz511.org and download the Commute Tracker app to log your trips.

For additional information, visit the TAPS website. and stay in the know by signing up for the TAPS monthly newsletter, Slugs on the Move.

Parking Restrictions

To support sustainability, traffic reduction, and space conservation efforts, parking for undergraduate students is either prohibited or extremely limited. Freshman and sophomore students who live on campus are generally not eligible to purchase parking permits. All commuting students and juniors and seniors who live on campus may apply for a permit; however, due to the limited number of parking spaces on campus, there is no guarantee of actually being able to purchase one. Historically, permits have sold out before the start of fall quarter, and have only been available through an appeals process for the remainder of the academic year. All students, including residential freshman and sophomores, with a documentable need for a parking permit, such as job or family responsibilities, or health-related needs, may use the appeal process to request a permit.

Off-campus parking options are also extremely limited, and typically sold out before classes begin in fall quarter. If you will be living on campus, and are not eligible to purchase an on-campus parking permit, you should not expect to be able to park your vehicle anywhere nearby.

Transportation Options

Campus Transit: On-campus shuttles and Disability Van Service are provided fare-free through funding from the Student Transit Fee. TAPS shuttles operate on campus from approx. 7:30 a.m. to 12:00 a.m. Monday through Friday, and from 4:30 p.m. to 12:00 a.m. on weekends. TAPS also offers the the Westside Connector (service to and from the residential campus and UCSC’s Westside properties, the Westside Research Park and the Coastal Science Campus) as well as the Silicon Valley Connector (service to and from the residential campus and UCSC’s Silicon Valley campus).

METRO Buses: Santa Cruz Metropolitan Transit District (METRO) is the transit bus service provider for Santa Cruz County. METRO operates more than 25 bus routes throughout the county, including routes to and from the residential UC Santa Cruz campus, and also between the residential UCSC campus and the Coastal Science Campus (CSC) during fall, winter, and spring quarters. METRO continues service to the residential campus and CSC during the summer on a more limited basis, due to the reduced population during that academic quarter. UCSC students can ride METRO fare-free throughout the county by showing a student ID card with a current quarter validation sticker.

Bike Programs: TAPS offers a variety of programs, including e-bike share, secure BikeLink lockers, helmet/light giveaways, bike classes, and group rides, e-bike workshops, free bike maintenance clinics, and free bike skills classes. TAPS also manages the e-bike sharing program, Santa Cruz BCycle, and provides subsidized memberships for affiliates (available while supplies last).
Visit slugbikelife.org for upcoming bike events and programs.

Car Sharing: Zipcar is a membership-based car share program that allows students 18 and over to rent cars on campus on an hourly or daily basis. Rates include all vehicle fees, gas, insurance, mileage, and reserved parking on campus. Members have access 24 hours per day to a variety of vehicles that are placed throughout the residential campus For detailed information, visit the campus Zipcar website.

Carpool Ridematching: Cruz511 offers a county-wide ride matching program that spans from San Francisco to Santa Cruz. Download the Commute Tracker mobile app to start finding carpool buddies on the UCSC private network and logging trips to win prizes. Even if you don't have a car, you can post the ride you need. If you have a car, you can share your trip with others and save on costs. You can list your regular commute to campus or your one-time trip needs through Cruz511.

Walking: UC Santa Cruz is one of the most beautiful campuses in the world, and the best way to experience it is on foot! Walking is the single most sustainable means of getting around (and often the most direct way, as well) so be sure to bring a pair of sturdy walking shoes.

Long-Distance Train/Bus Service and Airports: Northbound Amtrak is available from the San Jose Diridon Station, which can be accessed by the Hwy 17 bus. Southbound Amtrak service is available from San Jose or Salinas.

The nearest airport is in San Jose, approximately 35 miles from Santa Cruz. The San Francisco Airport is about 70 miles from campus. Both airports are accessible by taking the Highway 17 Express bus that runs between Santa Cruz and connecting to CalTrain or Santa Clara Valley Transportation Authority (VTA).

Student Health Services

The UCSC Student Health Services mission is to provide high-quality services that promote physical and emotional well-being, addressing the diverse needs of students. We strive to create a caring and supportive environment to help students thrive, supporting both their health and academic success.

Student Health Center

The Cowell Student Health Center offers integrated primary care, counseling, and psychiatric services to all UCSC students through in-person and telehealth appointments with board-certified physicians, nurse practitioners, and physician assistants. Services include same-day care, a 24/7 Nurse Advice Line, X-rays, lab tests, pharmacy services, and on-site optometry.

The health center works in partnership with departments within Student Health Services, including Counseling & Psychological Services (CAPS), the Center for Advocacy, Resources & Empowerment (CARE), the Cove Collegiate Recovery Community, and SHOP Health Promotion, to provide holistic and comprehensive care for students.

Student Health Services Departments

Counseling and Psychological Services (CAPS)

Counseling and Psychological Services (CAPS) offers a range of in-person and telehealth professional services to any students seeking support for mental health concerns. All registered students are eligible for confidential counseling at no out-of-pocket cost, and enrollment in UC SHIP or CruzCare is not required to access CAPS services.

We help students with academic and personal stress, anxiety and depression, relationship and family issues, drug and alcohol problems, psychological problems, and crisis situations. Psychiatry services include diagnostic evaluations or prescribing of medication in certain situations. Depending on a student's needs, a student may be provided with brief individual or couples counseling, group counseling, psychiatric services, crisis intervention, case management services, or a referral for open-ended or long-term therapy off campus:

- Let's Talk, a drop in confidential service for consultation, support, and advice
- Psychoeducational programs and workshops on a variety of mental health topics, such as stress and coping skills, managing anxiety and depression, andtrauma
- Same-day crisis services and after-hours crisis support
- Campus Mobile Crisis Team (CMCT) a mobile mental health crisis response service for all members of the UCSC community
- Consultation for staff, faculty, individuals, or family members for assistance in helping students in distress

Information provided to any CAPS professional staff member is confidential within Student Health Services and cannot be released without a student's permission, except in specific circumstances involving risk and safety. All services are aimed at helping students gain greater personal effectiveness and academic success. Professional staff members are available at various locations on campus, including the Student Health Services building, the Porter CAPS Annex, and the colleges.

For more information visit the Counseling and Psychological Services website or call (831) 459-2628.

Student Health Insurance Requirement

Health Insurance Requirement at UCSC

The University of California requires all registered students to have health insurance as a condition of enrollment. Unexpected medical expenses can disrupt your education, and health insurance helps protect you from this risk. UC Student Health Insurance Plan (UC SHIP) offers comprehensive coverage, including medical, dental, vision, mental health, pharmacy, and substance use

services. Many services at the Student Health Center are free or low-cost with UC SHIP.

To attend UCSC, you must either enroll in UC SHIP or waive it with a qualifying private insurance plan. We recommend comparing your options and choosing what fits your needs. If you waive UC SHIP, consider purchasing CruzCare for affordable access to on-campus care.

Health Insurance Options

Option 1: UC Student Health Insurance Plan (UC SHIP)

UC SHIP provides:

- comprehensive coverage, including medical, behavioral health, dental, vision, and prescriptions
- year-round coverage (including breaks and summer)
- free visits for preventive care, acute illness, injury, and X-rays at the Student Health Center
- 24/7 global coverage

UC SHIP is a convenient, cost-effective option for most students.

Option 2: Your Own Insurance / Private Plan

If you have your own insurance, you can waive UC SHIP by submitting a waiver online. Your plan must meet UC's coverage requirements. You can still access limited services, such as the nurse advice line, Same-Day Care, SHOP, and CAPS, but you'll pay out-of-pocket for other services at the Student Health Center.

Option 3: Your Own Insurance + CruzCare

If you want to use your own insurance off-campus but need access to on-campus care, consider CruzCare. It's a prepaid program that covers:

- acute illness or injury visits
- lab tests
- X-rays

CruzCare is an affordable option for students who waive UC SHIP, and you can learn how to enroll by visiting the Health Center's website.

Immunization and Tuberculosis Screening Requirements

The University of California requires all registered students to provide proof of certain immunizations, as outlined in the UC Immunization Policy.

The University allows exemptions only for medical reasons or sincerely held religious beliefs.

If you do not meet the immunization requirements, a hold will be placed on your registration, preventing future class enrollment. The deadline to meet these requirements (except for COVID-19 and flu) is before you come to campus. International students unable to obtain a required vaccine should contact Student Health Services.

Student Health Outreach and Promotion (SHOP)

SHOP is UCSC's destination for information, conversation, and self-exploration around health and wellness in a safe, non-judgmental environment. SHOP provides opportunities for students to explore and enhance their health and wellness as they pursue their academic goals. SHOP offers education, resources, and support on issues related to alcohol and other drugs, sexual and reproductive health, mental health and wellness, college life balance, and other concerns relevant to college students. All UCSC students are welcome and encouraged to drop in and speak with SHOP's professional and student staff. SHOP offers a robust peer education program - by students for students. Students can get involved with SHOP by becoming peer educators.

Alcohol and Other Drug (AOD) Education

Student Health Outreach and Promotion (SHOP) empowers students to reduce risks related to substance use/misuse. Students can meet with staff confidentially to discuss their personal AOD use, discuss concerns about friends or family members, obtain educational materials, participate in workshops, and access resources and a support center for students in recovery. SHOP Health

Educators provide formal and informal sessions and workshops for students, college residential staff, and other campus groups. For information call (831) 459-1417 or visit the SHOP website.

Sexually Transmitted Infection (STI) Prevention

SHOP offers many resources for promoting sexual health, including:

- Condom Co-Op, providing free safer sex supplies
- Birth Control Patrol—make an appointment with a peer to choose a contraceptive option
- workshops, activities, and events
- sexual health questions? Speak to a SHOP staff person

SHOP is located in Porter College B Suite 250. For more information, visit the SHOP website, call (831) 459-3772, or email shop@ucsc.edu.

Center for Advocacy, Resources and Empowerment (CARE)

The Center for Advocacy, Resources, and Empowerment (CARE) provides support, advocacy, resources, and violence prevention education to the UC Santa Cruz community. We respond to the needs of students, staff, faculty, and campus affiliates impacted by sexual assault, dating/domestic violence, and stalking by providing confidential advocacy services. CARE services are survivor-centered and trauma-informed.

To request an appointment with a confidential CARE Advocate, fill out an appointment request form or call 831-502-CARE (2273).

CARE also works collaboratively with students, faculty, and staff to educate the campus communities about the vital role that each of us has in preventing violence and creating a culture of consent and respect. We oversee a peer prevention education program for students covering topics including:

- how to support survivors
- reporting options
- healthy communication and relationships
- bystander intervention skills
- media literacy

CARE is located at Hahn Student Services, 400 Hahn Road, Suite 104. Find us online at CARE, TikTok (@ucsccare), and Instagram (@ucsantacruz_care). or sign up for our newsletter.

Clinical Laboratory

The UC Santa Cruz Student Health Services Laboratory offers routine tests with fast results and phlebotomy for send-out tests. Our compassionate team is here to support students.

We provide a self-ordered testing program, including STI tests and a wellness panel. Results are available through Health e-Messenger.

We're open Monday through Friday, with limited appointments and walk-ins. The lab is located in the basement of the Student Health Center.

Counseling and Psychological Services (CAPS)

Counseling and Psychological Services (CAPS) offers a range of in-person and telehealth professional services to undergraduate and graduate students seeking help with personal concerns. Counseling services are available for all registered UCSC students and are confidential. There is no out-of-pocket fee for CAPS services and UC SHIP or CruzCare is not required to participate in any CAPS services.

We help students with academic and personal stress, anxiety and depression, relationship and family issues, drug and alcohol problems, psychological problems, and crisis situations. Psychiatry services include diagnostic evaluations or prescribing of medication in certain situations. Depending on a student's needs, a student may be provided with brief individual or couples counseling, group counseling, psychiatric services, crisis intervention, case management services, or a referral for open-ended or long-term therapy off campus.

- Let's Talk, a drop in confidential service for consultation, support, and advice
- Psychoeducational programs and workshops on a variety of mental health topics, such as stress and coping skills, managing anxiety and depression, andtrauma
- Same-day crisis services (8-5) and after-hours crisis support
- Campus Mobile Crisis Team (CMCT) a mobile mental health crisis response service for all members of the UCSC community
- Consultation for staff, faculty, individuals, or family members for assistance in helping students in distress

Information provided to any CAPS professional staff member is confidential within Student Health Services and cannot be released without a student's permission except in specific circumstances involving risk and safety. All services are aimed at helping students gain greater personal effectiveness and academic success. Professional staff members are available at various locations on campus, including the Student Health Services building, the Porter CAPS Annex, and the colleges.

For more information visit the Counseling and Psychological Services website or call (831) 459-2628.

Student Health Insurance Requirement

To ensure that emergencies and other health care costs do not interfere with a student's education, all University of California students are mandated by the University of California Board of Regents to have health insurance. A comprehensive and affordable program specifically designed for students is available through the university via the University of California Student Health Insurance Plan (UC SHIP). All students are automatically enrolled in UC SHIP and billed quarterly through their MyUCSC student account, unless they choose to waive this coverage by providing proof of suitable health insurance annually by the specified deadlines. For detailed information regarding insurance coverage and the waiver process, view the Billing and Insurance Information section on the Student Health Center website. The Student Health Center only accepts UC SHIP, not any other health insurance plans.

If you want to use your own insurance and use Student Health Services on campus without paying high fees, consider CruzCare. CruzCare is inexpensive pre-paid access to SHS (it's not an insurance plan). With CruzCare, visits to the Student Health Center for some acute illness or acute injury do not generate a charge. There are no charges for some lab tests or x-rays done at the Student Health Center. Learn more about CruzCare.

Immunization and Tuberculosis Screening Requirements

UC-wide, all incoming UC students, (frosh, graduate, transfer, and returning) **are required** to obtain specific vaccines and tuberculosis (TB) screening **before coming to campus**. Immunization information and the TB Risk screening form must be submitted through Health e-Messenger.

Failure to complete this process will result in an enrollment hold and will affect the ability to register for future classes. For more information about UCSC Student Health Services and the UC-wide immunization requirements, please visit the Student Health Center website.

Student Health Outreach and Promotion (SHOP)

SHOP is UCSC's destination for information, conversation, and self-exploration around health and wellness in a safe, non-judgmental environment. SHOP provides opportunities for students to explore and enhance their health and wellness as they pursue their academic goals. SHOP offers information, education, resources, and support on issues related to alcohol and other drugs, sexual and reproductive health, mental health and wellness, college life balance and other concerns relevant to college students. All UCSC students are welcome and encouraged to drop in and speak with SHOP's professional and student staff. SHOP offers a robust peer education program - by students for students. Students can get involved with SHOP by becoming peer educators.

Alcohol and Other Drug (AOD) Education

Student Health Outreach and Promotion (SHOP) empowers students to reduce risks related to substance use/misuse. Students can meet with staff confidentially to discuss their personal AOD use, discuss concerns about friends or family members, obtain educational materials, participate in workshops, and access resources and a support center for students in recovery. SHOP Health Educators provide formal and informal sessions and workshops for students, college residential staff, and other campus groups. For information call (831) 459-1417 or visit the SHOP website. NOTE: In January 2014, UC Santa Cruz implemented a campuswide smoke and tobacco-free policy.

- Sexually Transmitted Infection (STI) Prevention
- SHOP offers many resources for promoting sexual health, including:
- The Condom Co-Op, selling safer sex supplies at reduced cost.
- The Birth Control Patrol—make an appointment with a peer to choose a contraceptive option.
- Workshops, activities, and events.
- Sexual health questions? Speak to a SHOP staff person.

SHOP is located in Porter College B Suite 250. For more information, visit the SHOP website, call (831) 459-3772, or email shop@ucsc.edu.

Center for Advocacy, Resources and Empowerment (CARE)

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To request an appointment with a confidential CARE Advocate, email care@ucsc.edu or call 831-502-CARE (2273).

CARE also works collaboratively with students, faculty, and staff to educate the campus communities about the vital role that each of us has in preventing violence and creating a culture of consent and respect. We oversee a peer prevention education program for students covering topics including:

- How to support survivors
- Reporting options
- Healthy communication and relationships
- Bystander intervention skills
- Media literacy

CARE is located at 233 Oakes Rd, Academic Building, Room 221. Find us online at CARE, TikTok (@ucsccare), and Instagram (@ucsantacruz_care). or sign up for our newsletter.

Clinical Laboratory

The UC Santa Cruz Student Health Services Laboratory provides a variety of testing and phlebotomy services. We perform many routine in-house tests with a quick turnaround time for results, in addition to phlebotomy services for send-out laboratory tests. in-house tests in addition to phlebotomy services for send-out laboratory tests. Our team is caring and compassionate about their work and look forward to helping our student body.

We have a robust self-ordered testing program. The most utilized tests are tests on our Sexually Transmitted Infection (STI) test menu. We offer students the ability to order their own STI tests (self-ordered) and report results for most tests directly to the student through Health e-Messenger. In addition to STIs, we have a self-ordered wellness panel to help students maintain optimal health.
We are open Monday through Friday, visit the locations and hours section of our website. Limited appointments are available, as well as walk-in service. The lab is located in the basement of the Student Health Center.

Resource Centers

African American Resource and Cultural Center (AARCC)

The mission of the African American Resource & Cultural Center (AARCC) is to provide support for the students in the African, Black, and Caribbean (ABC) communities at the University of California at Santa Cruz. We aim to foster an environment and community that supports all folks from the African Diaspora and encourages the pursuit of a deeper understanding of identity and culture as it relates to one’s educational journey.

The AARCC provides a wide range of programs, support services, and resources centered around the Black Diasporic experience. The AARCC serves as an advocate for ABC students on an array of campus matters. We encourage and facilitate student involvement and success in campus life, student organizations, academic excellence, and community engagement.

The AARCC endeavors to empower ABC students and community members to explore, honor, and respect their intersecting identities throughout their educational journey. The African American Resource & Cultural Center aims to be a hub for Black community on campus, while addressing systemic issues that impact the ABC community. AARCC is located on the third floor of the Bay Tree Building in Quarry Plaza, and is open Monday through Friday from 10 a.m. to 5 p.m. For more information, call (831) 459-3207, email aarcc@ucsc.edu, or visit the AARCC website.

American Indian Resource Center (AIRC)

Our Mission Statement

The AIRC is dedicated to supporting the needs of American Indian students and increasing Native visibility on campus by hosting student-centered programs, cultural events and providing tools for academic success and personal well-being. The center is a vital link between American Indian students, the University, and tribal communities that fosters growth through mentoring, leadership opportunities, and scholarly development.

The AIRC's objectives are as follows:

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To promote the value of a college education for American Indians.

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To serve as a supportive space for students as they transition from home to campus life.

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To center Indigenous knowledge and practices in our activities and help preserve the culture and heritage of American Indian students.

-

To serve as a liaison between Native communities and the University of California, Santa Cruz.

The American Indian Resource Center (AIRC) works in collaboration with other resource centers, faculty, staff, students, and organizations such as the Student Alliance of North American Indians (SANAI), the People of Color Sustainability Collective PoCSC), and the Amah Mutsun Tribal Band of California Indians, as well as the indigenous tribal community leaders of the region to develop co-curricular programming, cultural activities, and events that assist public understanding of Native Peoples. Invested in creating a campus climate that supports all students, the center provides leadership development, internship opportunities, mentoring, and personal and academic advising. AIRC is located on the third floor of the Bay Tree Building in Quarry Plaza, and is open Monday through Friday from 10 a.m. to 5 p.m. For more information, call (831) 459-2881, email airc@ucsc.edu, or visit the AIRC website.

Asian American/Pacific Islander Resource Center (AA/PIRC)

The Asian American/Pacific Islander Resource Center (AA/PIRC) co-creates engagement with students who identify as part of the Asian American, Pacific Islander, & Southwest Asian & North African (AA/PI/SWANA) diaspora at UC Santa Cruz; exploring the complexities of their holistic experiences, and individual and collective identities. AA/PIRC’s engagement includes leadership and holistic

development, along with educational opportunities with, for, and in support of AA/PI/SWANA communities.

AA/PIRC envisions AA/PI/SWANA communities to be affirmed and empowered in their identities. We imagine individual and collective healing, wholeness, and liberation from oppression, both within and expansive of their existences in relation with UC Santa Cruz.

For more information, contact aapirc@ucsc.edu or follow AA/PIRC on Instagram (@aapirc_ucsc).

Chicanx Latinx Resource Center (El Centro)

The Chicanx Latinx Resource Center (El Centro) serves as a hub of organized activity and resources that support student transition, retention, graduation and academic advancement. Through collaborative efforts with campus partners, students can participate in a host of activities that encourage intellectual growth, leadership development, preparation for graduate or professional school, and career options. El Centro encourages and supports student and community development through cultural and educational programming.

Annual programs include the following: Bienvenida—New Student Welcome Program; Día de los Muertos; Pachanga; Nuestras Raíces; dialogue on academic, social, cultural, and personal issues that affect Chicanx and Latinx communities; and a weekly online newsletter; CHISME E-News. El Centro offers student internships that support leadership-skills development, while students help to organize events and activities for the community. For more information or to schedule an appointment, call (831) 459-5806 or email elcentro@ucsc.edu, or visit El Centro.

Lionel Cantú Queer Resource Center

The Cantú Queer Resource Center at UC Santa Cruz provides an open, inclusive, intersectional, and welcoming space, promotes education about all genders and sexualities, and empowers self and communal explorations of sexual and gender diversities. We serve as a resource to LGBTQQIA students and the wider campus community by providing opportunities for leadership, personal development, advocacy, community, and academic exploration grounded in queer and trans experiences. Through our programs and services we seek to eliminate heterosexism, bi-phobia, trans-phobia, queer-phobia, and and other forms of oppression while also lifting up queer and trans resilience on and off campus. We strive to develop an atmosphere of acceptance, celebration, and well-being from which the campus community can fulfill the academic mission of the university.

Besides the Cantú Queer Resource Center, there are two queer spaces on campus tucked within McHenry Library: the GLBTI Reading Room on the 4th Floor, and the Gloria Anzaldua Reading Room on the 3rd Floor. Both spaces have beautiful displays that will make you feel at home. You can drop by and use these rooms if they are available or reserve them for individual or group use.

The Cantú Queer Resource Center website provides an overview and contact information.

Womxn's Center

The UCSC Womxn's Center affirms the dignity and diversity of all womxn. The center continues and challenges feminist traditions by creating community space for all womxn and their allies to achieve individual and social change.

Students are encouraged to get involved in the center's annual events, which include our Welcome Fall Ball, Sister Solidarity: Womxn's Heritage Month, Take Back The Night, Year-End Celebration, and more. Other opportunities for involvement include volunteering, work-study paid internships, and academic internships. The center is the ideal space to study, take a break from classes, check out a book from the lending library, and connect with the womxn's community.

The Womxn's Center is located at the Cardiff House, an historic farmhouse near the Carriage House in the lower campus. For more information or to book an appointment, please contact (831) 459-2072, email women@ucsc.edu, and/or visit the Womxn's Center website.

The Student Union

The Student Union is a student-governed facility where students can study, take a break and lounge, meet friends, play pool, use computers, or watch television. Located in the Quarry Plaza across from the Bay Tree Bookstore, the Student Union complements college facilities by providing a centrally located place for social, recreational, and educational gatherings for all students and members of the campus community.

The Student Union is also home to the campuswide student governing body (Student Union Assembly) and to student organizations, the Bike Co-op, Engaging Education, and Student Organization Advising and Resources (SOAR).

The Union is open Monday through Thursday 9 a.m. to 9 p.m., Friday 9 a.m. to 6 p.m. The Union is closed holidays and quarter breaks. For more information, call (831) 459-3167.

Student Activities

Campuswide Student Activities: SOMeCA

SOMeCA brings together three dynamic areas of campuswide student engagement: Student Organization Advising and Resources (SOAR), Student Media, and Cultural Arts and Diversity. The organizations and programs of SOMeCA offer students a place of self-discovery. SOMeCA's professional and experienced staff offers mentorship, leadership training, organizational development advising, and project management to all students. Visit the SOMeCA website for more information.

Student Organization Advising and

Resources (SOAR)

UCSC offers the student body over 180 student-initiated organizations including academic, cultural, environmental, political, professional, religious, service, and Greek-letter organizations. Students who are actively involved in a student organization gain valuable and transformative leadership skills ranging from conflict mediation to project planning.

Student organizations create a number of events from general body meetings to well-established major scale programming. For example, student leaders host high school students to encourage and support their entrance into college. Others produce major campuswide events to raise funds for cancer research and local community nonprofits. Performing arts organizations perform at conferences and competitions across the country. Student leaders gain real-world experience grounded in the knowledge, values, and skills necessary for navigating the global workplace and engage in dynamic civic participation.

Student organization membership is open to all UCSC students. Learn more at the Student Organization Advising and Resources (SOAR) office. Contact SOAR at (831) 459-2934, email soar@ucsc.edu, or visit the SOAR website. SOAR is located on the second floor of the Student Union.

Student Media

Student Media at UC Santa Cruz include print publications and broadcast organizations. Every year, hundreds of students enrich their educational experience through internships, academic credit, fellowships, and employment opportunities with media organizations.

The award-winning student newspaper of record, *City on a Hill Press,* covers campus and local news, sports, music, and offers art reviews and commentary. *Fish Rap Live!* provides an alternative forum for free expression of ideas, humorous coverage of local and campus events, and personal journalism. TWANAS, the Communities of Color and Native American Students Press Collective, publishes a news magazine that broadens awareness of perspectives of color in the campus community. Other campus magazines include the critical film journal, *EyeCandy; Leviathan Jewish Journal; Scientific Slug,* which blends coverage of research on campus with science-focused art and poetry; Fruitcake, which looks at life through the lens of graphics and cartoons; the philosophy journal, *Kalopsia; and Gaia,* which focuses on environmental issues. Annual literary journals include *Chinquapin, Red Wheelbarrow, ALAY,* and *Matchbox.*

Artistic, narrative, experimental, documentary, news, and public-service film and video are produced by broadcast organizations, including the Film Production Coalition, On the Spot, Slugworks Animation, Banana Slug Network, and others. Students from all disciplines are encouraged to participate.

To contact student media organizations, call the Student Media Center at (831) 459-2840 or SCTV at (831) 459-5360. Visit the Student Media website for links to print, radio, and broadcast organizations.

Cultural Arts and Diversity (CAD)

Cultural Arts and Diversity (CAD) strives to enhance the cultural climate of UCSC and its surrounding community by celebrating diversity. CAD fosters the spirit of unity between cultures by providing students with outlets for the creative talents of various cultures through theater, lectures, presentations, and productions. By promoting access to resources and services that support these endeavors, CAD strives to provide cultural awareness and diversity, build collaborative partnerships and community outreach, enhance retention and recruitment efforts, and provide opportunities for leadership and educational development. The Cultural Arts and Diversity Center promotes the following programs:

- African American Theater Arts Troupe
- Rainbow Theater
- Rainbow/African American Theater Arts Troupe Outreach
- Classes offered through Theater Arts and Stevenson College

Contact the CAD Office at (831) 459-1861 or visit the CAD website.

UC Santa Cruz and Systemwide Student Governance

UC Santa Cruz offers a wide variety of opportunities to participate in university governance at the college, campus, systemwide, and national levels. Regardless of what level you choose, participating in student government provides a wonderful opportunity to practice leadership skills, meet others who share your interests, and learn a great deal about yourself and the university.

Student Union Assembly

The Student Union Assembly (SUA) is the undergraduate advocacy organization and the official student voice of UC Santa Cruz. It comprises three representatives from each college government; six elected officers (president, vice president of External Affairs, vice president of Internal Affairs, vice president of Academic Affairs, vice president of Diversity and Inclusion, and vice president of Student Life and Student Advocate); and one appointed representative from each of the following student organizations that represent historically underrepresented people within the UC system: African/Black Student Alliance; Asian Pacific Islander Student Alliance; Queer Student Union; Movimiento Estudiantil Chicano/a de Aztlán; Student Alliance of North American Indians; and Ethnic Student Organization Council. The SUA also provides paid part-time internship opportunities for students. These internships include, but are not limited to, field organizers, treasurers, outreach and publicity, and strategy and planning.

The SUA conducts open meetings every Tuesday at 8 p.m. throughout the academic year. Students interested in advocacy, activism, and politics, as well as those concerned

with their own and their friends' lives, are invited to get involved. The assembly operates via issue-specific campaigns and around general campus concerns. In the past, the SUA has formed campaigns around fighting fee hikes, defending affirmative action, saving financial aid on a national and state level, striving for reasonable campus growth, and reforming UC Regents' procedures. Current issues include fighting to make a UC education affordable, fighting to stop balancing budgets on the backs of students, fighting for the rights of UC workers, and working with community groups because UCSC students are also Santa Cruz residents. The SUA also works with the UC Student Association and the United States Student Association on systemwide, statewide, and national issues. For more information, visit the SUA website.

Systemwide Student Government: UCSA

The UC Student Association (UCSA) is the statewide association of graduate and undergraduate student governments from the 10 UC campuses. UCSA is the officially recognized voice of the students to the UC Board of Regents, various UC administrative offices, and the UC Office of the President. Issues covered by UCSA include UC fees and financial aid, comprehensive admissions policies, and academic policies, as well as broader issues of social responsibility such as environmental concerns and civil rights.

The SUA office provides grassroots membership and support for the two main UCSA offices in Oakland and Sacramento. The campus office organizes students to run the grassroots campaigns that are adopted each summer during the UCSA Congress. At this session, delegates from the 10 UC campuses come together and choose the critical issues to be worked on for the next year. Issues in the past have included voter registration drives, letter-writing campaigns on particular UC issues, and increases in financial aid. UCSA provides a thorough introduction to UC politics and student representation. Students may also serve on systemwide committees through UCSA and gain a wide knowledge of the entire UC system through their service.

Two officers help to coordinate UCSA activities on our campus. The Student Union Assembly vice president of external affairs (VPE) is the official representative to the UCSA Board of Directors. This position has voting rights for UCSC, is the primary contact regarding all UCSA issues, and coordinates all lobbying of UCSA and local, state, and federal governments on behalf of UCSC students. The organizing director (OD) coordinates with the VPE to effectively run the grassroots campaigns that are sponsored by UCSA each year. These positions are elected for one-year terms during spring quarter every year.

The Student Union Assembly's VPE may be contacted at suavpe@ucsc.edu.

College Student Governments

Each college has its own student government, encouraging students to participate in program development and implementation, as well as determining where college membership fees should be allocated. Student governments give students a voice at the college and with the campuswide student government. Like the colleges themselves, each college governing body has its own character, structure, and meeting times and dates. For information, contact the programs coordinator at your college.

The Graduate Student Association (GSA)

The Graduate Student Association (GSA) advocates for graduate student interests with regard to tuition and fees, health insurance, transportation, housing, graduate student well-being, support for marginalized grad students, and other important issues. The GSA ensures graduate student representation on campus committees and works with the campus and UC administration to implement GSA Council goals. The GSA also works with state- and UC-wide bodies to represent the UCSC graduate community beyond our campus. The GSA awards research and travel grants to graduate students in order to provide funding for professional development, cover the cost of supplies, subscriptions, and books needed for research, and to assist with funding travel for conferences, research, and workshops. The GSA also organizes and co-sponsors events for graduate students, including international grads and grads from historically marginalized communities.

The GSA is funded by student fees and operated by an Executive Board. Representatives from departments that offer graduate degrees make up the GSA Council. The Council meets three times per quarter to strategize around and discuss issues that impact graduate students. For more information, contact the GSA website or email gsainfo@ucsc.edu.

Student Representation on Campuswide Committees

Serving on a campus advisory committee is a recognized channel for student involvement in the university's decision-making processes. Advisory committees composed of faculty, staff, and student representatives are established to develop and recommend policies on a wide range of topics. Each year the Student Committee on Committees (composed of one student appointed by each college and chaired by the Vice President of Internal Affairs of the Student Union Assembly) nominates more than 100 students to serve on over 50 administrative and Academic Senate committees. For information about the selection process, see the Student Union Assembly website or email gsainfo@ucsc.edu.

Community Service Opportunities

Community service is a vital part of the university's mission. It is possible for individual students, as well as campuswide student organizations, to develop service projects that link the university with the broader Santa Cruz community. With the financial support of the campus' Community Service Project funding, students have aided local groups such as Students Toward Achievement in Writing Success, the Strange Queer Youth Conference, and the Walnut Avenue Women's Center.

The Student Volunteer Center, located in the Dean of Students Office at Hahn Student Services, connects students with local volunteer opportunities based on skills and interest.

Volunteer opportunities range from aiding youth and elderly to addressing homelessness and environmental issues. The Student Volunteer Center also sponsors events for the campus community where students can volunteer their time.

For more information about service opportunities, see the Student Volunteer Center website, call (831) 459-3363, or email volunteer@ucsc.edu.

Campus Cultural Programs

Throughout the year, UCSC offers frequent and varied cultural opportunities. Students, faculty, and staff may participate as audience members, performers, or behind-the-scenes support crew. The considerable range of offerings includes art exhibits, lectures, films, concerts, recitals, and dance and drama presentations. Programs vary from single performances to weeklong cultural celebrations. The colleges host a number of events, and the departments frequently engage speakers of particular academic interest to address the campus community or present lecture-demonstrations.

The Arts Division serves as a gateway to the entire university, presenting high-quality research and work by faculty, students, and guest artists. Art exhibitions, film screenings, digital arts presentations, music recitals, as well as theater, dance, and music presentations, are offered in conjunction with the academic programs. The Arts Division also offers regular public lectures and colloquia to introduce audiences to professional practitioners and scholars in the traditional and digital arts.

In addition to attending Arts Division activities, UCSC students are invited to participate in a wide variety of division activities that are open to all UCSC students. Join an Indonesian gamelan ensemble, sing in the UCSC Concert Choir, play in the UCSC Orchestra, or audition for a theater or dance production.

For up-to-date information about cultural offerings from the Arts Division, contact the Arts Division Events Office at (831) 459-2787 and visit online at arts.ucsc.edu and on Facebook.

Bay Tree Campus Store

UCSC's Bay Tree Campus Store is located in the Quarry Plaza complex in the center of campus, at the intersection of Hagar Drive and Steinhart Way.

Bay Tree Campus Store is a self-supporting auxiliary enterprise whose mission is to provide convenient and affordable access to coursebook materials, school supplies, Computers, and technology products that complement the academic environment and support the diverse needs of the campus community.

The Bay Tree Campus Store features a variety of UC Santa Cruz insignia apparel and gift merchandise to promote school spirit among UC Santa Cruz students and Alumni who celebrate the iconic Banana Slug.

For more information, please call 831-459-4544 or visit us online at the Bay Tree Campus Store website.

Child Care and Early Education Services

Child Care and Early Education Services offers programs for children of students currently enrolled in classes at UCSC. Our center is located on campus near the West Entrance in Family Student Housing. Free or low-cost tuition rates are available for students who meet the eligibility requirements for subsidized care (please see the Eligibility for State Funding Chart at child care). All meals are included in the program (breakfast, lunch, and afternoon snack).

Our programs are dedicated to providing the highest quality developmental care possible in a secure, homelike environment characterized by warmth, affection, and support. Our curriculum stresses the importance of meeting children's needs in all areas of development: social, emotional, physical, cognitive and creative. Our program emphasizes nature-based outdoor learning incorporating the beautiful UCSC campus environment, garden activities, outdoor curriculum, all supporting a S.T.E.M. curriculum.

Programs are open to all children without regard to religion, color, ethnicity, gender, and physical or mental ability. All of our centers are located in the Family Student Housing Complex. Each center is open most days during the academic year from September through June, and some programs are open through the summer. The center is closed during administrative and university holidays, and staff development days. All of the child care spaces are provided for children of student families only. The majority of the spaces are reserved for students who meet the qualifications for subsidized care. Fee-for-service spaces at a below market rate may be available for student families whose income exceeds state-subsidy requirements.

Information about programs, fees, and applications is available at child care and at the Early Education Services Office in the Community Building at Family Student Housing; at (831) 459-2967, or by email at earlyeducation@ucsc.edu.

Infant Center

The Infant Center serves children ages 11 to 24 months with small group in a nurturing environment with developmentally appropriate curriculum to engage early learning. The hours of operation are 7:30 a.m. - 5:30 p.m. during the academic year and 8:30 a.m. - 5:00 p.m. during summer months.

Toddler Center

The Toddler Center serves children ages 18 to 36 months. Small groups, low child-to-adult ratios, outdoor curriculum and primary caregivers ensure consistent and nurturing care. Hours of operation are 7:30 a.m.-5:30 p.m. during the academic year, and 8:30 a.m.-5:00 p.m. during summer months.

Preschool Center

The Preschool Center serves children from three years of age until they enter Transitional Kindergarten. The classroom provides small groups with low child-to-adult ratios, and an

environment that supports a stimulating and rich curriculum that helps prepare children for kindergarten. The hours of operation are 7:30 a.m. to 5:30 p.m. during summer months.

School Age Center

The School Age Program provides an after-school recreation program for children during the academic year. The program provides developmentally appropriate arts and crafts, life skills and sports activities, occasional community outings and quiet time for homework. The hours of operation are 12:30 p.m. to 5:30 p.m. for kindergarteners; and 2:30 p.m. to 5:30 p.m. on Mondays, Tuesdays, Thursdays, and Fridays for 2nd through 4th graders. On Wednesdays (public school minimum days), care is available from 12:30 p.m. to 5:30 p.m. for all school-age children. Extended care is available on a sign-up basis on some Santa Cruz City Schools closure days (university closure days excluded).

UC Santa Cruz Alumni

From the moment you step on campus you become part of the UC Santa Cruz community. From student to alumni, you are a Banana slug for life!

The UC Santa Cruz Alumni community is a dynamic, innovative, successful, philanthropic, and world-changing network of individuals worldwide. Our UCSC alumni network is more than 160,000 Banana Slugs strong and growing. When you graduate, you are immediately part of our dynamic, change-making alumni network.

More than 2 million University of California alumni are making a significant impact around the globe as leaders and contributors in their communities. UCSC alumni are advocates, volunteers, supporters, friends, and ambassadors for their alma mater, supporting current students like you.

Get to know your UCSC alumni community. They are here to support you on your journey. They've been where you are and know how to help. Visit the alumni.ucsc.edu website and learn more now while you are a student. The sooner you make these lifelong connections, the more opportunities will open up for you.

As a UC Santa Cruz graduate, you will have a wealth of opportunities to stay connected with the UCSC community. From career and social networking to participating in events and sharing your success through volunteering, the alumni network is your gateway to personal and professional growth. Stay connected through alumni networks, regional groups, social media, identity groups, and signature events like Return to the Redwoods.

UC Santa Cruz alumni are on a mission to support the university, build robust connections between students and alumni, connect alumni where their passions lie, and strengthen the alumni network throughout the UC Santa Cruz community.

UC Santa Cruz Alumni promotes excellence through scholarships and awards each year, including the Alumni Association Scholarship and the Distinguished Alumni Awards. Alumni enrich the campus's intellectual life. UC Santa Cruz publications are filled with powerful stories about our alumni. You can read about many of our notable alumni at Alumni Profiles. We look forward to seeing your face among these profiles.

Get to know your alumni community and how we are here for you at the UC Santa Cruz Alumni website.

University Interfaith Council

Find your spiritual home at UC Santa Cruz. The University Interfaith Council (UIC) is comprised of 24 groups including Christian, Jewish, Muslim, etc. A full list of the council's member groups is below and online at www.ucscUIC.org, which can help get you connected with the group of your choice.

Member groups are: Sangha Shantivanam, Asian American Christian Fellowship, Chabad, Christian Challenge, Ekklesia, FEAST, IVCF Grad Christian Fellowship, High St. Comm, Hillel, International Students Inc., Newman Catholic, Muslim SA, Latter Day Saints, InterVarsity Christian Fellowship, Klesis , Kyrie, Lutheran, Muslims Student Assoc., Sikh, Soon Movement, Vintage Faith.

GRADUATE INFORMATION

In this section:

Graduate Admission (p. 1498)

Graduate Expenses (p. 1498)

Graduate Academic Program (p. 1504)

Campus Life (p. 1505)

UC Santa Cruz offers graduate study in 41 academic fields and 57 concentrations. Graduate programs encourage close working relationships between students and faculty to promote rapid learning and professional growth. Many graduate programs have interdisciplinary components, and students are encouraged to explore connections between fields as they acquire mastery in their areas of specialization.

There are extensive opportunities for graduate students to engage in significant independent study and research (see Resources for Learning and Research (p. 1508)). Graduate students are also encouraged to obtain teaching experience, primarily as supervised teaching assistants. They are highly valued members of the UCSC community, contributing substantially to the research and teaching conducted on the campus.

GRADUATE ADMISSION

APPLICATION FOR GRADUATE STUDIES

Applications for admission to UC Santa Cruz graduate programs are available online starting Oct. 1 of the prior year, for admission into the following academic year. Deadlines vary by program and are posted online; deadline extensions are not available.

Instructions and requirements for admission including required materials and test scores are posted on the Graduate Admissions website. Please read all instructions thoroughly and contact the program you are applying to with questions about the application. Note that there is no conditional admission to UC Santa Cruz graduate programs.

If there are any problems with the online application, please email gradadm@ucsc.edu.

GRADUATE EXPENSES

Fees and Expenses

Tuition, fees, and other charges are subject to change without notice by the Regents of the University of California. For current fee information, check registration fees and graduate student budgets. Some or all instruction for all or part of the Academic Year may be delivered remotely. Tuition and fees have been set regardless of the method of instruction and will not be refunded in the event instruction occurs remotely for any part of the Academic Year. Figures for tuition and fees represent currently approved or proposed amounts and may not be final. Actual tuition and fees are subject to change by the University of California as determined to be necessary or appropriate. Final approved tuition and fee levels may differ from the amounts presented.

For information on fee refunds, see Finances (p. 1412).

Students should not plan to undertake graduate study without assured funding, since outside employment in the Santa Cruz community can be difficult to obtain.

Financial aid recipients should note that fellowship, grant, and loan checks or bank deposits in excess of university charges are refunded to students via direct deposit or check, but are not available to you until the first week of instruction each quarter.

The Student Services Fee supports student services that provide a supportive and enriching learning environment and that are complementary to, but not part of, the instructional program. Programs include, but are not limited to, services related to the physical and psychological health and well-being of students, social and cultural activities and programs, services related to campus life, and educational and career support.

Tuition helps support student financial aid and related programs; administration; libraries; operation and maintenance; the university's operating budget; and all costs related to instruction, including faculty salaries.

Campus-Based Fees help support a wide range of student services, including extracurricular programs, campus child care, community and public service projects, and free-fare use of the local transit systems.

In addition, all students are assessed a mandatory Health Insurance Premium. The Cowell Student Health Center provides primary care services for the plan, while a contracted insurance company provides major medical and hospitalization insurance. Dependent coverage is also available. Detailed information is on the UCSC Student Health Insurance website, or contact (831) 459-2389.

Waivers from the mandatory insurance fee are available for students who can show that their outside plan provides coverage equal to or better than the student health insurance plan. Deadlines for applying for a waiver can be found on the Health Center website.

NONRESIDENT TUITION

A resident of a state other than California or of another country must also pay nonresident tuition. See general criteria for residency (p. 1515) elsewhere in this catalog.

Non-U.S. citizens note: Regardless of how long you live in California, only U.S. citizens and holders of immigrant visas may become qualified for resident classification.

DEFERRED PAYMENT PLAN

See the information under undergraduate expenses (p. 1412).

Graduate Student Budget

	Graduate Academic Student Fees	Annual	Fall 2024	Winter 2025	Spring 2025
	Student Services Fee (formerly University Registration Fee)	1,254.00	418.00	418.00	418.00
	Tuition (formerly Educational Fee)	12,762.00	4,254.00	4,254.00	4,254.00
	UCGPC Fee	7.00	3.00	2.00	2.00
	Campus Programs Fee	6.00	2.00	2.00	2.00
	College Student Govt. Fee	43.50	14.50	14.50	14.50
	Student Programs Fee	153.00	51.00	51.00	51.00
	Grad Student Facilities Fee	96.00	32.00	32.00	32.00
	Student Life Facilities Fee	90.00	30.00	30.00	30.00
	Seismic/Safety Fee	120.00	40.00	40.00	40.00
	Free/Anonymous HIV Testing Fee	2.25	0.75	0.75	0.75
	Transportation Fee	522.00	174.00	174.00	174.00

	OPERS Fitness Facilities Fee	45.00	15.00	15.00	15.00																					
	Campus Childcare Fee	24.00	8.00	8.00	8.00																					
	Intramural & Sports Club Team Activities Fee	6.75	2.25	2.25	2.25																					
	Recreation Programs Fee	12.00	4.00	4.00	4.00																					
	Renewable Energy Fee	9.00	3.00	3.00	3.00																					
	Intercoll. Athletics Sports Team Fee	15.00	5.00	5.00	5.00																					
	Physical Education Program Fee	37.50	12.50	12.50	12.50																					
	Student Health Center Expansion Fee	81.00	27.00	27.00	27.00																					
	Student Health Center Green Building Fee	15.60	5.20	5.20	5.20																					
	Intercoll. Athletics and Athletics Activities Access Fee	115.50	38.50	38.50	38.50																					
	UC SHIP Health Insurance (waivable)	6,252.00	2,084.00	2,084.00	2,084.00																					
	Total California Resident	21,669.10	7,223.70	7,223.70	7,223.70																					

	Nonresident Supplemental Tuition (formerly Nonresident Tuition)	15,102.00	5,034.00	5,034.00	5,034.00																						
	Total Non-Resident	36,771.10	12,257.70	12,257.70	12,257.70																						
	Total Campus Fees*	1,394.10	464.70	464.70	464.70																						
	*Campus fees (a.k.a. campus-based or referenda fees) are charged to undergraduate and graduate students, including those in professional masters degrees programs.																										

Financial Support

The University of California, Santa Cruz, makes a strong effort to provide financial support to all graduate students who make satisfactory academic progress in their program of studies. Certain kinds of support are awarded on the basis of academic merit, and others are granted on the basis of need. Students are encouraged to apply for both kinds of assistance by submitting the Free Application for Federal Student Aid (FAFSA). This form must be submitted after October 1 prior to the academic year for which you are requesting aid. The FAFSA may be filled out online and filed electronically at the FAFSA website. Applications for student loans for each

academic year will be accepted until April of that academic year. More detailed information about the application process and loans can be found at Financial Aid. Students may also visit the Financial Aid and Scholarships Office, 205 Hahn Student Services Building, or call (831) 459-2963.

UC Santa Cruz offers all eligible new and continuing doctoral and MFA* students five-year (*two-year for MFA) funding packages for the academic year, with a minimum level of quarterly support that is equivalent to no less than the quarterly (three-month) rate associated with the applicable current Salary Point 1 of a 50% Teaching Assistant or applicable current Salary Point 1 of a 50% GSR appointment, whichever is less.

FELLOWSHIPS, ASSISTANTSHIPS, GRANTS

Students who received **Cal Grant A or B** as undergraduates within the last 15 months may request a one-year extension from the California Student Aid Commission to attend a teacher credential program. Renewal of these awards requires the student to submit the FAFSA by March 2nd. In addition, the student must submit a Request for Teaching Program Benefits Form (Form G-44) to the California Student Aid Commission.

The federal **Teacher Education Assistance for College and Higher Education (TEACH) Grant Program** provides grants to students who intend to teach in a high-need field in a public/private elementary or secondary school that serves students from low-income families. The program at UCSC is for M.A. Education students. In exchange for receiving this grant, you must sign an Agreement to Serve and complete online counseling. This grant converts to a loan with retroactive interest if the Service Agreement is not fulfilled. More information and a fact sheet can be found at the Federal Student Aid TEACH Grants website.

Teaching Assistantships are offered by academic departments. Departments may decide to assign teaching assistantships to students outside of the department. Opportunities are shared among departments and students should inquire with their graduate program adviser about applying for assistantships. Salary information is posted online by the Academic Personnel Office.

Graduate Student Researcher (GSR) Appointments are assigned by faculty and sponsoring campus agencies. Students should inquire with faculty about GSR opportunities. Salary scales (steps) vary by department/division. Salary information is posted online by the Academic Personnel Office.

STUDENT LOANS

Graduate students can qualify for federal student loans by completing the FAFSA. Graduate students are eligible for Unsubsidized and Graduate PLUS loan programs. For additional information, see the UCSC Financial Aid and Scholarships website.

LOAN FORGIVENESS PROGRAMS

The federal government will forgive all or part of a student loan under certain circumstances. This can include performing volunteer work or military service, or practicing medicine in certain communities. For a summary of such exemptions, visit the Federal Student Aid website.

GRADUATE ACADEMIC PROGRAM

Degrees and Programs

UC Santa Cruz offers graduate programs leading toward the following degrees: master's of arts, master's of sciences, master's of fine arts, doctor of musical arts, and doctor of philosophy. See our full list of programs and read about each program's application requirements.

Administration

At UC Santa Cruz, individual graduate programs are directed by the academic departments. Overall policy is determined by the Graduate Council, and coordination and record keeping for matters common to all graduate students—such as admission applications, fellowships, and advancement to candidacy—are the responsibility of the Division of Graduate Studies. The dean of graduate studies is the chief administrative officer. Graduate policies and other information can be found online in the Graduate Student Handbook.

Catalog Rights

Students matriculating in a given graduate program will select the UCSC General Catalog they will follow to meet their requirements; either the catalog published the year they enter the program, or any subsequent catalog published prior to the year they are awarded the degree sought. Students who seek readmission after a break in attendance of more than two years (six regular quarters) must adhere to the graduation requirements in effect at the time of readmission or to those subsequently established for all portions of the degree requirements not already fulfilled. The readmitting program will determine which degree requirements remain to be fulfilled. A student must follow the chosen catalog in its entirety, including both the individual degree program and general university requirements. General university requirements may be found in the Graduate Student Handbook.

Evaluation of Performance

All graduate students in graduate or undergraduate courses will be graded Satisfactory (S), Unsatisfactory (U), or Incomplete (I). Graduate students also have the option of receiving a letter grade of A, B, C, D, or I in most courses. The grades of A or B shall be awarded for satisfactory work. Grades of C or D will not satisfy any course requirement for a graduate degree at UCSC. A graduate program has the option of requiring letter grades or S/U grades for any graduate course offered by that program.

Under the grading options, you will receive Satisfactory/Unsatisfactory unless you elect the letter grade option (A, B, C, D, F). The choice is yours at the time of enrollment and can be changed up to the end of the third week of instruction for the quarter.

Graduate students are not eligible to file Credit by Examination, Credit by Petition or to receive a "no record" notation. All notations including those of C, D, F, or Unsatisfactory will be listed on the permanent record.

Graduate student performance may also be evaluated according to the Narrative Evaluation System. Evaluations may be used by academic advisers and become part of the student's official academic record. Read the FAQs for Students: Evaluations for an explanation of the narrative process.

Please also refer to the statement on Academic Integrity; Appendix F, Graduate Student–Faculty Adviser Relationship Guidelines; and Appendix O, Official University Policy on Academic Integrity for Graduate Students, published in the Student Policies and Regulations Handbook.

Duplication of Higher Degrees

It is the policy of UC Santa Cruz campus to prohibit the pursuit of duplicate advanced degrees. However, applicants may petition the graduate dean for an exception to this policy if the degree sought is in a field of study distinctly different from the field in which the original advanced degree was attained.

In order for a student who already holds the doctorate to be admitted or readmitted to work toward a second Ph.D.—or toward an academic master's degree—each of the following conditions must be met:

- The applicant must petition the graduate dean in writing prior to the application deadline for the program in question.
- The department sponsoring the program to which admission is sought must support the applicant's petition.
- The department must present the graduate dean with a clear and complete outline of the program required for the degree sought, and must explain the intellectual separateness of the proposed program from that completed by the applicant in attaining the earlier degree.
- The graduate dean will review all materials submitted and decide whether or not to admit the applicant, consulting with the Graduate Council when appropriate.

Admission to a professional master's program after a Ph.D., or to an academic master's program after a professional doctorate, is not subject to these restrictions. Questions should be directed first to the program you are interested in applying to; they will determine if they support your petition.

Transfer of Credit

UC Santa Cruz does not automatically grant credit for graduate-level work undertaken at other universities. Each department determines credit transferability on an individual basis.

CAMPUS LIFE

Diversity-Enhancement Programs

The Eugene Cota-Robles Fellowship and the Dissertation-Year Fellowship are part of the University of California's Academic Career Development Program.

The Eugene Cota-Robles Fellowship is a merit-based diversity-enhancement program that provides financial support for students from diverse backgrounds to pursue and successfully complete a graduate degree. This fellowship is awarded to entering doctoral students who have overcome significant obstacles to achieve a baccalaureate-level degree, and whose economic, educational, or social background contributes to intellectual diversity of the graduate student population. Departments identify applicants from among their pool of admissions applications. Applicants should refer to the information under Financial Support in the application to gain a better understanding of this fellowship. Fellowship recipients must be a U.S. citizen, or a Permanent Resident, or an undocumented student who qualifies for nonresident supplemental tuition exemptions under AB 540, who are being recommended for admission to a Ph.D. program, and who plan to pursue an academic career in research and teaching.

The Dissertation-Year Fellowship is available to continuing students who are advanced to candidacy. Enrolled students are assisted through formal and informal group orientations, individual advice about academic matters, financial aid, postdoctoral opportunities, and the provision of information about career planning, health care, and housing.

Departments nominate applicants for this fellowship from among their qualified students. For information, see the Division of Graduate Studies website.

Student Identification Cards

Student Identification Cards

The Student ID card (which carries the student's picture, name, student ID number, college affiliation, validation

sticker, card access proximity number, and library bar code) is issued to new students during their first quarter on campus. Students who start out living in University housing (and have a signed housing contract) pay $25 for their cards as part of their contract. New students who have not signed a housing contract will have their Student Billing Services account charged $25 during their first quarter on campus.

New students receive their card validated with a quarterly sticker (if all their fees have been paid). Continuing students should go to their college office or housing office for their validation sticker. The sticker is available to you once you've paid your fees, and serves as proof that you are registered. Your college/housing office will be able to issue a sticker the business day after you have paid your fees at the Cashier's Office. Please see the ID Card Services website for more information about quarterly validation stickers.

The validated ID card allows you access to various campus offices and services, including the library, health center, field house, dining halls, and all Santa Cruz County Metro buses. Presentation of your student card is required by the Office of the Registrar for access to records and services. If your card is not functioning properly, please bring it to ID Card Services to be examined. Visit the ID Card Services website for information on replacement cards and their pricing, and their customer service hours.

Student ID Photos

Photos can be submitted following the instructions on ID Card Services' photo submission page. Their customer service hours, and other information, can be found on the IDCS website.

Student ID card photos are also included in the My.UCSC system, and can ony be seen by faculty using the faculty center class roster or by staff members with appropriate security. Student photos within the class roster are defined as confidential, intended to assist instructors and authorized staff in identifying students and for no other purpose.

Student Life

The campus offers a variety of programs to enhance the quality of student life, all of which are available to graduate students. These include child care, sports and recreation, health services, cultural events, transportation services, and the UCSC Womxn’s Center. See undergraduate Student Life (p. 1471) and graduate Student Life for information on these services and a description of the local community.
See Disability Resource Center for services available to students with disabilities.

Graduate Student Association

The Graduate Student Association (GSA) is recognized by both the UC systemwide and local campus administrations as the voice of the Santa Cruz graduate student community. The GSA serves the collective interests of the graduate students by promoting cooperation among the students of the various departments at UCSC; by representing their concerns to the UCSC faculty, administration, and staff; and by providing services to the graduate student body which are more effectively addressed as a group. In addition, the GSA holds social events during the academic year and makes available small travel grants for graduate students attending conferences at which they present a paper, or traveling for thesis-related research. Questions about the Graduate Dean's Research Travel Grant program can be addressed to gss-group@ucsc.edu.

The GSA Council consists of one voting member from each graduate department or program. The representatives are elected by the graduate students in some departments, and are volunteers in others. The representatives represent the views of their departments to the council and advise the Executive Council on campus issues. The Executive Council recommends graduate students for appointments to university committees and speaks to the administration on graduate student issues. Each year the council elects a president, an external and an internal vice president, a secretary, and a treasurer.

The GSA is a member of the University of California Student Association (UCSA). The UCSA is a coalition of students and student governments that provides a collective voice for all students through advocacy and direct action. Each government sends one voting member to serve on the UCSA Board of Directors, which then serves as the student voice to the UC Office of the President and the UC Regents. Graduate students may attend GSA Council meetings, either as the official departmental representative or as an interested party. For more information on open positions and GSA meeting times, please visit the GSA website or email us at gsainfo@ucsc.edu.

Graduate Student Commons

The Graduate Student Commons (GSC) was completed in 2001 and is located at the Quarry Plaza, across from the UCSC Bookstore. The goal for this facility is to provide a comfortable and welcoming space that will attract a wide spectrum of graduate students and foster graduate student interaction and a sense of community.

The GSC offers a variety of spaces, including small study rooms, computer terminals, and a lounge for social interaction. The aim is to make it a resource for graduate students to stop between classes where they may check email, hold office hours, attend or hold a meeting, or join a homework study group, for example. The Graduate Student Commons is a dedicated space for graduate students and all graduate students can obtain 24 hour access to the space.

The GSC is run by two entities, the Director of Graduate Student Life and the GSC Governance Board (GSCGB). The Director of Graduate Student Life is responsible for the day-to-day management of the GSC, while the GSCGB enacts usage policies of the GSC. The GSCGB is composed primarily of 19 graduate students–president, vice president, treasurer and program coordinator, and 15 regular voting members. GSC Governing Board meetings are held once a

month. GSC Governing Board members must attend two out of the three quarterly meetings, serve on a subcommittee (Programming, Outreach or Finance), support committee initiatives, and be present and volunteer at three events per quarter. Voting members may earn a quarterly stipend for their involvement. If you are interested in serving on the GSCGB, please contact the Graduate Commons on our contact page.

The Graduate Student Commons (GSC) hosts a variety of student life well-being programming including personal and professional development, social, health, wellness, spiritual, and financial events that are designed to help graduate students succeed at UC Santa Cruz, and in the world beyond. The GSC designs these workshops as seminars, panel discussions, community work sessions, social events and adventure outings that are offered throughout the academic year. The GSC believes all programming is important to the development and retention of well-rounded and healthy graduate students. All GSC events are open to all currently enrolled graduate students and postdoctoral scholars.

The Graduate Student Commons established the Graduate Student Peer Mentorship Program in 2022-23. The program creates a safe space for all incoming graduate students, as well as returning graduate students, who need space to connect with experienced graduate peers.

Housing

As at all UC campuses, finding housing may be a challenge. Students who wish to reside on campus should submit their application as soon as possible. Likewise, students who wish to live off campus should start looking at available rentals as soon as possible.

On-campus Graduate Student Housing is available for 82 graduate students. Visit the Grad Housing website, or email gradhsg@ucsc.edu.

Students with families may apply to live in Family Student Housing, a complex of two-bedroom unfurnished apartments. Refer to the Family Student Housing website, or email fsh@ucsc.edu.

To assist students in locating living accommodations in the surrounding communities, the Community Rentals Office maintains a list of available rentals.

Global Engagement

The Division of Global Engagement facilitates international partnership agreements, international research opportunities for faculty, student global learning programs, international student and scholar support, and globally focused programming. The units within the division include: Global Learning, International Student Services & Programming, International Faculty & Scholar Services, and Global Initiatives. For more information, visit Global Engagement: 103 Classroom Unit Building, (831) 459-2858, email: global@ucsc.edu.

International Student Services & Programming

International Student Services & Programming (ISSP), within the Division of Global Engagement, works with students and departments across campus to bring international students to UC Santa Cruz and offers specialized support while they are here.

ISSP provides visa and immigration advising to F-1 and J-1 international students at UCSC. The team also designs and provides orientation programs, events, and activities to foster intercultural learning, build community, and support cultural adjustment. By supporting international students, ISSP advances campus internationalization. Learn more on the ISSP website.

Nationally Competitive Fellowships

The Division of Global Engagement administers the application process and provides advising for nationally competitive fellowships for graduate study and research abroad. These include the Fulbright Program, Rhodes Scholarship, Marshall Fellowship, and Schwarzman Scholars Program. For more information, see the Nationally Competitive Fellowships webpage.

Study Abroad

Global Learning, within the Division of Global Engaement, provides students with the opportunity to graduate with a study abroad or away experience, which promotes an internationalized campus that cultivates an understanding of our diverse global community and encourages students to engage with other cultures to broaden their perspective and involvement in the world.

Opportunities for studying abroad or away include the UC Santa Cruz faculty-led Global Seminars, internship programs, and exchange programs, as well as additional opportunities through the UCDC Washington program and UC Education Abroad Program (UCEAP), just to name a few. Learn more on the Global Learning website.

RESOURCES, RESIDENCY, AND POLICIES

In this section:

Resources for Learning and Research (p. 1508)

California Residence and Nonresident Supplemental Tuition (p. 1515)

Policies (p. 1516)

RESOURCES FOR LEARNING AND RESEARCH

In this section:

University Library (p. 1508)

Natural Reserve System (NRS) (p. 1508)

Computing Facilities and Technology Services (p. 1509)

Arts Division (p. 1511)

Baskin School of Engineering (BSOE) (p. 1511)

Humanities Division (p. 1513)

Physical and Biological Sciences Division (p. 1514)

Social Sciences Division (p. 1515)

University Library

The UC Santa Cruz University Library supports the research and learning needs of the campus community from two locations: McHenry Library at the center of campus, and the Science and Engineering Library on “Science Hill.” The Library is a second home for many students, providing space for individual quiet study as well as reservable group study spaces. Each library’s Information Commons offers computer workstations, scanners, and printers as well as circulating laptop and Chromebook computers. McHenry Library hosts the Global Village Café, a perfect place to recharge during marathon study sessions.

The University Library provides access to a wide variety of scholarly resources. Access to eBooks, ejournals, and streaming media is available on campus and off, the latter via the campus’s Virtual Private Network. While the majority of the Library's print materials are housed in open stacks and accessible to all faculty, students, and staff, the campus community also has access to millions of other books and journals through shared licensing and the Interlibrary Loan service.

The Reserves service lends copies of assigned class readings and media on a short-term basis so that all students can access the course materials they need to succeed.

Special Collections acquires and manages rare book and primary source collections that are accessible to students, faculty, and the general public. Holdings include a significant book collection including an unusually large number of artists’ books, fine press, and early printing, as well as over 500 archival collections, with particular strengths in 20th century photography, literature, art, music, and astronomy.

The David Kirk Digital Scholarship Commons (DSC) at McHenry Library provides access to new work spaces and high-end computer software. The DSC invites all members of the UCSC community to build digital and web-based projects, collaborate on research, and experiment with innovative tools and methods.

Other important collections and services include:

- The Digital Collections website contains a growing treasury of digitized photographs, maps, artwork, oral history transcripts, and sound recordings, as well as “born digital” materials, focusing on the most rare and unique collections.
- The Video Game Lab at the Science and Engineering Library provides access to more than 2,000 games and 30 gaming consoles as well as books to support game design and studies.
- The Ask-A-Librarian service provides expert in-person and online research assistance.

For more information, see the University Library website.

Natural Reserve System (NRS)

The University of California administers 42 natural reserves throughout the state. UC Santa Cruz (UCSC) has responsibility for five—the Landels-Hill Big Creek Reserve, Fort Ord Natural Reserve, Año Nuevo Island, Younger Lagoon Natural Reserve, and Strathearn Ranch, a new addition as of 2024. This reserve portfolio is complemented by two reserves managed by UCSC apart from the UC NRS: UCSC’s own Campus Natural Reserve and the Santa Cruz Mountains Reserve. The latter is a cooperative agreement between UCSC and state and federal agencies and local land trusts and farms to bring university students on to these entities’ lands to help them achieve their biological monitoring goals. The purpose of the NRS is to establish and maintain, for teaching and research, a system of natural areas that encompass diverse and undisturbed examples of California’s terrain, both aquatic and terrestrial. The reserves are open to all qualified individuals and institutions for scholarly work concerned with the natural environment. Such work usually deals with ecological topics or experimental studies in a natural setting.

At UCSC, the reserves play an important role in supporting experiential learning (course support, internships, and research support) for undergraduate students interested in the ecological, physical, and environmental sciences. The close proximity of three of the reserves (Campus Reserve and Younger Lagoon) makes it possible for faculty and students to walk out the classroom door and into a living laboratory and outdoor classroom. These two reserves serve over 4,500

students, dozens of courses across multiple disciplines, and 150 undergraduate internships each year.

Information about the reserves is available at the UC Santa Cruz Natural Reserves website. Information about the UC system's NRS holdings and management is available at the University of California Natural Reserve System website. You may also contact the UCSC Natural Reserve director, c/o Environmental Studies Department, 467 Natural Sciences 2 Building, at (831) 459-4867, or by email at ghdayton@ucsc.edu.

Computing Facilities and Technology Services

INFORMATION TECHNOLOGY SERVICES (ITS)

Information Technology Services (ITS) is the center of the university's IT operations, enabling the teaching, learning, research, and outreach mission of UC Santa Cruz. Learn more about ITS.

ITS delivers exceptional, modern, accessible, and secure technology services to nearly 20,000 students and 5,000 faculty and staff members. View the IT catalog of services.

ITS operates the campus network, providing secure, high-speed connectivity for the entire UC Santa Cruz community. This includes wired and wireless connections for reliable access to both campus and external networks.

Whether you need assistance with your accounts, getting connected, obtaining software, or general technical support, ITS is here to help. Learn more about ITS technical support.

GET STARTED WITH TECHNOLOGY

The UCSC Tech for Students guide is designed to help both new and continuing students at UC Santa Cruz navigate the essential technology resources available on campus. From setting up Wi-Fi and accessing student portals to finding computer labs, software, and tech support, this guide covers everything you need to get connected and stay on track throughout your academic journey.

PURCHASING A COMPUTER?

If you're planning to buy a new computer, UC Santa Cruz recommends choosing a laptop with both wired and wireless networking capabilities. The campus supports both PC and Mac systems. While ITS does not manage computer or accessory purchases for students, we do offer both minimum and recommended specifications to guide you. Be sure to check your intended major's website or consult with advising staff for any specific recommendations related to your program.The UCSC Bay Tree Bookstore sells discounted computers to students. Students are also eligible for educational discounts from Apple Education Store, Dell Education Purchase Program, and Best Buy Student Hub.

UCSC ACCOUNT (CRUZID) AND EMAIL

All students, faculty, and staff at UCSC are automatically provided with a CruzID account and a UCSC email address. Your CruzID forms the first part of your email address—for example, in bslug@ucsc.edu, "bslug" is the CruzID.

Beyond email, your CruzID gives you access to a wide range of campus systems and applications. Learn more about CruzIDs and email services.

HOW TO GET ONLINE

Stay securely connected to Wi-Fi on the UC Santa Cruz campus with eduroam, a global service that provides safe, encrypted internet access.

Learn more about how to get online at UCSC, including Wi-Fi options for residence halls, family student housing, and guests: How to Get Online at UC Santa Cruz.

In addition to wireless, cellular providers offer cell phone services on campus. However, signal strength can vary depending on your location and distance from a micro-cell tower, and service is not guaranteed.

MANAGE YOUR NAME AND IDENTITY DATA ON CAMPUS

This guide provides instructions for updating your name and other data at UC Santa Cruz to what you wish to be used and displayed. Learn more about the UC Gender Recognition and Lived Name (GRLN) policy.

CYBERSECURITY FOR STUDENTS

As students, you have a lot going on—classes, extracurriculars, jobs, and your personal life. Scammers take advantage of this, targeting you when you're busy or distracted. This Cybersecurity for Students guide will share tips for how to protect your personal and online information.

RESIDENTIAL NETWORK

ITS provides secure internet access and technical support for UCSC students living on campus (excluding Campus Park), including wireless access in most residence halls and apartments. Students can connect devices like computers, smartphones, tablets, streaming devices, and gaming consoles. Free streaming TV services such as Xfinity on Campus and Max are also included. ITS offers technical support for internet access, minor computer repairs, help with device maintenance and e-waste disposal, and assistance with removing viruses, malware, or copyrighted material to comply

with university policies. Learn more about Residential Network.

COMPUTING LABS FOR DROP-IN USE AND ACADEMIC CLASSES

ITS manages 12 computer labs throughout the campus. These labs have more than 300 computers available for students to use that include PC, Mac, and Sun workstations. Wireless access is available in all labs. More extensive lab information, including hardware and software specifications and hours of operation, is available at the Computer Labs page.

ACADEMIC COURSE MATERIALS ON THE WEB

Canvas is the campus online course-management system used to create web-based course materials to supplement, but not replace, classroom instruction.

Faculty using Canvas can incorporate a wide variety of tools in their course site, such as a course calendar, student conferencing system, electronic mail, group projects with student-created web pages, and quizzes. Outside of class time, students can use Canvas to view course materials, participate in web-based class discussions, collaborate on student group projects, and take quizzes. Learn more about Canvas.

GET SUPPORT FOR TECHNICAL AND COMPUTER HELP

Whether you need help with your accounts, getting online, obtaining software, or technical support, ITS is here to help.

- Find answers to commonly asked questions
- Explore guides for more in depth information
- Get a help ticket started or call us at 831-459-4357.

DISABILITY ACCOMMODATIONS FOR INSTRUCTION

UCSC computing labs have common adaptive technologies—such as enlarged type for students with low vision and Dvorak keyboards for students with repetitive strain injuries. If you have a disability and require adaptive or assistive technology to use lab computers, library facilities, or other campus services, please contact the Disability Resource Center (DRC) so that they can coordinate services for you. You can also reach the DRC at (831) 459-2089 (voice), or (831) 459-4806 (TTY).

COMPUTING POLICIES

Policies establish requirements for key aspects of information technology use, and also ensure compliance with legal and regulatory requirements, support operational efficiency, and mitigate risks associated with cybersecurity threats and technological advancements. Learn more about UC IT-related policies.

Veterans Benefit Services

The VA School Certifying Official (SCO) in the Office of the Registrar is responsible for administering the federal and state Department of Veterans Affairs (VA) educational benefits programs at UC Santa Cruz for students who as veterans, veterans' dependents, active duty, or reservists receive education benefits. Students should contact the Veterans Benefit Services office as soon as they receive notification of admission to UCSC to ensure timely processing of their benefit claims.

The Veterans Benefit Services staff assists with the California Department of Veterans Affairs' college fee-waiver program for dependents of veterans who have service-connected disabilities or who have died from service-related causes. Students classified as a California resident for UC tuition may apply for the college fee-waiver program at their County Veterans Services Office. Claims for fee waivers should be presented to the university during the academic year for which the claim applies. Retroactive approval can be granted only in situations in which students applied for the exemption in a timely manner but approval was delayed by the VA's processing of an original or reopened service-connected disability compensation claim. A copy of the initial denial letter and Disability Rating from the VA is required to document such circumstances. The Cal Vet Fee Waiver may only be applied to Summer Session fees if you are a continuing UC student. Note that an application of veterans benefits may impact financial aid eligibility.

UCSC will not prevent enrollment, assess late registration fees, require alternate or additional funding, or deny access to campus resources available for students using VA Education Chapter 33 (Post-9/11 GI Bill®) or Chapter 31 (Vocational Rehabilitation) benefits while payment is pending from the VA (up to 90 days). To qualify, provide a Certificate of Eligibility or an eBenefits GI Bill® Statement of Benefits and all required VA forms needed to certify enrollment by the first day of class. For more information please see the Veterans Benefits and Transition Act of 2018, section 103. GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA).

Veterans Benefit Services is located at 190 Hahn Student Services Building. For more information, visit the Veterans Benefit Services website, email vets_benefits@ucsc.edu.

Veteran Resource Center (VRC) is a STARS program for military affiliates returning to school or transferring to UC Santa Cruz. In this peer mentor program, military affiliates will meet each other and receive assistance as they navigate admission and transition into university life. Ongoing personal and academic support and outreach to prospective students are also offered. The Veterans Resource Center is located on the 2nd floor of the Baytree Bookstore. Contact the VRC staff at **(831) 459-1520**, or send an email to vets@ucsc.edu, or visit the STARS website.

Arts Division

ARTS DIVISION RESEARCH CENTERS AND INSTITUTES

Arts Research Institute (ARI)

Center for Creative Ecologies

Center for Documentary Arts and Research (CDAR)

Center for the Study of the Force Majeure

Contemporary Print Media Research Center

E.A.R.T.H. Lab

Innovation and Design Lab (IDL)

Institute of the Arts and Sciences

OpenLab Collaborative Research Center

Social Practice Arts Research Center (SPARC)

ARTS DIVISION TEACHING, RESEARCH, AND PERFORMANCE FACILITIES

Arts Information Technology Services (ITS) Labs (Porter Arts Mac Lab and the Music Lab)

Digital Arts Research Center (DARC)

Music Center

Theater Arts Center

Arts Division Research Centers and Institutes

Arts Research Institute (ARI)
Center for Creative Ecologies
Center for Documentary Arts and Research (CDAR)
Center for the Study of the Force Majeure
Contemporary Print Media Research Center
E.A.R.T.H. Lab
Innovation and Design Lab (IDL)
Institute of the Arts and Sciences
OpenLab Collaborative Research Center
Social Practice Arts Research Center (SPARC)

Arts Division Teaching, Research, and Performance Facilities

Arts Information Technology Services (ITS) Labs (Porter Arts Mac Lab and the Music Lab)
Communications Building: Theater C
Digital Arts Research Center (DARC)
Galleries at the Institute of the Arts and Sciences (in Santa Cruz)
Music Center
Sesnon Art Gallery at Porter College
Theater Arts Center

Baskin Engineering

Baskin Engineering is known for rigorous engineering research with a focus on engineering for social good. From data science, to life and health and cyber-physical systems, Baskin Engineering is shaped around the opportunities and challenges of the 21st century. Much of our research takes place in collaborative interdisciplinary centers and institutes, outfitted with modern equipment and instrumentation, and providing opportunities for graduate and undergraduate students to work side by side with world-class engineering faculty.

Facilities and resources include class 100 clean rooms, nanofabrication equipment, modern microscopy facilities, ultrafast optics and single particle spectroscopy labs, an immersive virtual reality CAVE lab, modern gaming equipment, and one of the most advanced stem cell research facilities in the western United States.

BASKIN ENGINEERING RESEARCH CENTERS AND INSTITUTES

California Institute for Quantitative Biosciences (QB3)

Center for Biomolecular Science and Engineering (CBSE)

Center for Games and Playable Media

Center for Information Technology Research in the Interest of Society (CITRIS)

Center for Research in Open Source Software (CROSS)

Center for Research in Storage Systems (CRSS)

Cyber-Physical Systems Research Center (CPSRC)

Data, Discovery and Decisions in Data Science (D3) Research Center

Information Technologies Institute (ITI)

Storage Systems Research Center

W.M. Keck Center for Adaptive Optical Microscopy

W.M. Keck Center for Nanoscale Optofluidics

BASKIN ENGINEERING RESEARCH GROUPS AND LABORATORIES

Advanced Visualization and Interactive Systems Lab

Alternative Learning and Technologies Games Lab

Applied and Nano-Optics Group

Assistive Sociotechnical Systems for Individuals with Special Needs (ASSIST) Lab

Autonomous Systems Lab

Computer Communication Research Group (CCRG)

Computer Vision Lab

Creative Coding Lab

Expressive Intelligence Studio

Game User Interaction and Intelligence Lab

Geospatial Visualization Laboratory

Group Researching Advances in Software Engineering (GRASE)

Hardware Systems Collective

Human Aware Robotics Exploration (HARE) Lab

Hybrid Systems Laboratory

Information Retrieval and Knowledge Management Lab (IRKM)

Institute for Scalable Scientific Data Management (ISSDM)

Institute for the Biology of Stem Cells (IBSC)

Interaction Dynamics Lab

Internetworking Research Group (i-NRG)

Micro Architecture at Santa Cruz (MASC)

Misfit Lab

Natural Language and Dialogue Systems

Robotics and Control Lab

Social Emotional Technology Lab

Systems Research Lab

Tech4Good Lab

UC Santa Cruz Genomics Institute

VLSI Design and Automation Group

Resources for learning and research in Baskin Engineering are augmented by industry partnerships, both in Santa Cruz and Silicon Valley, and by labs and centers across the UC Santa Cruz campus.

BSOE Research Centers and Institutes

California Institute for Quantitative Biosciences (QB3)
Center for Biomolecular Science and Engineering (CBSE)
Center for Games and Playable Media
Center for Information Technology Research in the Interest of Society (CITRIS)
Center for Research in Open Source Software (CROSS)
Center for Research in Storage Systems (CRSS)
Cyber-Physical Systems Research Center (CPSRC)
Data, Discovery and Decisions in Data Science (D3) Research Center
Information Technologies Institute (ITI)
Storage Systems Research Center
W.M. Keck Center for Adaptive Optical Microscopy
W.M. Keck Center for Nanoscale Optofluidics

BSOE Research Groups and Laboratories

Advanced Visualization and Interactive Systems Lab
Applied and Nano-Optics Group
Autonomous Systems Lab
Computer Communication Research Group (CCRG)
Computer Vision Lab
Geospatial Visualization Laboratory
Group Researching Advances in Software Engineering (GRASE)
Hybrid Systems Laboratory

Information Retrieval and Knowledge Management Lab (IRKM)
Institute for Scalable Scientific Data Management (ISSDM)
Institute for the Biology of Stem Cells (IBSC)
Internetworking Research Group (i-NRG)
Micro Architecture at Santa Cruz (MASC)
NanoEngineering Group
Network Management and Operations Lab
Robotics and Control Lab
Storage Systems Research Center (SSRC)
Systems Research Lab
UC Santa Cruz Genomics Institute
VLSI Design and Automation Group

Resources for learning and research in the Baskin School of Engineering are augmented by industry partnerships, both in Santa Cruz and Silicon Valley, and by labs and centers across the UC Santa Cruz campus.

Humanities Division

RESEARCH PROGRAMS

The Humanities Institute at UC Santa Cruz is a hub for academic research, cross-discipline collaboration, and public engagement. We incubate ideas and foster innovation by funding projects, centers, and research clusters that enable faculty and students to work on some of the biggest problems of our day.

The Institute is a source, resource, and force for humanities-based inquiry and engagement with world events. We're passionate about expanding the field of humanities scholarship with digital tools and an interdisciplinary focus. And we believe strongly that the core subjects of the humanities—philosophy, history, language and literature—should be accessible to everyone. That's why we're committed to engaging with the broadest community possible—from first-generation undergraduate students, to local residents, to anyone interested in compelling ideas and making sense of this increasingly complex world.

As part of the University of California system, the Institute is able to leverage the resources of the finest public university system in the world. Part of what makes the UC system of universities great—and what makes us different from so many universities around the globe—is the central role of the humanities in our educational experience, not only in the curriculum, but also in the vibrant intellectual life of our campuses. Here at UC Santa Cruz, we possess an especially rich tradition of innovation, creativity, and collaboration in the humanities.

Centers include:

Center for Cultural Studies

Center for Jewish Studies

Center for Public Philosophy

Center for the Study of Pacific War Memories

Center for World History

Dickens Project

Digital Humanities Initiative

Gail Project

Language of Conservation Project

Linguistics Research Center

Morton Marcus Poetry Reading

Nido de Lenguas

Shakespeare Workshop

Sikh and Punjabi Studies

Undergraduate students in the humanities actively participate in the work and the activities of the centers and projects above. In addition, The Humanities Institute gives out 10 research fellowships annually to undergraduate students working on humanities projects. The students' work is showcased at the annual divisional award ceremony in the spring quarter.

Research Programs

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Digital Humanities Initiative
Gail Project
Language of Conservation Project
Linguistics Research Center
Morton Marcus Poetry Reading
Nido de Lenguas
Shakespeare Workshop
Sikh and Punjabi Studies

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Physical and Biological Sciences Division

RESEARCH PROGRAMS AND CENTERS

Center for Adaptive Optics (CfAO) (also see lao.ucolick.org)

Center for Molecular Biology of RNA

Center for Origin, Dynamics, and Evolution of Planets (CODEP)

Institute of Marine Sciences (IMS)

Institute for the Biology of Stem Cells (IBSC)

Microbiology and Biomedical Research

Santa Cruz Institute for Particle Physics (SCIPP)

Santa Cruz Predatory Bird Research Group

RESEARCH FACILITIES AND LABORATORIES

Chemical Screening Center (CSC)

Earth System Computing & Digital Imaging Facilities

Geochemical and Rock Analysis

Geophysical Facilities

Hydrogeology Facilities

Life Sciences Microscopy Center

Macromolecular Structure Function Core Facility (MSFCF)

Marine Analytical Laboratories

Mass Spectrometry Facility

Microarray Facility

Mineral Physics Laboratory

Molecular Ecology and Evolutionary Genetics Facility

Nanosecond Time-resolved Laser Spectroscopy

Nuclear Magnetic Resonance Facility

Scientific Diving and Boating Safety

Shallow Earth Processes Facilities

Stable Isotope Laboratory

UCSC Greenhouses

W.M. Keck Isotope Laboratory

Research Programs and Centers

Center for Adaptive Optics (CfAO) (also see lao.ucolick.org)
Center for Molecular Biology of RNA
Center for Origin, Dynamics, and Evolution of Planets (CODEP)
Institute of Marine Sciences (IMS)
Institute for the Biology of Stem Cells (IBSC)
Microbiology and Biomedical Research
Santa Cruz Institute for Particle Physics (SCIPP)

Research Facilities and Laboratories

Chemical Screening Center (CSC)
Earth System Computing & Digital Imaging Facilities
Geochemical and Rock Analysis
Geophysical Facilities
Hydrogeology Facilities
Life Sciences Microscopy Center
Macromolecular Structure Function Core Facility (MSFCF)
Marine Analytical Laboratories
Mass Spectrometry Facility
Microarray Facility
Mineral Physics Laboratory
Molecular Ecology and Evolutionary Genetics Facility
Nanosecond Time-resolved Laser Spectroscopy
Scientific Diving and Boating Safety
Shallow Earth Processes Facilities
Stable Isotope Laboratory
UCSC Greenhouses
W.M. Keck Isotope Laboratory

Interdisciplinary and Systemwide Research Programs and Resources

California Institute for Quantitative Biosciences (QB3)
Center for Collaborative Research for an Equitable California (CCREC)
Center for Information Technology Research in the Interest of Society (CITRIS) and the Banatao Institute
Center for Innovation and Entrepreneurial Development (CIED)
Educational Partnership Center (EPC)
Institute of the Arts and Sciences
Santa Cruz Institute for Particle Physics (SCIPP)
UC Monterey Bay Education, Science, and Technology (UC MBEST) Center
UC Santa Cruz Arboretum & Botanic Garden

University of California High-Performance AstroComputing Center (UC-HiPACC)
University of California Observatories (UCO)

Social Sciences Division

RESEARCH CENTERS

Center for Agroecology and Sustainable Food Systems (CASFS)

Center for Analytical Finance (CAFIN)

Center for Integrated Spatial Research (CISR)

Center for Labor and COmmunity (CLC)

Center for Research on Equity and Collaborative Evaluation (CRECE)

Center for Statistical Analysis in Social Sciences (CSASS)

Chicano/Latino Research Center (CLRC)

Kenneth S. Norris Center for Natural History

Science & Justice Research Center

UC Santa Cruz Blum Center on Poverty, Social Enterprise, and Participatory Governance

RESEARCH INITIATIVES

Bruce Initiative on Rethinking Capitalism

Everett Program

Institute for Scientist and Engineer Educators (ISEE)

INTERDISCIPLINARY AND SYSTEMWIDE RESEARCH PROGRAMS AND RESOURCES

California Institute for Quantitative Biosciences (QB3)

Center for Collaborative Research for an Equitable California (CCREC)

Center for Information Technology Research in the Interest of Society (CITRIS) and the Banatao Institute

Center for Innovation and Entrepreneurial Development (CIED)

Educational Partnership Center (EPC)

Institute of the Arts and Sciences

Santa Cruz Institute for Particle Physics (SCIPP)

UC Monterey Bay Education, Science, and Technology (UC MBEST) Center

UC Santa Cruz Arboretum & Botanic Garden

University of California High-Performance AstroComputing Center (UC-HiPACC)

University of California Observatories (UCO)

Research Centers

Archaeological Research Center (ARC)
Campus + Community (C+C)
Center for Agroecology (CFA)
Center for Analytical Finance (CAFIN)
Center for Critical Urban and Environmental Studies (CUES)
Center for Economic Justice and Action (CEJA)
Center for Integrated Spatial Research (CISR)
Center for Labor and Community (CLC)
Center for Statistical Analysis in Social Sciences (CSASS)
Dolores Huerta Research Center for the Americas (Huerta Center)
Kenneth S. Norris Center for Natural History (Norris Center)
Right Livelihood Center (RLC)
Science & Justice Research Center (SJRC)

Research Initiatives

Institute for Social ransformation (IST)

CALIFORNIA RESIDENCE AND NONRESIDENT SUPPLEMENTAL TUITION

RESIDENCY INFORMATION FOR TUITION PURPOSES

The Residence Policy and Guidelines is the main source of residency information and is utilized by the campus residence deputy to make determinations regarding residency. Read the full text of the Residency Policy and Guidelines.

If you do not meet the University of California requirements for residence for tuition purposes on the residence determination date for each term in which you propose to attend the university, you must pay a Nonresident Supplemental Tuition in addition to all other fees. The residence determination date is the day instruction begins at the last of the University of California campuses to open for the quarter.

STATEMENT OF LEGAL RESIDENCE

New undergraduate and graduate students and returning students with an absence of two or more terms must submit a Statement of Legal Residence (SLR). This form is used to determine the fees that will be assessed. Students who do not submit the SLR will be classified as nonresidents and will be assessed the Nonresident Supplemental Tuition.

PETITIONING FOR RESIDENT

RECLASSIFICATION

At least a year before you start your first quarter of classes, begin the process of becoming a California resident. Establish a physical presence by living in California for 366 days prior to the first day of instruction you wish to be a resident. Establish your intent to become a California resident by changing your legal ties immediately from your previous residence to this state. Meet one of the financial independence requirements or prove dependency on California resident parents who have met Physical Presence and Intent to become a California resident for UC tuition. Continuing students must submit a Petition for Nonresident Reclassification and SLR by the filing deadline for the relevant term. Late petitions will not be accepted.

TIME LIMITATION ON PROVIDING DOCUMENTATION

If additional documentation is required for residence classification but is not readily accessible, you will have until the billing date of the applicable term to provide it. If your residency is not determined because of an incomplete SLR or missing documents, your status will revert to nonresident, and you will not be eligible for a retroactive fee adjustment.

INCORRECT CLASSIFICATION

If you are incorrectly classified as a resident, your classification will be corrected and you will be required to pay all nonresident tuition not paid. If you concealed information or furnished false information and were classified incorrectly as a result, you are also subject to university discipline. Resident students who become nonresidents must immediately notify the campus residence deputy.

INQUIRIES AND APPEALS

Inquiries

All inquiries regarding residence requirements, determination, and/or recognized exceptions should be directed to the Residence Deputy, Office of the Registrar, 190 Hahn Student Services Building, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064-1077, reg-residency@ucsc.edu,

Appeals

To appeal a decision, you have 30 days following the date of the campus decision to submit a completed Application to Appeal along with a copy of your nonresident decision by email to residency.appeal@ucop.edu, Attention:Residency Appeals.

Instructions and Application to Appeal a Nonresident Classification

RESIDENCY DISCLAIMER

This is only a summary of the UC Residence Regulations and is not a complete explanation of the policy regarding residence classification. Changes may be made to the residence requirements between the publication date of this statement and the relevant residence determination date. Any student, following a final decision on residence classification by the residence deputy, may appeal in writing to the residence specialist within 30 days of notification of the residence deputy's final decision.

No other University of California personnel are authorized to provide information regarding residence requirements.

PRIVACY NOTICE

All of the information requested on the Statement of Legal Residence form is required [established by Regents Policy 3105 as set forth in the UC Residence Policy and Guidelines] for determining whether or not you are a legal resident for tuition purposes. You have the right to inspect university records containing the residence information requested on this form. The records are maintained by the Office of the Registrar, 190 Hahn Student Services Building, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064-1077.

POLICIES

In this section:

UC Santa Cruz Police Department

UC Santa Cruz Police Department officers are duly sworn peace officers under section 830.2(b) of the California Penal Code. The officers are armed and possess the same authority and responsibility, by law, as those in municipal police departments. Officers patrol the campus 24 hours a day, 365 days a year, on foot, bicycle, motorcycle, or by car. They enforce the law, arrest violators, investigate and suppress crime, investigate traffic and bicycle accidents, and provide a full range of services to the community. For more information about the UC Santa Cruz Police Department, please visit police.ucsc.edu.

Reporting Procedures

It is important that all crimes, emergencies, and/or suspicious, disturbing, or threatening behaviors occurring on campus be immediately reported to the Police Department to ensure that appropriate action can be taken. Emergencies requiring police, fire, or medical aid can be reported in person or by dialing 911 from any campus phone, cell phone, or landline phone. Emergencies can also be reported by using one of the "Blue Light" emergency phones or elevator phones located throughout the campus. If there is a fire and no telephone is available, activate one of the fire alarm manual pull stations located throughout campus buildings.

Public safety services are available 24-hours a day, seven days a week, 365 days per year at the UCSC PD main police station located at 114 Carriage House Road, Santa Cruz, CA 95064. Activities or incidents occurring outside of the UC Santa Cruz jurisdiction should be reported immediately to the agency having jurisdiction for the location where the incident occurred. If an individual is uncertain which agency should take the report, UC Santa Cruz Police can help determine which one is appropriate and refer the individual to that agency.

Phone Numbers To Call

- **9-1-1 for any emergency situation with serious threat to life or property.**
- **(831) 459-2345.** If unable to call 9-1-1 from the phone being used for any **emergency** situation with serious threat to life or property.
- **(831) 459-4980:** Telecommunications Device for the Deaf, 24 hours.
- **(831) 459-2231:** Ext 1. Non-emergency calls for assistance.
- **(831) 459-2100:** Community Safety Program Dispatch Line, 7 p.m. to 3 a.m. nightly.
- **(831) 459-3TIP or (831) 459-3847:** Anonymous Tip Line.

Lost and Found

The UC Santa Cruz Police Department provides a lost and found service. Only items valued at approximately $300 or more are accepted, and are kept for 90 days. Exceptions are made for found wallets, cash, driver licenses or identification cards, bank cards, and keys. To drop off a found item or to inquire about a lost item, please visit the Police Department or call (831) 459-2231.

Residential Community Service Partners

Residential Community Service Partners (RCSPs) are employees of the Residential Life Program within Colleges, Housing and Educational Services and work in conjunction with the UC Santa Cruz Police, Santa Cruz City Fire, and the administration of university residential communities (both on- and off-campus) to ensure a safe and secure living environment for all residents.

RCSPs work in teams and are trained to assist police and fire departments with emergency response, first aid, CPR, and disaster response, across campus and in all residential communities. They carry radios linked to the UC Santa Cruz Police Dispatch Center and are visible in the communities at night from 7 p.m. to 3 a.m. RCSPs may be contacted through the UC Santa Cruz Police Dispatch Center at (831) 459-2100.

Residential Community Service Partners (RCSPs) offer a wide variety of services to the residential communities including:

- assistance with lockouts
- securing buildings
- providing first aid
- assisting with noise complaints
- assistance with documenting policy violations
- assistance with nighttime maintenance issues
- assisting with calls for fire, medical, or crisis assistance
- assistance with quality of life concerns
- residential event security

Jeanne Clery Disclosure of Campus Security and Campus Crime Statistics Act

Choosing a postsecondary institution is a major decision for students and their families. Along with academic, financial and geographic considerations, the issue of campus safety is a vital concern. In 1990, Congress enacted the Crime Awareness and Campus Security Act of 1990, which amended the Higher Education Act of 1965 (HEA). This act required all postsecondary institutions participating in HEA's Title IV student financial assistance programs to disclose campus crime statistics and security information. The act was amended in 1992, 1998, and 2000. The 1998 amendments renamed the law the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act in memory of a student who was slain in her dorm room in 1986. It is generally referred to as the Clery Act. More information about the Clery Act can be found at: Clery Center.

Campus Security Authorities

Although UC Santa Cruz has a police department, victims of crime may be more inclined to report to someone other than the police. For this reason the Clery Act requires all institutions to collect crime reports from a variety of individuals and organizations that the Clery Act refers to as Campus Security Authorities (CSA). The term campus security authority, or CSA, is a Clery-specific term encompassing four groups of individuals and organizations associated with an institution:

- A campus police department or a campus security department of an institution.
- Any individual or individuals who have responsibility for campus security but who do not constitute a campus police department or a campus security department (e.g., an individual who is responsible for monitoring the entrance into institutional property).
- Any individual or organization specified in an institution's statement of campus security policy as an individual or organization to which students and employees should report criminal offenses.

- An official of an institution who has significant responsibility for student and campus activities, including, but not limited to, student housing, student discipline, and campus judicial proceedings. An official is defined as any person with the authority and the duty to take action or respond to particular issues on behalf of the institution.

CSAs are responsible for reporting crimes and incidents that occur on the UC Santa Cruz campus or affiliated property to the UC Santa Cruz Police Department. More information about CSA responsibility is located at UCSC's Ethics & Compliance webpage.

Annual Campus Security and Fire Safety Report

On Oct.1 of each year, an email notification is sent to all enrolled students and to academic and staff personnel, providing the website link to the **Annual Security and Fire Safety Report**. This report includes statistics for the previous three years concerning reported crimes that occurred on campus; in certain off-campus buildings or property owned or controlled by UC Santa Cruz; and on public property within, or immediately adjacent to and accessible from, the campus.

The report also includes information on fire protection systems, fire prevention policies, as well as institutional policies concerning other safety and security matters. You can obtain a printed copy of this report by contacting the UC Santa Cruz Police Department at 1156 High Street, Santa Cruz, CA 95064 or (831) 459-2231.

The UC Santa Cruz Police Department assists the Clery Act Compliance Officer with compiling the annual crime and fire statistics published in this report. The statistical information gathered by the Department of Education is available to the public through the Department of Education website.

Consequences for Non-Compliance with the Clery Act

Possible consequences for an institution's non-compliance with the Clery Act include:

- A suspension or limiting of the institutions Title IV funding;
- The Department of Education may issue a civil fine per each violation;
- The institution may suffer reputational loss due to negative media attention;
- Failure to comply with the Clery Act can be used in various litigation matters.

Increased Safety Measures and Safeguards

Pursuant to California Education Code section 67380, each UC campus is required to provide information regarding special safeguards that have been established for particular facilities or activities in the preceding 18 months to increase safety, and any changes in safety precautions expected to be made during the future 24 months. You can review the full plan detailing current and future safety measures in the 2024 Campus Safety Plan.

As of fall 2024, actions in the past 18 months to increase safety include:

- **Active Shooter Recovery Tabletop Exercise** conducted with campus leadership and key operational stakeholders;
- **new Emergency Response Guide published** to provide students, staff, and faculty with information on how to respond when faced with a variety of hazards and incidents;
- **Emergency Preparedness Training provided** to students, staff, and faculty providing an overview of the campus environment, emergency alert system, response procedures, and preparedness action items;
- **new well-marked and highly visible RCSP vehicle that RCSP staff uses** to conduct community checks in the Affiliated Residential Community Housing areas (Family Student Housing, University Town Center, The Village, Graduate Student Housing);
- **use of electric carts for RCSP staff** to respond to calls more quickly within the residential college areas;
- **tabling at Cornucopia** (major fall quarter welcome event) to educate students about available services RCSP provides, including lock-outs, facilities emergencies, safety walking escorts;
- **partnership between RCSP and Emergency Medical Slugs (EMS)** to provide on-site first aid at events and functions, including unplanned or unsanctioned events on weekend nights;
- **began offering staff De-Escalation Training of RCSP team** for contacts with individuals with unique needs;
- **each RCSP staff member received a new highly portable first aid kit** to be carried while in the community;
- **UCSC PD conducted several active shooter presentations** to various campus units/departments;
- **UCSC PD conducted CPR training** for dining services; and
- **UCSC PD conducted presentations for campus/traffic safety** to maintenance staff and TAPS staff.

As of fall 2024, anticipated changes in safety precautions during the next 24 months include:

- **new on-demand Emergency Preparedness training** developed as an eLearning course or to be delivered in-person or remotely;

- **implementation of an Individualized Emergency Evacuation Plan** specifically tailored for individuals with Access and Functional Needs;
- **rollout of new Department Emergency Action Plans** that meet Cal-OSHA Section 3220 requirements and include new language on Access and Functional Needs. Planning priorities are aligned with departments who contribute to Emergency Support Functions.
- **approval and implementation of the UC Santa Cruz Emergency Response Framework** developed in alignment with the FEMA Comprehensive Planning Guide, which outlines how the University responds to incidents using proactive mechanisms and sets the foundation for the development of function specific annexes;
- **additional electric carts to be deployed** to other zones to increase mobility and response time of RCSP staff;
- **De-Escalation Training to be provided to the entire RCSP Department** for contacts with individuals with unique needs.
- **continued tabling at the Fall 2024 and 2025 Cornucopia** (major fall quarter welcome event) to educate students about the services RCSP provides;
- **increased involvement in orientation programs** to familiarize students with RCSP staff and their roles;
- **implementation of Silvertrack software for CSA program** to facilitate real-time processing and photo assist for more timely incident reporting;
- **begin to replace aging patrol vehicles** which are frequently unavailable due to maintenance or service issues;
- **increase training opportunities** for sworn staff members;
- **seek grant funding for Dispatch Center** improvements and upgrades;
- **seek IACLEA accreditation** by October 2024; and
- **increase safety training presentations** for campus by UCSC PD.

Night Safety Escort Service Provided By Transportation and Parking Services (TAPS)

Request a free “Safe Ride” from one location on the residential campus to another. Safe Ride is staffed by student operators and is available from 7:00 p.m. to 12:00 a.m., seven days a week when classes are in session during fall, winter, and spring quarters. This service provides a safe and reliable means of transit from one location to another on campus and ensures the safety of students who feel endangered or unsafe during night hours. Learn more at the Safe Ride website.

Tools for Navigating the UC Santa Cruz Campus

The Wayfinding Workgroup seeks to improve the tools available for navigating the campus. It has worked on improving temporary signage, recommended improvements to the campus entrance, and developed a pilot project in the Science Hill area. Over the next two years, the group’s tasks include writing a campus policy on signage and developing outreach to inform campus constituents about the best ways to direct people to specific locations.

The campus is also in the process of developing a Master Pedestrian Plan to promote walking as the most sustainable way to traverse the campus. The final plan will include an assessment of existing conditions, including gaps in the pedestrian infrastructure, and a plan to create a more pedestrian-friendly campus.

In a parallel effort, Transportation and Parking Services (TAPS) is revising the information posted at each transit stop, including an overall map of the campus, and an enlarged map of the half-mile radius surrounding each stop. TAPS has also launched a bus tracking system app (developed in conjunction with the campus Computer Science Department) that allows riders to see each active campus shuttle in real time on a campus map.

Drug-Free Schools and Communities Act

In compliance with the federal Drug-Free Schools and Communities Act, UC Santa Cruz annually notifies students, faculty, and staff of policies, procedures, and potential consequences related to unlawful possession, use, or distribution of drugs and alcohol on campus. This notice is distributed to students, faculty, and staff via email. The university also conducts a biennial review of programs related to drug and alcohol abuse prevention to determine effectiveness, implement changes, and ensure that disciplinary sanctions are consistently enforced. This review is coordinated by the Dean of Students Office. For information, email deanofstudents@ucsc.edu.

Smoking on Campus Policy

The University of California is smoke and tobacco-free at all campus locations. The use of cannabis containing THC is prohibited under federal regulations. Use of all forms of tobacco, including smokeless tobacco products and unregulated nicotine products (e.g. “e-cigarettes”), is strictly prohibited within the boundaries of university-controlled properties, including parking lots. Assistance to students, faculty, and staff to overcome addiction to tobacco, nicotine, or cannabis products is available through the UC health and benefits plans, Faculty/Staff Wellness Programs, Student Health Center, Faculty Staff Assistance Programs (FSAP), and Counseling Center. For more detailed information about the policy, help quitting, and other resources, see the UCSC Smoke and Tobacco-Free website.

Graduate Student–Faculty Adviser

Relationship Guidelines

The University of California, Santa Cruz, expects professional, fair, and frequent communication between graduate students and their advisers. Open communication and mutual respect should be the foundation of the relationship between a graduate student and faculty adviser. The faculty adviser and the graduate student should discuss their student-adviser relationship early and clearly communicate mutual and agreeable expectations from the beginning. Regular interactions, especially face-to-face meetings, are essential in ensuring that expectations and goals are met.

In an optimal learning environment, the faculty adviser should provide timely and constructive feedback on performance and expectations; timely and sufficient warning of inadequate performance; appropriate recognition of a student's intellectual contributions; and academic and professional advice on all stages of the graduate career. The graduate student should be an active participant in seeking advice and getting feedback on progress, keeping the faculty adviser informed of plans, progress, and obstacles, and contributing during regular progress assessments. The faculty adviser and the student each have the duty and responsibility to initiate meetings as necessary to foster and protect the success of the relationship.

Professionalism and fairness should guide the graduate student–faculty adviser relationship. In such relationships, faculty are bound by the Faculty Code of Conduct , see APM 015.A. Faculty advisers and graduate students are bound by policies that prohibit discrimination and harassment. Graduate students may be entitled to accommodations under the Americans with Disabilities Act. (See Appendix E: Policies and Regulations (p. 1516) and Nondiscrimination and Affirmative Action Policies (p. 1520).) When concerns and conflicts arise, they should be raised and attended to professionally, honestly, and promptly. Retaliation and discrimination against students for raising concerns are prohibited.

If something happens that disrupts the faculty adviser–graduate student relationship and cannot be resolved either by direct or indirect discussion, a graduate student can seek assistance from a trusted faculty member, the dean of graduate studies, the department graduate director, the department chair, conflict resolution, counseling and psychological services, the Office of the Ombuds, and/or the Title IX Office. Graduate students may request confidentiality. Many departments have developed processes to address a range of potential concerns. For information about grievance and appeal procedures, see Appendix E: Policies and Regulations (p. 1516) and Nondiscrimination and Affirmative Action Policies (p. 1520). For a description of additional informal and formal grievance and appeal processes available to UCSC graduate students, please refer to the Graduate Student Handbook.

Office of Student Conduct & Conflict

Education

A comprehensive list of student policies and codes of conduct is available online: Student Policies and Regulations Handbook. The Student Policies and Regulations Handbook is also available in alternate formats from the Office of Student Conduct & Conflict Education(OSCCE).

The Office of Student Conduct & Conflict Education is responsible for the adjudication of nonacademic student and student organization misconduct for UC Santa Cruz. In this capacity, (OSCCE) administers the Code of Student Conduct in accordance with Section 100.00 of the Student Policies and Regulations Handbook. Allegations of misconduct may be brought by students, faculty, staff, police, visitors to the campus, and members of the community. Incident reports may be made by submitting a report at the Office of Student Conduct & Conflict Education webpage.

OSCCE is currently located in Hahn Student Services, and can be reached by phone at (831) 459-4377, by fax at 459-5196, or via email at conduct@ucsc.edu.

Nondiscrimination and Affirmative Action Policies

In this section:

Student-related matters (p. 1520)

Employment-related matters (p. 1521)

Sexual harassment and sexual violence/Title IX (p. 1521)

Student-Related Matters

The University of California, in accordance with applicable federal and state law and university policy, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy[1], physical, mental health or cognitive disability, medical condition (cancer-related or genetic characteristics), genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services[2]. The university also prohibits sexual harassment.

This nondiscrimination policy covers admission, access, and treatment in university programs and activities.

Inquiries regarding the university's student-related nondiscrimination policies may be directed to the Dean of Students office, or email deanofstudents@ucsc.edu.

Inquiries regarding the university's affirmative action, equal employment opportunity, nondiscrimination, and harassment policies as they relate to student employment may be directed to the Equity and Equal Protection (EEP) Office, (831) 459-2462, or by emailing equity@ucsc.edu. You can also make a report to EEP using the online reporting form here.

Inquiries regarding the UC Policy on Sexual Violence and Sexual Harassment, reports of Title IX violations, needs related to pregnancy and lactation, and requests for safety and supportive measures may be directed to Title IX Office by

calling (831) 459-2462, or by emailing titleix@ucsc.edu. You can also make a Title IX report using the online reporting form here.

Student inquiries regarding disability or disability accommodations may be addressed to the Disability Resource Center, (831) 459-2089; or email drc@ucsc.edu.

Students with disabilities who are unable to resolve accommodation or discrimination concerns may contact the campus ADA compliance officer by email at mshahin@ucsc.edu or nubyaan@ucsc.edu.

[1]Pregnancy includes pregnancy, childbirth, and medical conditions related to pregnancy or childbirth.

[2]Service in the uniformed services includes membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services.

Employment-Related Matters

The University of California is committed to providing a workplace free of discrimination and harassment. The university prohibits discrimination against any person employed; seeking employment; or applying for or engaged in a paid or unpaid internship or training program leading to employment with the University of California. In addition, the university prohibits harassment of an employee, applicant, paid or unpaid intern, volunteer, person participating in a program leading to employment, or person providing services pursuant to a contract. The university undertakes affirmative action, consistent with its obligations as a federal contractor. The University of California is an Equal Opportunity/Affirmative Action Employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability, age or protected veteran status.

The university prohibits discrimination against any person employed; seeking employment; or applying for or engaged in a paid or unpaid internship or training program leading to employment with the University of California on the basis of race, color, national origin, religion, sex, gender, gender expression, gender identity, gender transition status, pregnancy[1], physical, mental health or cognitive disability, medical condition (cancer-related or genetic characteristics), genetic information (including family medical history), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services[2], including protected veterans. This policy applies to all employment practices, including recruitment, selection, promotion, transfer, merit increase, salary, training and development, demotion, and separation.

In addition, the university prohibits harassment based on the above protected characteristics of an employee, applicant, paid or unpaid intern, volunteer, person participating in a program leading to employment, or person providing services pursuant to a contract.

If the harassment is sexual in nature, the university's Sexual Violence and Sexual Harassment (SVSH) policy will apply. Local SVSH resource information can be found at the UC Sexual Violence Prevention and Response website.

University policy prohibits retaliation for bringing a complaint of discrimination or harassment pursuant to this policy against any person employed; seeking employment; providing services pursuant to a contract; or applying for or engaged in a paid or unpaid internship, volunteer capacity, or training program leading to employment with the University of California. This policy also prohibits retaliation against a person who assists someone with a complaint of discrimination or harassment, or participates in any manner in an investigation or resolution of a complaint of discrimination or harassment. Retaliation includes threats, intimidation, reprisals, and/or adverse actions related to employment.

While absolute confidentiality cannot be promised, those hearing and investigating discrimination and harassment complaints apply a strict business need-to-know standard when sharing or disclosing information as needed to conduct an investigation, to work toward a resolution, and as university policy, campus policy, and state or federal law dictate. We ask that all involved parties maintain an appropriate level of confidentiality.

UC Santa Cruz maintains comprehensive complaint processes to address discrimination and harassment concerns to ensure that appropriate confidentiality is maintained; that reporters and responding parties receive timely responses; that investigations are conducted in a timely fashion by impartial, qualified personnel; systems are in place for documenting and tracking progress; and that appropriate remedial actions and resolutions are offered.

University policy is intended to be consistent with the provisions of applicable state and federal laws.

Inquiries regarding the university's affirmative action, equal employment opportunity, and harassment and nondiscrimination policies for academic, staff and student employment may be directed to Sonjé Dayries, JD at the Office for Diversity, Equity, and Inclusion, 831-459-2686 or email sdayries@ucsc.edu.

NOTES:

1. **Pregnancy** includes pregnancy, childbirth, and medical conditions related to pregnancy or childbirth.
2. **Service in the uniformed services** includes membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services.

Sexual Harassment and Sexual Violence Title IX

The University of California cherishes the free and open exchange of ideas and expansion of knowledge. Maintaining this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of

the university community who exercise the greatest authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect the campus community from sexual harassment and sexual violence. Students, faculty, and staff who would like information or a consultation about gender-based discrimination, sexual harassment, or sexual violence; would like to understand resources and reporting options; would like to file a formal complaint; would like to request a training session; and/or would like copies of the UC Policy on Sexual Violence and Sexual Harassment and/or the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment may consult the Title IX Office website or contact Julie Lewis, Title IX Officer, at (831) 459-2462, or via email at juelewis@ucsc.edu. Individuals seeking additional resources and information regarding rights and reporting options for those impacted by sexual harassment and sexual violence may also consult the CARE website.

TEACHING AND ADMINISTRATIVE STAFF

2025-26 UCSC FACULTY

Faculty titles for 2023-24 were verified as of June 23, 2023, and subsequent changes may not be reflected in the following list. Please note that inclusion in this list is not a guarantee that the faculty member will be teaching throughout the 2023–24 academic year. In addition, some faculty listed here as emeriti may be recalled to teach courses.

The listing for most faculty members includes college membership, year of arrival at UC Santa Cruz, and academic title.

University of California and UC Santa Cruz Administration (p. 1581)

2025-26 UCSC FACULTY

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Abadi	Martin	Professor Emeritus	Computer Science and Engineering
Abbaszadeh	Shiva	Associate Professor	Electrical and Computer Engineering
Abraham	W	Professor Emeritus	Philosophy
Abrams	Elizabeth	Teaching Professor	Writing Program
Achs	Rachel	Assistant Professor	Philosophy
Adams	Robert	Professor Emeritus	Economics
Afrisando	Jay	Assistant Professor	Music
Aguilera	Michelle	Assistant Professor	Education
Aguirre	Anthony	Professor	Physics
Aherne	Patrick	Professor Emeritus	Art
Ahmad	Ishtiyaque	Assistant Professor	Computer Science and Engineering
Aissen	Judith	Professor Emeritus	Linguistics
Aizenman	Joshua	Professor Emeritus	Economics
Akeson	Mark	Professor Emeritus	Biomolecular Engineering
Akhtar	Nameera	Professor	Psychology
Aladro Font	Jorge	Professor	Literature

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Aldhous	Peter	Lecturer Continuing	Science Communication
Alexandradinata	Aris	Assistant Professor	Physics
Alfaro Cordoba	Marcela	Assistant Teaching Professor	Statistics
Ali	Arshad	Associate Professor	Education
Alinder	Jasmine	Professor	History
Alkon	Alison	Associate Teaching Professor	Sociology
Alonso	Jonathan	Assistant Professor	Film and Digital Media
Alonzo	Suzanne	Professor	Ecology and Evolutionary Biology
Altice	Nathan	Associate Teaching Professor	Computational Media
Altmannshofer	Wolfgang	Associate Professor	Physics
Alvaro	Peter	Associate Professor	Computer Science and Engineering
Amengual	Mark	Professor	Languages and Applied Linguistics
Amis	George	Professor Emeritus	Literature
Amis	Margaret	Senior Lecturer Continuing	Writing Program
Anand	Pranav	Professor	Linguistics
Anderson	Elliot	Associate Professor	Art
Anderson	Scott	Lecturer Continuing	Economics
Anderson	Mark	Professor	Anthropology
Anderson	Roger	Professor Emeritus	Chemistry and Biochemistry
Andrews	Lawrence	Professor	Film and Digital Media
Angelo	Hillary	Associate Professor	Sociology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Anthony	David	Professor Emeritus	History
Aptheker	Bettina	Professor Emeritus	Feminist Studies
Archer	Cameron	Lecturer Continuing	Film and Digital Media
Arden	Owen	Associate Professor	Computer Science and Engineering
Ares	Manuel	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Argenal	Amy	Assistant Teaching Professor	Sociology
Arondekar	Anjali	Professor	Feminist Studies
Aronson	Elliot	Professor Emeritus	Psychology
Arredondo	Gabriela	Associate Professor	Latin American and Latino Studies
Arribere	Joshua	Associate Professor	"Molecular, Cell, and Developmental Biology"
Arthur	Derede	Senior Lecturer Continuing	Writing Program
Artun	Burcak	Lecturer Continuing	Microbiology and Environmental Toxicology
Ash	Doris	Professor Emeritus	Education
Aso	Noriko	Associate Professor	History
Asphaug	Erik	Professor Emeritus	Earth & Planetary Sciences
Ayzner	Alexander	Professor	Chemistry and Biochemistry
Azeb	Sophia	Assistant Professor	Critical Race & Ethnic Studies
Azmitia	Margarita	Professor	Psychology
Aznar	Ignacio	Associate Teaching Professor Emeritus	Languages and Applied Linguistics
Bachman	Erik	Lecturer	Porter College

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Continuing	
Bailey	Delbert	Lecturer Continuing	Computer Science and Engineering
Baker	Mark	Lecturer Continuing	Oakes College
Baker	Mark	Senior Lecturer Continuing	Writing Program
Ball	Tamara	Lecturer Continuing	Rachel Carson College
Ballard	Patrick	Assistant Teaching Professor	"Performance, Play and Design"
Balloffet	Lily	Associate Professor	Latin American and Latino Studies
Banks	Thomas	Professor Emeritus	Physics
Barad	Karen	Professor	History of Consciousness
Barahona	Byron	Lecturer Continuing	Languages and Applied Linguistics
Barbora	Sanjay	Associate Professor	Sociology
Bargu	Banu	Professor	History of Consciousness
Bartlett	Lora	Associate Professor	Education
Bassi	Karen	Professor Emeritus	Literature
Batalha	Natalie	Professor	Astronomy and Astrophysics
Batish	Ashwin	Lecturer Continuing	Music
Battle	James	Associate Professor	Sociology
Bäuerle	Frank	Teaching Professor	Mathematics
Baumbach	Ryan	Acting Associate Professor	Physics
Baumgarten	Murray	Professor Emeritus	Literature
Beal	Amy	Professor	Music

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Beamer	Scott	Assistant Professor	Computer Science and Engineering
Beaulieu	Claudie	Associate Professor	Ocean Sciences
Beaumont	Elizabeth	Associate Professor	Politics
Beecher	Jonathan	Professor Emeritus	History
Belanger	David	Professor Emeritus	Physics
Bell	Dorian	Associate Professor	Literature
Beltran	Roxanne	Assistant Professor	Ecology and Evolutionary Biology
Benjamin	Ilan	Professor Emeritus	Chemistry and Biochemistry
Benner	Christopher	Professor	Environmental Studies
Benner	Christopher	Professor	Sociology
Bennett	Ryan	Professor	Linguistics
Berman	Nathaniel	Lecturer Continuing	Music
Berman	Phillip	Professor Emeritus	Biomolecular Engineering
Bernardi	Giacomo	Professor	Ecology and Evolutionary Biology
Bernick	David	Associate Teaching Professor	Biomolecular Engineering
Bernstein	Sara	Professor	Philosophy
Berrahmoun	Abdelkader	Lecturer Continuing	Languages and Applied Linguistics
Bertram	Eva	Associate Professor	Politics
Bettie	Julie	Associate Professor	Sociology
Bhalla	Needhi	Professor	"Molecular, Cell, and Developmental Biology"
Bhargava	Kriti	Assistant Teaching Professor	Computer Science and Engineering
Bhattacharya	Nandini	Senior	Mathematics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Lecturer Continuing	
Biehl	Peter	Professor	Anthropology
Bierman	James	Professor Emeritus	"Performance, Play and Design"
Binder	Caitlin	Lecturer Continuing	Chemistry and Biochemistry
Birnbaum	Raoul	Professor Emeritus	History of Art and Visual Culture
Bittar Prieto	Josefina	Assistant Professor	Languages and Applied Linguistics
Bivens	Hunter	Associate Professor	Literature
Blackburn	Terrence	Associate Professor	Earth & Planetary Sciences
Blumenthal	George	Professor Emeritus	Astronomy and Astrophysics
Bodenheimer	Peter	Professor Emeritus	Astronomy and Astrophysics
Boeger	Hinrich	Professor	"Molecular, Cell, and Developmental Biology"
Bogomolni	Roberto	Professor Emeritus	Chemistry and Biochemistry
Bolte	Michael	Professor Emeritus	Astronomy and Astrophysics
Boltje	Robert	Professor	Mathematics
Bonam	Courtney	Associate Professor	Psychology
Bonett	Douglas	Professor	Psychology
Bordeaux	Clementine	Assistant Professor	History of Art and Visual Culture
Bordignon	Guido	Associate Teaching Professor	"Molecular, Cell, and Developmental Biology"
Borker	Abraham	Assistant Teaching Professor	Ecology and Evolutionary Biology
Bose	Soumya	Assistant Professor	Electrical and Computer Engineering
Bose	Dev	Associate Teaching	Writing Program

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Professor	
Boudewyn	Megan	Assistant Professor	Psychology
Bowin	John	Associate Professor	Philosophy
Bowman	Barry	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Boyd	David	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Brandt	Scott	Professor	Computer Science and Engineering
Brandwajn	Alexandre	Professor Emeritus	Computer Science and Engineering
Braslau	Rebecca	Professor	Chemistry and Biochemistry
Brasoveanu	Adrian	Professor	Linguistics
Breakspear	Anthony	Lecturer Continuing	Writing Program
Breen	Benjamin	Associate Professor	History
Brenneis	Donald	Professor Emeritus	Anthropology
brice	mattie	Assistant Professor	"Performance, Play and Design"
Bridges	Frank	Professor Emeritus	Physics
Brodie	Jean	Professor Emeritus	Astronomy and Astrophysics
Brodsky	Emily	Professor	Earth & Planetary Sciences
Brooks	Angela	Professor	Biomolecular Engineering
Brose	Margaret	Professor Emeritus	Literature
Brown	George	Professor Emeritus	Physics
Brown	Michael	Professor Emeritus	Politics
Bruland	Kenneth	Professor Emeritus	Ocean Sciences
Brummell	Nicholas	Professor	Applied Mathematics
Brundage	David	Professor	History

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Emeritus	
Bueno	Claudio	Assistant Professor	Art
Bugg	Laura Beth	Associate Teaching Professor	Social Sciences Division
Bullock	Heather	Professor	Psychology
Bulman	George	Associate Professor	Economics
Bunch	George	Professor	Education
Bundy	Kevin	Associate Professor	Astronomy and Astrophysics
Burgin	Victor	Professor Emeritus	History of Consciousness
Burke	Edmund	Professor Emeritus	History
Burton-Carvajal	Julianne	Professor Emeritus	Literature
Bury	Jeffrey	Professor	Environmental Studies
Cailloux	Renee	Lecturer Continuing	Languages and Applied Linguistics
Caldwell	Melissa	Professor	Anthropology
Calegari Andrade	Marcos	Assistant Professor	Chemistry and Biochemistry
Callanan	Maureen	Professor Emeritus	Psychology
Calsoyas	Candace	Lecturer Continuing	Rachel Carson College
Camblin	Caren	Senior Lecturer Continuing	Stevenson College
Cameron	Elisabeth	Professor Emeritus	History of Art and Visual Culture
Cameron	Kenneth	Professor Emeritus	Earth & Planetary Sciences
Campbell	Elliott	Professor	Environmental Studies
Camps	Manel	Professor	Microbiology and Environmental Toxicology
Cardenas	Micha	Associate Professor	Critical Race & Ethnic Studies

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Cardenas	Micha	Associate Professor	"Performance, Play and Design"
Cardenas	Alvaro	Professor	Computer Science and Engineering
Cardilla	Kim	Lecturer Continuing	Psychology
Carpenter	Susan	Professor	"Molecular, Cell, and Developmental Biology"
Carr	Mark	Professor	Ecology and Evolutionary Biology
Carson	Ben	Professor	Music
Carstensdottir	Elin	Assistant Professor	Computational Media
Carter	Sue	Professor	Physics
Casanova	Saskias	Associate Professor	Psychology
Castillo	Pedro	Professor Emeritus	History
Castillo Trelles	Carolina	Lecturer Continuing	Languages and Applied Linguistics
Casumbal-Salazar	Iokepa	Assistant Professor	Critical Race & Ethnic Studies
Cha	Mijin	Assistant Professor	Environmental Studies
Chacón	Dustin	Assistant Professor	Linguistics
Chamorro Garcia	Raquel	Assistant Professor	Microbiology and Environmental Toxicology
Chan	Ariel Shuk Ling	Assistant Professor	Languages and Applied Linguistics
Chan	Shelly	Associate Professor	History
Chan	Pak	Professor Emeritus	Electrical and Computer Engineering
Chattopadhyay	Ashesh	Assistant Professor	Applied Mathematics
Chatziafratis	Evangelos	Assistant Professor	Computer Science and Engineering
Check Hayden	Erika	Associate Teaching Professor	Physical & Biological Sciences Division
Chemers	Michael	Professor	"Performance, Play and Design"

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Chemers	Martin	Professor Emeritus	Psychology
Chen	Christopher	Associate Professor	Literature
Chen	Bin	Professor	"Molecular, Cell, and Developmental Biology"
Chen	Nancy	Professor	Anthropology
Chen	Shaowei	Professor	Chemistry and Biochemistry
Chen	Yihsu	Professor	Electrical and Computer Engineering
Cheng	Weixin	Professor	Environmental Studies
Cheung	Yin-Wong	Professor Emeritus	Economics
Childers	Geoffrey	Lecturer Continuing	Stevenson College
Childs	John	Professor Emeritus	Sociology
Christensen	Peter	Associate Professor	Economics
Christy	Alan	Professor	History
Chuang	Patrick	Professor	Earth & Planetary Sciences
Chung	Christina	Associate Professor	Computational Media
Chung	Sandra	Professor Emeritus	Linguistics
Cioc-Ortega	Mark	Professor Emeritus	History
Clapham	Matthew	Professor	Earth & Planetary Sciences
Clifford	James	Professor Emeritus	History of Consciousness
Cobbins-Modica	Quin'Nita	Assistant Professor	History
Coe	Robert	Professor Emeritus	Earth & Planetary Sciences
Cole	Hannah	Assistant Professor	Literature
Colquitt	Bradley	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Comandur	Seshadhri	Professor	Computer Science and Engineering
Connery	Christopher	Professor	Literature

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Contos	Paul	Lecturer Continuing	Music
Cook	Andrea	Lecturer Continuing	Psychology
Coonerty	Ryan	Lecturer Continuing	Legal Studies
Cooper	Catherine	Professor Emeritus	Psychology
Cooperstein	Bruce	Professor Emeritus	Mathematics
Cooppan	Vilashini	Professor	Literature
Cooppan	Vilashini	Professor	Critical Race & Ethnic Studies
Corbett-Detig	Russell	Professor	Biomolecular Engineering
Cornejo Ordaz	Omar	Associate Professor	Ecology and Evolutionary Biology
Cortez	Valerie	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Corzine	Keith	Professor	Electrical and Computer Engineering
Costa	Daniel	Professor	Ecology and Evolutionary Biology
Coulter	Steven	Lecturer Continuing	Writing Program
Coulter	William	Senior Lecturer Continuing	Music
Covarrubias	Rebecca	Professor	Psychology
Crews	Philip	Professor Emeritus	Chemistry and Biochemistry
Crichton	Edith	Professor Emeritus	Art
Croll	Donald	Professor	Ecology and Evolutionary Biology
Crosby	Faye	Professor Emeritus	Psychology
Cruz	Cynthia	Professor Emeritus	Education
Curry	Robert	Professor Emeritus	Environmental Studies
Daehnke	Jon	Associate Professor	Anthropology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Daifallah	Yasmeen	Assistant Professor	Politics
Daniel	Sharon	Professor	Film and Digital Media
Daniels	Ray	Lecturer Continuing	Writing Program
Darke	A.M.	Associate Professor	"Performance, Play and Design"
Davidenko	Nicolas	Professor	Psychology
Davis	Muriam	Associate Professor	History
Davis	James	Professor	Computer Science and Engineering
Davis	Angela	Professor Emeritus	History of Consciousness
Davis	William	Professor Emeritus	Ecology and Evolutionary Biology
Dayton	Gage	Coordinator of Field Work Continuing	Physical & Biological Sciences Division
De Alfaro	Luca	Professor	Computer Science and Engineering
De Lauretis	Teresa	Professor Emeritus	History of Consciousness
de Roock	Roberto	Associate Professor	Education
Dean	Carolyn	Professor Emeritus	History of Art and Visual Culture
Delaney	Margaret	Professor Emeritus	Ocean Sciences
Delgado	Grace	Professor	History
Demertzis	Ioannis	Assistant Professor	Computer Science and Engineering
Demos	T. J.	Professor	History of Art and Visual Culture
Dent	Gina	Professor	Humanities Division
Derr	Jennifer	Associate Professor	History
Desa	Subhas	Teaching Professor	Baskin Engineering
Deutsch	Nathaniel	Professor	History

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Deutsch	Joshua	Professor Emeritus	Physics
Devecka	Martin	Associate Professor	Literature
Dewitt	Jamie	Supervisor of Teacher Education Continuing	Education
Diaz	Josen	Associate Professor	Critical Race & Ethnic Studies
Diaz	Maria Elena	Professor Emeritus	History
Dillon	Lindsey	Associate Professor	Sociology
Dine	Michael	Professor Emeritus	Physics
Dinishak	Janette	Associate Professor	Philosophy
Dobkin	Carlos	Professor	Economics
Domhoff	George	Professor Emeritus	Sociology
Donaldson	Bryan	Professor	Languages and Applied Linguistics
Dong	Chongying	Professor	Mathematics
Dooley	Michael	Professor Emeritus	Economics
Dorfan	David	Professor Emeritus	Physics
Du Puis	E	Professor Emeritus	Sociology
Duane	Timothy	Professor Emeritus	Environmental Studies
Dubois	Rebecca	Professor	Biomolecular Engineering
Dudley	Walter	Professor Emeritus	Music
Dunkin	Robin	Associate Teaching Professor	Ecology and Evolutionary Biology
Dunn	David	Professor Emeritus	Music
Eaton	Kent	Professor	Politics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Edmunds	Kate	Professor Emeritus	Film and Digital Media
Edwards	Christopher	Professor	Ocean Sciences
Eger	Markus	Assistant Teaching Professor	Computational Media
Ehrhardt	Torsten	Professor	Mathematics
Einarsdottir	Olof	Professor Emeritus	Chemistry and Biochemistry
El Dessouky	Dina	Lecturer Continuing	Writing Program
Elbaum	Bernard	Professor Emeritus	Economics
Elkaim	Gabriel	Professor	Electrical and Computer Engineering
Ellis	Nathan	Assistant Professor	Electrical and Computer Engineering
Ellis	Jonathan	Associate Professor	Philosophy
Ellis	John	Professor Emeritus	Literature
Epps	Harland	Professor Emeritus	Astronomy and Astrophysics
Epstein	Barbara	Professor Emeritus	History of Consciousness
Erb	Joseph	Associate Professor	Film and Digital Media
Erbig	Jeffrey	Associate Professor	Latin American and Latino Studies
Eroy-Reveles	Aura	Teaching Professor	Chemistry and Biochemistry
Errington	Shelly	Professor Emeritus	Anthropology
Escobar	Laura	Associate Professor	Mathematics
Eshraghian	Jason	Assistant Professor	Electrical and Computer Engineering
Evangelatou	Maria	Professor	History of Art and Visual Culture
Ezerova	Maria	Lecturer Continuing	Music

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Faber	S	Professor Emeritus	Astronomy and Astrophysics
Fairbairn	Madeleine	Associate Professor	Environmental Studies
Falcon	Sylvanna	Professor	Latin American and Latino Studies
Farkas	Donka	Professor Emeritus	Linguistics
Farquhar	Dion	Lecturer Continuing	Crown College
Faulkner	John	Professor Emeritus	Astronomy and Astrophysics
Favaloro	Tela	Associate Teaching Professor	Baskin Engineering
Fehren-Schmitz	Lars	Professor	Anthropology
Feldheim	David	Professor	"Molecular, Cell, and Developmental Biology"
Feldl	Nicole	Associate Professor	Earth & Planetary Sciences
Feldman	Jerry	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Ferguson	F	Professor Emeritus	Computer Science and Engineering
Fernando	Mayanthi	Professor	Anthropology
Fiechter	Jerome	Associate Professor	Ocean Sciences
Finnegan	Noah	Professor	Earth & Planetary Sciences
Fiore	Giacomo	Lecturer Continuing	Music
Fischer	Arthur	Professor Emeritus	Mathematics
Fisher	Andrew	Professor	Earth & Planetary Sciences
Flanagan	Cormac	Professor	Computer Science and Engineering
Flanigan	Jeffrey	Assistant Professor	Computer Science and Engineering
Flegal	Arthur	Professor Emeritus	Microbiology and Environmental Toxicology
Flores	Caro	Assistant Professor	Philosophy

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Foley	Ryan	Associate Professor	Astronomy and Astrophysics
Foley	Mary	Professor Emeritus	"Performance, Play and Design"
Foreman	Doyle	Professor Emeritus	Art
Forsberg	Camilla	Professor	Biomolecular Engineering
Fortney	Jonathan	Professor	Astronomy and Astrophysics
Fox	Renee	Associate Professor	Literature
Fox	Jonathan	Professor Emeritus	Latin American and Latino Studies
Fox	Laurel	Professor Emeritus	Ecology and Evolutionary Biology
Fox Tree	Jean	Professor	Psychology
Frank	Dana	Professor Emeritus	History
Franko	Mark	Professor Emeritus	"Performance, Play and Design"
Freccero	Carla	Professor	Literature
Fredston	Alexa	Assistant Professor	Ocean Sciences
Fregoso	Oliver	Associate Professor	"Molecular, Cell, and Developmental Biology"
Fregoso	Rosa-Linda	Professor Emeritus	Latin American and Latino Studies
Fremont	Daniel	Assistant Professor	Computer Science and Engineering
Friedlaender	Ari	Professor	Ocean Sciences
Friedlander	Benjamin	Professor Emeritus	Electrical and Computer Engineering
Friedman	Daniel	Professor Emeritus	Economics
Fritsch	Gregory	Lecturer Continuing	"Performance, Play and Design"
Friz	Anna	Associate Professor	Film and Digital Media
Fukurai	Hiroshi	Professor	Sociology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Fung	Kwok-Chiu	Professor	Economics
Furniss	Amy	Associate Teaching Professor	Physics
Furtado	Nicole	Assistant Professor	History of Art and Visual Culture
Gaensler	Bryan	Professor	Astronomy and Astrophysics
Gallagher	Patricia	Professor	"Performance, Play and Design"
Galloway	Alison	Professor Emeritus	Anthropology
Galuszka	Frank	Professor Emeritus	Art
Garaud	Pascale	Professor	Applied Mathematics
Garcia-Luna-Aceves	Jose	Professor Emeritus	Computer Science and Engineering
Garrick-Bethell	Ian	Professor	Earth & Planetary Sciences
Gaspari	George	Professor Emeritus	Physics
Gehring	Jacqueline	Associate Teaching Professor	Politics
Getoor	Lise	Professor	Computer Science and Engineering
Gharakhloo	Roozbeh	Assistant Professor	Mathematics
Gianferrari	Filippo	Assistant Professor	Literature
Gibson	Margaret	Professor Emeritus	Education
Gifford-Gonzalez	Diane	Professor Emeritus	Anthropology
Giges	Robert	Lecturer Continuing	Porter College
Gilbert	Gregory	Professor	Environmental Studies
Gill	James	Professor Emeritus	Earth & Planetary Sciences
Gillette	Kristen	Assistant Teaching Professor	"Performance, Play and Design"
Gillman	Susan	Professor	Literature

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Gilpin	Leilani	Assistant Professor	Computer Science and Engineering
Ginther	Amy	Associate Professor	"Performance, Play and Design"
Ginzburg	Viktor	Professor	Mathematics
Giuliano	Laura	Professor	Economics
Gjerde	Per	Professor Emeritus	Psychology
Glass	Ronald	Professor Emeritus	Education
Glatzmaier	Gary	Professor Emeritus	Earth & Planetary Sciences
Glenn	Linda	Lecturer Continuing	Crown College
Gliessman	Stephen	Professor Emeritus	Environmental Studies
Glogovac-Smith	Chari	Assistant Professor	Film and Digital Media
Goff	Lynda	Professor Emeritus	Ecology and Evolutionary Biology
Goff	Robert	Professor Emeritus	Philosophy
Gomez	Marcella	Associate Professor	Applied Mathematics
Gómez-Rivas	Camilo	Associate Professor	Literature
Gong	Mia	Assistant Professor	Linguistics
Gong	Qi	Professor	Applied Mathematics
Gonzalez	Julie	Lecturer Continuing	Economics
Gonzalez	Jennifer	Professor	History of Art and Visual Culture
Gonzalez Pagani	Maria	Teaching Professor	Languages and Applied Linguistics
Gonzalez Reguero	Borja	Acting Associate Professor	Physical & Biological Sciences Division
Gonzalez-Rocha	Javier	Assistant Professor	Applied Mathematics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Goodman	David	Professor Emeritus	Environmental Studies
Gordon	David	Associate Professor	Politics
Gordon	June	Professor Emeritus	Education
Gori	Stefania	Professor	Physics
Gorman	Samantha	Assistant Teaching Professor	Computational Media
Gould	Deborah	Professor	Sociology
Grabe	Shelly	Professor	Psychology
Gray	Chris	Lecturer Continuing	Crown College
Gray	Herman	Professor Emeritus	Sociology
Graziani	Richard	Lecturer Continuing	Computer Science and Engineering
Green	Richard	Professor	Biomolecular Engineering
Greenberg	Miriam	Professor	Sociology
Greene	Jody	Professor	Literature
Gregor	Eduard	Lecturer Continuing	"Performance, Play and Design"
Greider	Carolyn	Professor	"Molecular, Cell, and Developmental Biology"
Grieson	Ronald	Professor Emeritus	Economics
Griggs	Gary	Professor	Earth & Planetary Sciences
Gruesz	Kirsten	Professor	Literature
Gruhn	Isebill	Professor Emeritus	Politics
Gu	Claire	Professor Emeritus	Electrical and Computer Engineering
Guevara	Daniel	Professor Emeritus	Philosophy
Guha Thakurta	Puragra	Professor	Astronomy and Astrophysics
Gurun	Giulia	Associate Teaching Professor	"Molecular, Cell, and Developmental Biology"

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Gustafson	Irene	Associate Professor	Film and Digital Media
Guthaus	Matthew	Professor	Computer Science and Engineering
Guthman	Julie	Professor Emeritus	Sociology
Gutierrez	Kathleen	Assistant Professor	History
Guzman	Viviana	Lecturer Continuing	Music
Gwyn	Melissa	Associate Professor	Art
Haas	Lisbeth	Professor Emeritus	History
Haber	Howard	Professor Emeritus	Physics
Habicht Mauche	Judith	Professor Emeritus	Anthropology
Haddad	Brent	Professor	Environmental Studies
Hagen	Joy	Lecturer Continuing	Writing Program
Hagen	Joy	Lecturer Continuing	Rachel Carson College
Hain	Mathis	Associate Professor	Earth & Planetary Sciences
Hale	Galina	Professor	Economics
Halk	Erica	Lecturer Continuing	Writing Program
Hamel	Gildas	Teaching Professor Emeritus	History
Hamilton	Charles	Lecturer Continuing	Music
Hamilton	Roxanne	Senior Lecturer Continuing	Writing Program
Hammack	Phillip	Professor	Psychology
Hammond	Nicol	Associate Professor	Music
Hance	Michael	Associate Professor	Physics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Haney	Craig	Professor	Psychology
Hankamer	Jorge	Professor Emeritus	Linguistics
Haraway	Donna	Professor Emeritus	History of Consciousness
Harding	Susan	Professor Emeritus	Anthropology
Harrington	David	Professor Emeritus	Psychology
Harris	Yolande	Assistant Teaching Professor	Music
Harrison	David	Assistant Teaching Professor	Computer Science and Engineering
Hartzog	Grant	Professor	"Molecular, Cell, and Developmental Biology"
Hasan-Aslih	Siwar	Assistant Professor	Psychology
Hausman	Hannah	Assistant Professor	Psychology
Haussler	David	Professor	Biomolecular Engineering
Hauter	Ashwak	Assistant Professor	Anthropology
Hawthorne	Camilla	Associate Professor	Sociology
Hawthorne	Camilla	Associate Professor	Critical Race & Ethnic Studies
Hay	John	Professor Emeritus	History of Art and Visual Culture
Heady	Kristen	Lecturer Continuing	Ecology and Evolutionary Biology
Heady	Kristen	Lecturer Continuing	Rachel Carson College
Heald	Abigail	Lecturer Continuing	Literature
Heald	Abigail	Lecturer Continuing	Stevenson College
Heckman	Alma	Associate Professor	History
Hedrick	Charles	Professor	History

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Emeritus	
Helmbold	David	Professor Emeritus	Computer Science and Engineering
Helmer	Kimberly	Teaching Professor	Writing Program
Hendricks	Dianne	Associate Teaching Professor	Biomolecular Engineering
Hendricks	Margo	Professor Emeritus	Literature
Hernandez Garavito	Carla	Assistant Professor	Anthropology
Hershatter	Gail	Professor Emeritus	History
Hester	Karlton	Professor	Music
Hibbert Jones	Dee	Professor	Art
Hilberg	Soleste	Associate Teaching Professor	Education
Hinck	Lindsay	Professor	"Molecular, Cell, and Developmental Biology"
Hinegardner	Ralph	Professor Emeritus	Ecology and Evolutionary Biology
Hinz	Philip	Professor	Astronomy and Astrophysics
Holbrook	Bryan	Lecturer Continuing	Psychology
Holl	Karen	Professor	Environmental Studies
Hollander	Eli	Professor Emeritus	Film and Digital Media
Holman	Theodore	Professor	Chemistry and Biochemistry
Hong	Christine	Professor	Critical Race & Ethnic Studies
Hong	Christine	Professor	Literature
Horne	Jennifer	Associate Professor	Film and Digital Media
Hoshi	Saori	Assistant Professor	Languages and Applied Linguistics
Houghton	Edward	Professor Emeritus	Music
Hourigan	Jeremy	Professor	Earth & Planetary Sciences

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Hoversten	Liv	Assistant Professor	Psychology
Hoy	David	Professor Emeritus	Philosophy
Hu	Chenyue	Assistant Professor	Economics
Hu	Liting	Assistant Professor	Computer Science and Engineering
Hu	Minghui	Associate Professor	History
Hughey	Richard	Professor	Computer Science and Engineering
Hughey	Richard	Professor	Biomolecular Engineering
Huh	Tae Myung	Assistant Professor	Electrical and Computer Engineering
Hull	Akasha	Professor Emeritus	Feminist Studies
Hunnicutt	Fred	Professor Emeritus	Art
Hunter	Donna	Professor Emeritus	History of Art and Visual Culture
Hutchison	Michael	Professor Emeritus	Economics
Hwang	Hyesung Grace	Assistant Professor	Psychology
Hyun	Sangwon	Assistant Professor	Statistics
Ife	Fahima	Associate Professor	Critical Race & Ethnic Studies
Illingworth	Garth	Professor Emeritus	Astronomy and Astrophysics
Im	Sungjin	Associate Professor	Computer Science and Engineering
Imara	Nia	Assistant Professor	Astronomy and Astrophysics
Ioannidis	Alexander	Assistant Professor	Biomolecular Engineering
Ioannidis	Nilah	Assistant Professor	Applied Mathematics
Irion	Robert	Teaching Professor	Science Communication

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Emeritus	
Irvine	Erin	Lecturer Continuing	Music
Isaacson	Michael	Professor Emeritus	Electrical and Computer Engineering
Isbister	Katherine	Professor	Computational Media
Isbister	John	Professor Emeritus	Economics
Ito	Junko	Professor Emeritus	Linguistics
Jackson	Jonathan	Assistant Professor	Art
Jankiewicz	Kasia	Assistant Professor	Mathematics
Jansen	Virginia	Professor Emeritus	History of Art and Visual Culture
Jeltema	Tesla	Professor	Physics
Jensen Clem	Rebecca	Associate Professor	Astronomy and Astrophysics
Jibrin	Rekia	Assistant Professor	Education
Jinnah	Sikina	Professor	Environmental Studies
Johns	Janet	Lecturer Continuing	Education
Johnson	Robert	Professor	Physics
Johnston	Caitlin	Lecturer Continuing	Education
Johnstone	Timothy	Associate Professor	Chemistry and Biochemistry
Jones	Catherine	Associate Professor	History
Jones	Kevin	Associate Teaching Professor	Economics
Jones	Burton	Professor Emeritus	Astronomy and Astrophysics
Jones	David	Professor Emeritus	Music
Jonsson	Vanessa	Assistant	Biomolecular Engineering

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Professor	
Jordan	John	Professor Emeritus	Literature
Josephson	Colleen	Assistant Professor	Electrical and Computer Engineering
Josephson	Colleen	Assistant Professor	Computer Science and Engineering
Julien	Isaac	Professor	Arts Division
Julien	Isaac	Professor	History of Consciousness
Jullig	Richard	Lecturer Continuing	Computer Science and Engineering
Jurica	Melissa	Professor	"Molecular, Cell, and Developmental Biology"
Kamakaka	Rohinton	Professor	"Molecular, Cell, and Developmental Biology"
Kamehiro	Stacy	Professor	History of Art and Visual Culture
Kamieniecki	Sheldon	Professor Emeritus	Environmental Studies
Kang	Sung Mo	Professor Emeritus	Electrical and Computer Engineering
Kapuscinski	Anne	Professor	Environmental Studies
Kara	Selmin	Associate Professor	Film and Digital Media
Kareem	Jamila	Associate Teaching Professor	Writing Program
Karlic	Karolina	Associate Professor	Art
Karplus	Kevin	Professor Emeritus	Biomolecular Engineering
Kass	Jesse	Associate Professor	Mathematics
Katznelson	Jonathan	Senior Lecturer Continuing	Applied Mathematics
Katznelson	Jonathan	Senior Lecturer Continuing	Statistics
Kawamoto	Alan	Professor Emeritus	Psychology
Kay	Kathleen	Professor	Ecology and Evolutionary Biology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Kehler	Edward	Lecturer Continuing	Stevenson College
Kehler	Edward	Lecturer Continuing	History
Keilen	Sean	Professor	Literature
Keliiaa	Caitlin	Assistant Professor	History
Kelley	Joanna	Professor	Ecology and Evolutionary Biology
Kelley	Al	Professor Emeritus	Mathematics
Kellogg	Douglas	Professor	"Molecular, Cell, and Developmental Biology"
Kelly	Jennifer	Associate Professor	Feminist Studies
Kelly	Jennifer	Associate Professor	Critical Race & Ethnic Studies
Kelly	Patricia	Lecturer Continuing	Cowell College
Kemper	Jonaya	Assistant Teaching Professor	"Performance, Play and Design"
Kenez	Peter	Professor Emeritus	History
Kiesling	Bruce	Associate Professor	Music
Kikon	Dolly	Professor	Anthropology
Kilpatrick	Auston	Professor	Ecology and Evolutionary Biology
Kim	Daniel	Assistant Professor	Biomolecular Engineering
Kim	Euiseok	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Kim	Gueyon	Assistant Professor	Economics
Kim	Hanna	Assistant Professor	Psychology
Kim	Lahn	Associate Professor	Film and Digital Media
Kim	Hi	Professor	Music
Kimmey	Jacqueline	Assistant Professor	Microbiology and Environmental Toxicology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
King	Robin	Lecturer Continuing	Oakes College
King	Robin	Senior Lecturer Continuing	Writing Program
Kinoshita	Sharon	Professor	Literature
Kissell	Rene	Assistant Professor	Education
Klahn	Norma	Professor Emeritus	Literature
Kleinberg Biehl	Jody	Associate Teaching Professor	Humanities Division
Kletzer	Kenneth	Professor	Economics
Kletzer	Lori	Professor	Economics
Kliger	David	Professor Emeritus	Chemistry and Biochemistry
Knisely	Lindsay	Lecturer Continuing	Oakes College
Knisely	Lindsay	Senior Lecturer Continuing	Writing Program
Knittle	Elise	Professor Emeritus	Earth & Planetary Sciences
Kobayashi	Nobuhiko	Professor	Electrical and Computer Engineering
Koch	Paul	Professor	Earth & Planetary Sciences
Kolaitis	Phokion	Professor Emeritus	Computer Science and Engineering
Kolla	Alexandra	Assistant Professor	Computer Science and Engineering
Konopelski	Joseph	Professor Emeritus	Chemistry and Biochemistry
Koo	David	Professor Emeritus	Astronomy and Astrophysics
Kottas	Athanasios	Professor	Statistics
Kramer	Alejandra	Lecturer Continuing	Anthropology
Kreps	Anne	Associate Professor	History

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Kroeker	Kristy	Professor	Ecology and Evolutionary Biology
Kudela	Raphael	Professor	Ocean Sciences
Kuper	Lindsey	Assistant Professor	Computer Science and Engineering
Kurniawan	Sri	Professor	Computational Media
Kyo	Rosaline	Assistant Professor	History of Art and Visual Culture
Ladusaw	William	Professor Emeritus	Linguistics
Lain	Stephanie	Lecturer Continuing	Languages and Applied Linguistics
Lam	Phoebe	Professor	Ocean Sciences
Lamborg	Carl	Professor	Ocean Sciences
Lanam	Faith	Lecturer Continuing	Music
Landesman	Edward	Professor Emeritus	Mathematics
Lane	Ian	Associate Professor	Computer Science and Engineering
Lane	Madeline	Lecturer Continuing	Writing Program
Langdale	Glyn	Senior Lecturer Continuing	History of Art and Visual Culture
Langhout	Regina	Professor	Psychology
Langridge	Ruth	Lecturer Continuing	Legal Studies
Laporte	Leo	Professor Emeritus	Earth & Planetary Sciences
Larive	Cynthia	Professor	Chemistry and Biochemistry
Lariviere	Ingrid	Lecturer Continuing	Porter College
Lariviere	Ingrid	Senior Lecturer Continuing	Writing Program
Larkin	Bruce	Professor Emeritus	Politics
Larrabee	Tracy	Professor Emeritus	Computer Science and Engineering

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Lashaw	Amanda	Lecturer Continuing	Education
Lau	Kimberly	Professor	Literature
Law	Jess	Assistant Professor	Linguistics
Lay	Christopher	Lecturer Continuing	Environmental Studies
Lay	Thorne	Professor Emeritus	Earth & Planetary Sciences
Lazo	Rodrigo	Professor	Literature
Lazzati	Natalia	Associate Professor	Economics
Leanos	John	Professor	Film and Digital Media
Leaper	Campbell	Professor	Psychology
Leauthaud-Harnett	Alexie	Associate Professor	Astronomy and Astrophysics
Leboeuf	Burney	Professor Emeritus	Ecology and Evolutionary Biology
Lebron	Marisol	Associate Professor	Feminist Studies
Lebron	Marisol	Associate Professor	Critical Race & Ethnic Studies
Lederman	David	Professor	Physics
Lee	David	Assistant Professor	Computational Media
Lee	Cynthia	Associate Professor	"Performance, Play and Design"
Lee	Jeremy	Associate Teaching Professor	"Molecular, Cell, and Developmental Biology"
Lee	Dongwook	Professor	Applied Mathematics
Lee	Herbie	Professor	Statistics
Lee	Jimin	Professor	Art
Lee	Ju Hee	Professor	Statistics
Leicester	H	Professor Emeritus	Literature
Leikin	Anatole	Professor Emeritus	Music

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Leiva	Fernando	Professor	Latin American and Latino Studies
Lesani	Mohsen	Associate Professor	Computer Science and Engineering
Leslie	Juliana	Lecturer Continuing	Kresge College
Letourneau	Deborah	Professor Emeritus	Environmental Studies
Leung	Michael	Associate Professor	Economics
Levine	Bruce	Professor Emeritus	History
Levinson	Robert	Professor Emeritus	Computer Science and Engineering
Levitow	Jonathan	Lecturer Continuing	Languages and Applied Linguistics
Lewis	Debra	Professor	Mathematics
Lewis	Cynthia	Professor Emeritus	Education
Li	Richard	Assistant Professor	Statistics
Li	Jessie	Associate Professor	Economics
Li	Yat	Professor	Chemistry and Biochemistry
Limbrick	Peter	Professor	Film and Digital Media
Lin	Audrie	Assistant Professor	Microbiology and Environmental Toxicology
Lin	Longzhi	Professor	Mathematics
Lin	Douglas	Professor Emeritus	Astronomy and Astrophysics
Linger	Daniel	Professor Emeritus	Anthropology
Lipschutz	Ronnie	Professor Emeritus	Politics
Litz	Heiner	Associate Professor	Computer Science and Engineering
Liu	Yang	Assistant Professor	Computer Science and Engineering
Livermon	Xavier	Associate Professor	Critical Race & Ethnic Studies

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Locks	Norman	Professor Emeritus	Art
Lodha	Suresh	Professor Emeritus	Computer Science and Engineering
Loeffler	Toby	Senior Lecturer Continuing	Writing Program
Loerch	Sarah	Assistant Professor	Chemistry and Biochemistry
Loik	Michael	Professor	Environmental Studies
Lokey	Robert	Professor	Chemistry and Biochemistry
London	Rebecca	Professor	Sociology
Lonetree	Amy	Professor	History
Long	Darrell	Professor Emeritus	Baskin Engineering
Longo	Philip	Lecturer Continuing	Writing Program
Lopez	Leslie	Lecturer Continuing	Oakes College
Lopez Vargas	Kristian	Associate Professor	Economics
Lord	Charles	Professor Emeritus	Film and Digital Media
Lowe	Todd	Professor	Biomolecular Engineering
Lu	Flora	Professor	Environmental Studies
Lubeck	Paul	Professor Emeritus	Sociology
Lund	Robert	Professor	Statistics
Lunine	Brij	Senior Lecturer Continuing	Writing Program
Lusztig	Irene	Professor	Film and Digital Media
Ly	Boreth	Associate Professor	History of Art and Visual Culture
Lyon	Bruce	Professor Emeritus	Ecology and Evolutionary Biology
Lyons	Lauren	Assistant Professor	Philosophy

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Mac Claren	Kevin	Lecturer Continuing	Stevenson College
Macias-Munoz	Aide	Assistant Professor	Ecology and Evolutionary Biology
Macintosh	Bruce	Professor	Astronomy and Astrophysics
Mackey	Nathaniel	Professor Emeritus	Literature
Mackey	Pascale	Professor Emeritus	Literature
MacMillan	John	Professor	Chemistry and Biochemistry
Madau	Piero	Professor	Astronomy and Astrophysics
Magalhães	Marina	Assistant Professor	"Performance, Play and Design"
Mahajan	Nidhi	Associate Professor	Anthropology
Majzler	Robert	Lecturer Continuing	Psychology
Majzler	Robert	Lecturer Continuing	John R. Lewis College
Malan	Roy	Lecturer Continuing	Music
Mallett	Christopher	Lecturer Continuing	Music
Malone	Sandra	Lecturer Continuing	Languages and Applied Linguistics
Manago	Adriana	Associate Professor	Psychology
Manduchi	Roberto	Professor	Computer Science and Engineering
Mangel	Marc	Professor Emeritus	Applied Mathematics
Mantey	Patrick	Professor Emeritus	Electrical and Computer Engineering
Margon	Bruce	Professor Emeritus	Astronomy and Astrophysics
Marinescu	Razvan	Assistant Professor	Computer Science and Engineering
Marinovic	Baldo	Lecturer Continuing	Ecology and Evolutionary Biology
Marion	Justin	Professor	Economics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Marriott	David	Professor Emeritus	History of Consciousness
Marsh	George	Lecturer Continuing	Music
Martin	Daisy	Lecturer Continuing	Education
Martin	Laura	Lecturer Continuing	Porter College
Martinez	Ari	Assistant Professor	Ecology and Evolutionary Biology
Martinez	Carlos	Assistant Professor	Latin American and Latino Studies
Martinez	Cinthya	Assistant Professor	Latin American and Latino Studies
Martinez	Alma	Professor Emeritus	"Performance, Play and Design"
Martinez Iriarte	Julian	Assistant Professor	Economics
Martinez Leal	Enrique	Associate Professor	Art
Martinez-Echazabal	Lourdes	Professor Emeritus	Latin American and Latino Studies
Martinez-Galarce	Marco	Lecturer Continuing	Porter College
Mascarenhas Menna Barreto	Jorge	Assistant Professor	Art
Mascharak	Pradip	Professor Emeritus	Chemistry and Biochemistry
Mason	Geoffrey	Professor Emeritus	Mathematics
Massaro	Dominic	Professor Emeritus	Psychology
Massoud	Mark Fathi	Professor	Politics
Mateas	Michael	Professor	Computational Media
Matera	Marc	Professor	History
Mathews	Andrew	Professor	Anthropology
Mathiowetz	Dean	Associate Professor	Politics
Matute-Bianchi	Maria	Professor	Education

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Emeritus	
Max	Claire	Professor Emeritus	Astronomy and Astrophysics
Mayer	Melanie	Professor Emeritus	Psychology
McCarthy	Michael	Associate Professor	Sociology
McCarthy	Matthew	Professor	Ocean Sciences
Mccloskey	James	Professor Emeritus	Linguistics
Mccullen	Christie	Lecturer Continuing	Sociology
Mcdade	Jennie	Professor Emeritus	Art
Mcdowell	Charles	Professor Emeritus	Computer Science and Engineering
McGuinness	Aims	Associate Professor	History
McGuire	Stephen	Assistant Professor	Electrical and Computer Engineering
Mcguire	Grant	Associate Professor	Linguistics
McKay	Steven	Professor	Sociology
Mckinnie	Shaun	Assistant Professor	Chemistry and Biochemistry
Mclaughlin	Barry	Professor Emeritus	Psychology
McNamara	Megan	Lecturer Continuing	Sociology
Mehta	Rita	Professor	Ecology and Evolutionary Biology
Meininger	Aaron	Lecturer Continuing	Economics
Meister	Robert	Professor	History of Consciousness
Menendez	David	Assistant Professor	Psychology
Mercer	Jaron	Assistant Professor	Chemistry and Biochemistry
Merchant	Tanya	Associate Professor	Music

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Mester	Armin	Professor Emeritus	Linguistics
Michaillat	Pascal	Associate Professor	Economics
Michals	Sarah	Lecturer Continuing	Writing Program
Miga	Karen	Associate Professor	Biomolecular Engineering
Miles	Gary	Professor Emeritus	History
Miljkovic	Nada	Lecturer Continuing	Crown College
Miller	Kyle	Assistant Professor	Baskin Engineering
Miller	Timothy	Lecturer Continuing	Ecology and Evolutionary Biology
Miller	Ethan	Professor Emeritus	Computer Science and Engineering
Miller	Joseph	Professor Emeritus	Astronomy and Astrophysics
Miller	Leta	Professor Emeritus	Music
Miller	Robert	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Millhauser	Glenn	Professor	Chemistry and Biochemistry
Millman	Marcia	Professor Emeritus	Sociology
Milutinovic	Dejan	Professor	Electrical and Computer Engineering
Mitchell	Nicholas	Associate Professor	Feminist Studies
Mitchell	Nicholas	Associate Professor	Critical Race & Ethnic Studies
Mitchell	Katharyne	Professor	Sociology
Mogannam	Jennifer	Assistant Professor	Critical Race & Ethnic Studies
Monaghan	Sean	Lecturer Continuing	Art
Monard	Francois	Associate Professor	Mathematics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Monroe	James	Professor	Anthropology
Monsen	Katie	Lecturer Continuing	Environmental Studies
Monsen	Katie	Lecturer Continuing	Rachel Carson College
Montazeri	Niloofar	Assistant Teaching Professor	Computer Science and Engineering
Montenegro	Maywa	Associate Professor	Environmental Studies
Montgomery	Richard	Professor Emeritus	Mathematics
Moodie	Megan	Professor	Anthropology
Moore	Andrew	Professor	Ocean Sciences
Morales Almazan	Pedro	Associate Teaching Professor	Mathematics
Moreno	Alli	Assistant Professor	Ocean Sciences
Moreno	Danna	Supervisor of Teacher Education Continuing	Education
Morse	Jaimie	Assistant Professor	Sociology
Moschkovich	Judit	Professor Emeritus	Education
Mosqueda	Eduardo	Associate Professor	Education
Mota	Thiago	Assistant Professor	History
Moulds	Gerald	Lecturer Continuing	Computer Science and Engineering
Mumma	Gordon	Professor Emeritus	Music
Murray	Soraya	Associate Professor	Film and Digital Media
Murray	Derek	Professor	History of Art and Visual Culture
Murray-Clay	Ruth	Professor	Astronomy and Astrophysics
Murty	Madhavi	Associate	Sociology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Professor	
Musacchio	John	Professor	Computer Science and Engineering
Najera Ramirez	Olga	Professor Emeritus	Anthropology
Narath	Albert	Associate Professor	History of Art and Visual Culture
Narayan	Onuttom	Professor	Physics
Naru	Akua	Assistant Professor	Music
Nash	Mark	Professor	History of Consciousness
Nash	Mark	Professor	Arts Division
Nath	Sagnik	Assistant Teaching Professor	Computer Science and Engineering
Neu	Jerome	Professor Emeritus	Humanities Division
Neuman	Dard	Associate Professor	Music
Newberry	Andrew	Professor Emeritus	Ecology and Evolutionary Biology
Newberry	Ellen	Senior Lecturer Continuing	Writing Program
Nichols	Shawn	Lecturer Continuing	Politics
Nichols	Robert	Professor	History of Consciousness
Niedzwiecki	Sara	Associate Professor	Politics
Nielsen	Jason	Professor	Physics
Nimmo	Francis	Professor	Earth & Planetary Sciences
Niumeitolu	Fuifuilupe	Assistant Professor	Critical Race & Ethnic Studies
Nolan	Daniel	Professor	Philosophy
Noller	Harry	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Nygaard	Loisa	Professor Emeritus	Literature
Obraczka	Katia	Professor	Computer Science and Engineering

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Ocampo-Penuela	Natalia	Assistant Professor	Environmental Studies
Ochoa	Marcia	Associate Professor	"Performance, Play and Design"
Ochoa	Marcia	Associate Professor	Critical Race & Ethnic Studies
Oelze	Vicky	Associate Professor	Anthropology
Ogawa	Rodney	Professor Emeritus	Education
O'Hara	Matt	Professor	History
Okamoto	Shigeko	Professor Emeritus	Languages and Applied Linguistics
Oliver	Scott	Professor	Chemistry and Biochemistry
Olsen	Brad	Professor Emeritus	Education
O'Malley	Gregory	Professor	History
Orlandi	Nico	Professor	Philosophy
Orlando	David	Associate Teaching Professor Emeritus	Languages and Applied Linguistics
Ortiz	Charles	Professor Emeritus	Ecology and Evolutionary Biology
Otte	Richard	Professor Emeritus	Philosophy
Ottemann	Karen	Professor	Microbiology and Environmental Toxicology
Owen	Stephen	Lecturer Continuing	Economics
Padgett	Jaye	Professor	Linguistics
Paiement	Nicole	Professor Emeritus	Music
Palkovacs	Eric	Professor	Ecology and Evolutionary Biology
Palmer	Alison Laurie	Professor Emeritus	Art
Pan	Jiayin	Assistant Professor	Mathematics
Pancheva	Roumyana	Professor	Linguistics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Pandey	Annapurna	Lecturer Continuing	Anthropology
Pandey	Triloki	Professor Emeritus	Anthropology
Pang	Alex	Professor	Computer Science and Engineering
Papadopoulos	Dimitris	Professor	History of Consciousness
Parker	Paul	Assistant Professor	Statistics
Parker	Ingrid	Professor	Ecology and Evolutionary Biology
Parker	Jennifer	Professor	Art
Parmeter	Sarah-Hope	Senior Lecturer Continuing	Writing Program
Parry	Kyle	Associate Professor	History of Art and Visual Culture
Parsa	Christina	Lecturer Continuing	Computer Science and Engineering
Parsa	Leila	Professor	Electrical and Computer Engineering
Partch	Carrie	Professor	Chemistry and Biochemistry
Pasotti	Eleonora	Professor	Politics
Patel	Shankari	Lecturer Continuing	Latin American and Latino Studies
Paten	Benedict	Professor	Biomolecular Engineering
Patnode	Michael	Assistant Professor	Microbiology and Environmental Toxicology
Paytan	Adina	Professor	Earth & Planetary Sciences
Peacock	Laurel	Lecturer Continuing	Porter College
Pearce	Daniel	Lecturer Continuing	Kresge College
Pearlman	Cid	Lecturer Continuing	"Performance, Play and Design"
Pease-Alvarez	Lucinda	Professor Emeritus	Education
Pedrotti	Kenneth	Professor	Electrical and Computer Engineering
Pedroza	Juan	Associate Professor	Sociology
Pepper	James	Professor	Environmental Studies

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Emeritus	
Perera	Nirshan	Lecturer Continuing	Writing Program
Perez	Justin	Assistant Professor	Latin American and Latino Studies
Perez	Ariel	Lecturer Continuing	Languages and Applied Linguistics
Perks	Micah	Professor	Literature
Petersen	Stephen	Associate Teaching Professor	Electrical and Computer Engineering
Pettigrew	Thomas	Professor Emeritus	Psychology
Pham	Josephine	Assistant Professor	Education
Philpott	Stacy	Professor	Environmental Studies
Pico	Tamara	Assistant Professor	Earth & Planetary Sciences
Pinho	Patricia	Professor	Latin American and Latino Studies
Pinsky	Malin	Associate Professor	Ecology and Evolutionary Biology
Pittermann	Jarmila	Professor	Ecology and Evolutionary Biology
Poblete	Juan	Professor	Literature
Pogson	Grant	Professor Emeritus	Ecology and Evolutionary Biology
Pohl	Ira	Professor Emeritus	Computer Science and Engineering
Polecritti	Cynthia	Professor Emeritus	History
Polissar	Pratigya	Professor	Ocean Sciences
Polito	Michael	Associate Professor	Ocean Sciences
Polzak	Kailani	Assistant Professor	History of Art and Visual Culture
Pommerenke	Kai	Lecturer Continuing	Economics
Poodry	Clifton	Professor Emeritus	"Molecular, Cell, and Developmental Biology"

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Porter	Eric	Professor	History
Potts	Donald	Professor Emeritus	Ecology and Evolutionary Biology
Pourmand	Nader	Professor	Biomolecular Engineering
Prado	Raquel	Professor	Statistics
Pratkanis	Anthony	Professor Emeritus	Psychology
Pratorius	Christopher	Lecturer Continuing	Music
Prelinger	Richard	Professor Emeritus	Film and Digital Media
Prencipe	Maria	Senior Lecturer Continuing	Languages and Applied Linguistics
Press	Daniel	Professor Emeritus	Environmental Studies
Primack	Joel	Professor Emeritus	Physics
Prochaska	Jason	Professor	Astronomy and Astrophysics
Profumo	Stefano	Professor	Physics
Pudup	Mary Beth	Professor Emeritus	Sociology
Puig de la Bellacasa	María	Professor	History of Consciousness
Pullum	Geoffrey	Professor Emeritus	Linguistics
Qian	Chen	Professor	Computer Science and Engineering
Qing	Jie	Professor	Mathematics
Quinn	Andi	Assistant Professor	Computer Science and Engineering
Quintana Morales	Erendira	Assistant Professor	Anthropology
Rahal	Danny	Assistant Professor	Psychology
Raila	Hannah	Assistant Teaching Professor	Psychology
Raimondi	Peter	Professor	Ecology and Evolutionary Biology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Rajan	S Ravi	Professor	Environmental Studies
Ramirez	Arthur	Professor	Physics
Ramirez	Catherine	Professor	Latin American and Latino Studies
Ramirez	Renya	Professor	Anthropology
Ramirez-Ruiz	Enrico	Professor	Astronomy and Astrophysics
Raskatov	Evgenij	Professor	Chemistry and Biochemistry
Ratiu	Tudor	Professor Emeritus	Mathematics
Ravelo	Ana	Professor	Ocean Sciences
Read	Benjamin	Professor	Politics
Reardon	Jennifer	Professor	Sociology
Reigh	Emily	Assistant Professor	Education
Reilly	Sean	Lecturer Continuing	Ecology and Evolutionary Biology
Reinarman	Craig	Professor Emeritus	Sociology
Renau	Jose	Professor	Computer Science and Engineering
Reti	Jay	Assistant Teaching Professor	Anthropology
Rettenwender	Thomas	Lecturer Continuing	Rachel Carson College
Rexach	Michael	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Rezki	Zouheir	Associate Professor	Electrical and Computer Engineering
Rich	B Ruby	Professor Emeritus	Film and Digital Media
Richards	Alan	Professor Emeritus	Environmental Studies
Richmond	Dustin	Assistant Professor	Computer Science and Engineering
Rifaqat	Zeb	Lecturer Continuing	Stevenson College
Riley	Alicia	Assistant Professor	Sociology
Ringland	Kathryn	Assistant	Computational Media

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Professor	
Ritz	Steven	Professor	Physics
Rivas	Cecilia	Associate Professor	Latin American and Latino Studies
Rizzo Martinez	Martin	Assistant Professor	Film and Digital Media
Robertson	Kyle	Lecturer Continuing	Philosophy
Robertson	Brant	Professor	Astronomy and Astrophysics
Robinson	Jonathan	Professor	Economics
Robinson	Forrest	Professor Emeritus	Humanities Division
Roby	Pamela	Professor Emeritus	Sociology
Rockosi	Constance	Professor	Astronomy and Astrophysics
Rodriguez	Russell	Assistant Professor	Music
Rodriguez-Montero	Pamela	Assistant Professor	"Performance, Play and Design"
Rofel	Lisa	Professor Emeritus	Anthropology
Rogoff	Barbara	Professor	Psychology
Rohmer	Carine	Lecturer Continuing	Languages and Applied Linguistics
Rolandi	Marco	Professor	Electrical and Computer Engineering
Rollins	Lisa Marie	Assistant Professor	"Performance, Play and Design"
Romero	Matthew	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Roos	Norvid	Professor Emeritus	"Performance, Play and Design"
Roper	Richard	Lecturer Continuing	Music
Roth	Paul	Professor Emeritus	Philosophy
Rubin	Seth	Professor	Chemistry and Biochemistry
Ruiz	Susana	Associate Professor	Film and Digital Media

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Ruotolo	Vanessa	Lecturer Continuing	Music
Russell	Shelbi	Assistant Professor	Biomolecular Engineering
Rutherford	Danilyn	Professor Emeritus	Anthropology
Ruvalcaba	Christian	Assistant Professor	Languages and Applied Linguistics
Rysling	Amanda	Associate Professor	Linguistics
Sack	Warren	Professor	Film and Digital Media
Sadjadpour	Hamid	Professor	Electrical and Computer Engineering
Saha	Subhra	Lecturer Continuing	Economics
Sahota	G.S.	Associate Professor	Literature
Saijo	Hikaru	Associate Professor	Economics
Salama	Sofie	Acting Professor	"Molecular, Cell, and Developmental Biology"
Sallum	Steph	Assistant Professor	Astronomy and Astrophysics
Saltikov	Chad	Professor	Microbiology and Environmental Toxicology
Samaha	Jason	Associate Professor	Psychology
Samaniego De La Parra	Brenda	Assistant Professor	Economics
Samuels	Jessica	Lecturer Continuing	Stevenson College
Sanchez	Laura	Professor	Chemistry and Biochemistry
Sanders	Beren	Associate Professor	Mathematics
Sanders-Self	Melissa	Lecturer Continuing	Literature
Sanfelice	Ricardo	Professor	Electrical and Computer Engineering
Sanfilippo	Brenda	Lecturer Continuing	Writing Program
Sanford	Sarah	Assistant Teaching	Art

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Professor	
Sanford	Jeremy	Professor	"Molecular, Cell, and Developmental Biology"
Sanso	Bruno	Professor	Statistics
Santos	Dorothy	Assistant Teaching Professor	Art
Sarker	Pallab	Assistant Professor	Environmental Studies
Savage	Heather	Professor	Earth & Planetary Sciences
Saxton	William	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Schaefer	Neil	Lecturer Continuing	Rachel Carson College
Schaeffer	Felicity	Professor	Feminist Studies
Schaeffer	Felicity	Professor	Critical Race & Ethnic Studies
Schechter	John	Professor Emeritus	Music
Scheie	Danny	Professor Emeritus	"Performance, Play and Design"
Schilz	Lisa	Lecturer Continuing	Writing Program
Schlag	Martine	Professor Emeritus	Computer Science and Engineering
Schlesinger	Zack	Professor Emeritus	Physics
Schmidt	Holger	Professor	Electrical and Computer Engineering
Schneider	Tsim	Associate Professor	Anthropology
Schoenman	Roger	Associate Professor	Politics
Schonbek	Maria	Professor Emeritus	Mathematics
Schumaker	Matthew	Assistant Professor	Music
Schumm	Bruce	Professor	Physics
Schwartz	Susan	Professor Emeritus	Earth & Planetary Sciences
Scott	William	Professor	Chemistry and Biochemistry

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Scott	Judith	Professor Emeritus	Education
Seeger	Andrea	Lecturer Continuing	Oakes College
Seiden	Abraham	Professor Emeritus	Physics
Seif El-Nasr	Magy	Professor	Computational Media
Selden	Daniel	Professor Emeritus	Literature
Serres	Thomas	Associate Professor	Politics
Seth	Vanita	Associate Professor	Politics
Seto	Katherine	Associate Professor	Environmental Studies
Seymour	Travis	Professor	Psychology
Shaghoulian	Edgar	Assistant Professor	Physics
Shaikh	Juned Noor	Associate Professor	History
Shange	Savannah	Associate Professor	Anthropology
Shanken	Edward	Professor	Arts Division
Shanks	James	Lecturer Continuing	"Molecular, Cell, and Developmental Biology"
Shapiro	Beth	Professor	Ecology and Evolutionary Biology
Shapiro	Helen	Professor Emeritus	Sociology
Sharf	Tal	Assistant Professor	Biomolecular Engineering
Shariati	Ali	Assistant Professor	Biomolecular Engineering
Sharma	Upasna	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Sharma	Kriti	Associate Professor	Critical Race & Ethnic Studies
Shastry	B Sriram	Professor	Physics
Shaw	Carolyn	Professor Emeritus	Anthropology

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Shaw	Jerome	Professor Emeritus	Education
Shearer	Heather	Teaching Professor	Writing Program
Shennan	Carol	Professor Emeritus	Environmental Studies
Shenoy	Ajay	Associate Professor	Economics
Sher	Alexander	Professor	Physics
Sherlock	Madeline	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Shimizu	Celine	Professor	Film and Digital Media
Sichel	Ivy	Professor	Linguistics
Sikandar	Shaheen	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Silva	Denise	Senior Lecturer Continuing	Writing Program
Silver	Kiva	Lecturer Continuing	Writing Program
Silver	Kiva	Lecturer Continuing	History
Silver	Kiva	Lecturer Continuing	Stevenson College
Silver	Eli	Professor Emeritus	Earth & Planetary Sciences
Silver	Mary	Professor Emeritus	Ocean Sciences
Simons	Julie	Associate Teaching Professor	Applied Mathematics
Sinclair	Emily	Lecturer Continuing	Music
Singaram	Bakthan	Professor Emeritus	Chemistry and Biochemistry
Singh	Nirvikar	Professor	Economics
Sizemore	Anne	Assistant Teaching Professor	Chemistry and Biochemistry
Skemer	Andrew	Professor	Astronomy and Astrophysics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Skenazy	Paul	Professor Emeritus	Literature
Skrajna	Aleksandra	Assistant Professor	Chemistry and Biochemistry
Sloan	Lisa	Professor Emeritus	Earth & Planetary Sciences
Smith	Joshua	Assistant Professor	Ecology and Evolutionary Biology
Smith	Adam	Associate Professor	Computational Media
Smith	Amanda	Associate Professor	Literature
Smith	David	Professor	Physics
Smith	Donald	Professor	Microbiology and Environmental Toxicology
Smith	Graeme	Professor	Astronomy and Astrophysics
Solt	Susan	Professor	"Performance, Play and Design"
Sorensen	Tyler	Assistant Professor	Computer Science and Engineering
Soussloff	Catherine	Professor Emeritus	History of Art and Visual Culture
Souza	Abel	Assistant Professor	Computer Science and Engineering
Spafford	Roswell	Associate Teaching Professor Emeritus	Writing Program
Sparke	Matthew	Professor	Politics
Spearot	Alan	Professor	Economics
Springer	Melanie	Associate Professor	Politics
Stamp	Shelley	Professor	Film and Digital Media
Steadmon	Weishi	Associate Professor	Economics
Stein-Rosen	Galia	Lecturer Continuing	Languages and Applied Linguistics
Stephens	Elizabeth	Professor	Art
Stinneford	Caitlin	Lecturer Continuing	Cowell College

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Stoddart	Patricia	Professor Emeritus	Education
Stoller	Nancy	Professor Emeritus	Community Studies
Stone	Abraham	Associate Professor	Philosophy
Stone	Michael	Professor	Chemistry and Biochemistry
Stone	Victoria	Professor	Microbiology and Environmental Toxicology
Storm	Benjamin	Professor	Psychology
Strome	Susan	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Stuart	Joshua	Professor	Biomolecular Engineering
Su	Norman	Associate Professor	Computational Media
Suckiel	Ellen	Professor Emeritus	Philosophy
Suh	Junecue	Professor	Mathematics
Sullivan	Elaine	Associate Professor	History
Sullivan	William	Professor	"Molecular, Cell, and Developmental Biology"
Sumarna	Undang	Teaching Professor Emeritus	Music
Sundara Raman	Ram	Assistant Professor	Computer Science and Engineering
Swanger	David	Professor Emeritus	Education
Sweet	David	Professor Emeritus	History
Swensen	Elizabeth	Associate Professor	"Performance, Play and Design"
Switkes	Eugene	Professor Emeritus	Chemistry and Biochemistry
Sylvan	Marshall	Associate Teaching Professor Emeritus	Mathematics
Syzranov	Sergey	Associate Professor	Physics

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Szasz	Andrew	Professor Emeritus	Environmental Studies
Taft	Jessica	Professor	Latin American and Latino Studies
Tait	Kira	Assistant Professor	Politics
Taiz	Lincoln	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Takagi	Dana	Professor Emeritus	Sociology
Tamanoi	Hirotaka	Professor	Mathematics
Tamkun	John	Professor	"Molecular, Cell, and Developmental Biology"
Tan	Paulo	Assistant Professor	Education
Tanner	Robert	Professor Emeritus	Computer Science and Engineering
Tantalo	Patrick	Lecturer Continuing	Computer Science and Engineering
Taylor	Jennifer	Professor	Film and Digital Media
Tellez	Kip	Professor Emeritus	Education
Telus	Myriam	Associate Professor	Earth & Planetary Sciences
Teodorescu	Mircea	Associate Professor	Electrical and Computer Engineering
Teodorescu	Mircea	Associate Professor	Biomolecular Engineering
Terdiman	Richard	Professor Emeritus	Literature
Terhaar	Terry	Senior Lecturer Continuing	Writing Program
Thangavelu	Kirtana	Lecturer Continuing	History of Art and Visual Culture
Thomas	Megan	Associate Professor	Politics
Thomas	David	Professor Emeritus	Politics
Thompson	Bruce	Lecturer Continuing	History

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Thompson	Bruce	Lecturer Continuing	Literature
Thompson	John	Professor Emeritus	Ecology and Evolutionary Biology
Thorne	Avril	Professor Emeritus	Psychology
Thorpe	Todd	Lecturer Continuing	Cowell College
Tobisch	Othmar	Professor Emeritus	Earth & Planetary Sciences
Tomba	Massimiliano	Professor	History of Consciousness
Toosarvandani	Maziar	Professor	Linguistics
Traugott	Mark	Professor Emeritus	History
Treadwell	Nina	Professor	Music
Tromba	Anthony	Professor	Mathematics
Tseng	Jennifer	Associate Professor	Literature
Tserenjigmid	Gerelt	Assistant Professor	Economics
Tsing	Anna	Professor	Anthropology
Tulaczyk	Slawomir	Professor	Earth & Planetary Sciences
Tuna	E. Hande	Assistant Professor	Philosophy
Turk-Kubo	Kendra	Assistant Professor	Ocean Sciences
Turner-Evans	Daniel	Assistant Professor	"Molecular, Cell, and Developmental Biology"
Ty	M.	Assistant Professor	Critical Race & Ethnic Studies
Tziavelis	Nikos	Assistant Professor	Computer Science and Engineering
Ulysse	Gina	Professor	Humanities Division
Urban	Michael	Professor Emeritus	Politics
V	Natasha	Lecturer Continuing	Film and Digital Media
Valdez	Kinan	Lecturer	"Performance, Play and Design"

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Continuing	
Vandercook	Hayley	Lecturer Continuing	Education
Varma	Anujan	Professor Emeritus	Computer Science and Engineering
Vaske	Olena	Associate Professor	"Molecular, Cell, and Developmental Biology"
Vazquez	Gustavo	Professor Emeritus	Film and Digital Media
Velasco	Jairo	Associate Professor	Physics
Venturi	Daniele	Professor	Applied Mathematics
Verma	Anjuli	Assistant Professor	Politics
Vesecky	John	Professor Emeritus	Electrical and Computer Engineering
Vidali	Amy	Associate Teaching Professor	Writing Program
Villacorta	Alonso	Assistant Professor	Economics
Vogler	Thomas	Professor Emeritus	Literature
Vogt	Steven	Professor Emeritus	Astronomy and Astrophysics
Vollmer	Susan	Lecturer Continuing	Music
Vollmers	Christopher	Professor	Biomolecular Engineering
Wagers	Matthew	Professor	Linguistics
Walker	Logan	Lecturer Continuing	Film and Digital Media
Walker	Rachel	Professor	Linguistics
Walker	Marilyn	Professor Emeritus	Computer Science and Engineering
Walker	Merle	Professor Emeritus	Astronomy and Astrophysics
Walsh	Carl	Professor Emeritus	Economics
Wang	Chenguang	Assistant	Computer Science and Engineering

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Professor	
Wang	Xiao	Assistant Professor	Chemistry and Biochemistry
Wang	Hongyun	Professor	Applied Mathematics
Wang	Su-hua	Professor	Psychology
Wang	Yiman	Professor	Film and Digital Media
Wang	Zhu	Professor	"Molecular, Cell, and Developmental Biology"
Wang	Howard	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Warburton	Edward	Professor	"Performance, Play and Design"
Ward	Jordan	Associate Professor	"Molecular, Cell, and Developmental Biology"
Wardrip-Fruin	Noah	Professor	Computational Media
Warmuth	Manfred	Professor Emeritus	Computer Science and Engineering
Warren	Michael	Professor Emeritus	Literature
Wasserstrom	Richard	Professor Emeritus	Philosophy
Waterhouse	Hannah	Assistant Professor	Environmental Studies
Watrous	Susan	Lecturer Continuing	Kresge College
Watts	Lewis	Professor Emeritus	Art
Wear	Rebecca	Assistant Professor	"Performance, Play and Design"
Weems	Marianne	Professor	"Performance, Play and Design"
Wei	Dong	Assistant Professor	Economics
Weiss	Peter	Lecturer Continuing	Chemistry and Biochemistry
Weissman	Martin	Professor	Mathematics
West	Jeremy	Associate Professor	Economics
West	Candace	Professor Emeritus	Sociology
Westerkamp	Marilyn	Professor	History

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Weygandt	Clara	Lecturer Continuing	Rachel Carson College
Whipple	Grant	Assistant Teaching Professor	Art
Whitehead	Emmet	Professor	Computational Media
Whittaker	Stephen	Professor Emeritus	Computational Media
Whitworth	Paul	Professor Emeritus	"Performance, Play and Design"
Wilkes	John	Teaching Professor Emeritus	Science Communication
Willey	Sheila	Lecturer Continuing	Music
Williams	Ethan	Assistant Professor	Earth & Planetary Sciences
Williams	Jamal	Assistant Professor	Psychology
Williams	James	Assistant Professor	Music
Williams	Quentin	Professor	Earth & Planetary Sciences
Williams	Terrie	Professor	Ecology and Evolutionary Biology
Williams	Donald	Teaching Professor	"Performance, Play and Design"
Williamson	Stanley	Professor Emeritus	Chemistry and Biochemistry
Wilmers	Christopher	Professor	Environmental Studies
Wilson	James	Associate Teaching Professor Emeritus	Writing Program
Wilson	Ronaldo	Professor	Literature
Wilson	Ronaldo	Professor	Critical Race & Ethnic Studies
Wilson	George	Professor Emeritus	Community Studies
Wilson	Margaret	Professor Emeritus	Psychology
Wilson	Robert	Professor Emeritus	Literature

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Wilson	Johnnie	Supervisor of Teacher Education Continuing	Education
Winant	William	Lecturer Continuing	Music
Winther	Rasmus	Professor	Humanities Division
Winton	Scott	Assistant Professor	Environmental Studies
Wipke	Will	Professor Emeritus	Chemistry and Biochemistry
Wirls	Daniel	Professor	Politics
Wittman	Donald	Professor Emeritus	Economics
Wolf	Alexander	Professor	Computer Science and Engineering
Wong	Tiffany	Lecturer Continuing	Writing Program
Woo	Deborah	Professor Emeritus	Community Studies
Woosley	Stanford	Professor Emeritus	Astronomy and Astrophysics
WouldGo	Tanner	Teaching Professor	Writing Program
Wu	Ting Ting	Lecturer Continuing	Languages and Applied Linguistics
Xie	Cihang	Assistant Professor	Computer Science and Engineering
Xu	Yuanchao	Assistant Professor	Computer Science and Engineering
Yager	David	Professor Emeritus	Art
Yamamoto	Naoko	Lecturer Continuing	Languages and Applied Linguistics
Yamashiro	Jeremy	Associate Professor	Psychology
Yamashita	Karen	Professor Emeritus	Literature
Yan	Aiming	Assistant Professor	Physics
Yang	Bo	Assistant	Environmental Studies

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
		Teaching Professor	
Yang	Chia-Lin	Lecturer Continuing	Music
Yang	Alice	Professor	History
Yang	Alice	Professor	Critical Race & Ethnic Studies
Yanik	Ahmet	Associate Professor	Electrical and Computer Engineering
Ye	Hao	Assistant Professor	Electrical and Computer Engineering
Yeh	Andy	Assistant Professor	Biomolecular Engineering
Yellin	Joel	Professor Emeritus	Physical & Biological Sciences Division
Yildiz	Fitnat	Professor	Microbiology and Environmental Toxicology
Young	Allan	Professor Emeritus	Physics
Young	Gary	Senior Lecturer Continuing	Literature
Young	Gary	Senior Lecturer Continuing	Cowell College
Yu	Zhicong	Assistant Professor	Electrical and Computer Engineering
Yue	Xiang	Assistant Professor	Computer Science and Engineering
Yue	Hao	Associate Teaching Professor	Computer Science and Engineering
Yukawa	Keiko	Lecturer Continuing	Languages and Applied Linguistics
Zachos	James	Professor Emeritus	Earth & Planetary Sciences
Zahler	Alan	Professor Emeritus	"Molecular, Cell, and Developmental Biology"
Zajac	Jack	Professor Emeritus	Art
Zaustinsky	Julia	Professor Emeritus	Music

LAST NAME	FIRST NAME	TITLE	DEPARTMENT
Zavaleta	Erika	Professor	Ecology and Evolutionary Biology
Zavella	Patricia	Professor Emeritus	Latin American and Latino Studies
Zehr	Jonathan	Professor Emeritus	Ocean Sciences
Zhang	Yu	Assistant Professor	Electrical and Computer Engineering
Zhang	Jin	Professor	Chemistry and Biochemistry
Zhang	Xi	Professor	Earth & Planetary Sciences
Zhang	Yi	Professor	Computer Science and Engineering
Zhao	Zoe	Assistant Professor	Sociology
Zhou	Yuyin	Assistant Professor	Computer Science and Engineering
Zihlman	Adrienne	Professor Emeritus	Anthropology
Zimmer	Zac	Associate Professor	Literature
Zucker	Ariel	Assistant Professor	Economics
Zuniga	Martha	Professor	"Molecular, Cell, and Developmental Biology"
Zuo	Yi	Professor	"Molecular, Cell, and Developmental Biology"
Zurbriggen	Eileen	Professor	Psychology
Zyzik	Eve	Professor	Languages and Applied Linguistics

2025-26 ADMINISTRATION

UNIVERSITY OF CALIFORNIA ADMINISTRATION

The governance of the university is entrusted, under the state constitution, to the Regents of the University of California. The Board of Regents is presently composed of 18 members who are appointed by the governor of California, subject to California State Senate confirmation; seven members who participate because of the offices they hold; and a student member appointed by the board.

The president of the university is the chief executive of the 10-campus system. He or she is appointed by the Regents and is directly responsible to them.
Each of the 10 campuses of the university has a chancellor, its chief administrative officer, who is responsible for the organization and operation of the campus, including academic, student, and business affairs.

The Academic Senate, consisting of the faculty and certain administrative officers, determines the conditions for admission and degrees, subject to the approval of the Regents; authorizes and supervises courses and curricula; and advises the university administration on important matters such as appointments and promotions, budgets, student discipline, and administration of the library.

THE REGENTS

Ex Officio Regents

Gavin C. Newsom, Governor of California
Eleni T. Kounalakis, Lieutenant Governor
Robert Rivas, Speaker of the Assembly
Tony K. Thurmond, Superintendent of Public Instruction
James B. Milliken, President of the University

Appointed Regents

(Term expires on March 1 of year indicated)
Maria Anguiano (Vice Chair) (2029)
Elaine Batchlor (2033)
Carmen Chu (2030)
Michael Cohen (2030)
Gareth Elliott (2025)
Howard "Peter" Guber (2029)
Jose M. Hernandez (2033)
Nancy Lee (2036)
Richard Leib (2026)
Hadi Makarechian (2032)
Ana Matosantos Oakley (2034)
Robert Myers (2034)
Lark Park (2029)
John A. Pérez (2024)
Janet Reilly (Chair) (2028)
Mark Robinson (2034)
Gregory Sarris (2026)
Jonathan Sures (2032)
Ann Wang (2026)

Student Regent

Sonya Brooks (2025-26) UCLA

Officers of the Regents

Gavin C. Newsom, President of the Board
Janet Reilly, Chair of the Board
Maria Anguiano, Vice Chair
Charles F. Robinson, General Counsel and Vice President, Legal Affairs
Tricia Lyall, Secretary and Chief of Staff
Jagdeep Singh Bachher, Vice President and Chief Investment Officer
Alexander Bustamante, Senior Vice President and Chief Compliance Officer

UNIVERSITY OFFICERS

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Executive Vice President—Chief Operating Officer
Rachael Nava

Provost and Executive Vice President—Academic Affairs
Katherine Newman

Executive Vice President—Chief Financial Officer
Nathan Brostrom

Executive Vice President—UC Health
David Rubin, M.D.

Senior Vice President—Ethics, Compliance, and Audit Services
Alexander Bustamonte

Interim Senior Vice President—External Relations and Communications
Meredith Turner

Vice President—General Counsel
Charles F. Robinson

Vice President—Agriculture and Natural Resources
Glenda Humiston

Vice President—Human Resources
Cheryl Lloyd

Vice President—Information Technology Services and Chief Information Officer
Van Williams

Vice President—Institutional Research and Academic Planning
Pamela Brown

Vice President—Investments and Chief Investment Officer
Jagdeep Singh Bachher

Vice President—National Laboratories
June Yu

Vice President—Research and Innovation
Theresa A. Maldonado

Vice President and Vice Provost—Graduate, Undergraduate and Equity Affairs
Yvette Gullatt

Vice Provost for Academic Personnel and Programs
Douglas M. Haynes

Associate Vice President—Federal Government Relations
Christopher Harrington

Associate Vice President and Director—State Government Relations
Kathleen Fullerton

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Richard K. Lyons

UC Davis
Gary May

UC Irvine
Howard Gillman

UCLA
Julio Frenk

UC Merced
Juan S. Muñoz

UC Riverside
S. Jack Hu

UC San Diego
Pradeep Khosla

UC San Francisco
Sam Hawgood

UC Santa Barbara
David Marshall

UC Santa Cruz
Cynthia Larive

Lawrence Berkeley National Laboratory
Michael Witherell

UC SANTA CRUZ ADMINISTRATION

Chancellor
Cynthia Larive

Interim Campus Provost and Executive Vice Chancellor
Paul Koch

Interim Associate Chancellor and Chief of Staff
Christina Armstrong

Chief Campus Counsel
Eréndira Rubin

Vice Chancellor for Information Technology
Aisha Jackson

Vice Chancellor for Finance, Operations, and Administration
Edward Reiskin

Vice Chancellor of the Office of Diversity, Equity, and Inclusion
Anju Reejhsinghani

Vice Chancellor, Student Affairs and Success
Akirah Bradley-Armstrong

Interim Vice Chancellor—Research
John MacMillan

Vice Chancellor for University Advancement
Mark Delos Reyes Davis

Vice Chancellor, Budget and Planning
Kimberly Register

Vice Chancellor, Information Technology
Aisha Jackson

Vice Chancellor, Finance, Operations and Administration
Edward D. Reiskin

Associate Vice Chancellor, Campus Controller
Biju Kamaleswaran

Vice Provost—Academic Affairs
Herbie Lee

Vice Provost and Dean—Graduate Studies
Peter Biehl

Vice Provost and Dean—Undergraduate Education and Global Engagement
Richard Hughey

Executive Director—Educational Partnerships & Chief Campus Outreach Officer
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University Librarian
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Celine Parrenas Shimizu

Dean of Social Sciences
Katharyne Mitchell

Dean of Engineering
Alexander Wolf

Dean of Physical and Biological Sciences
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Dean of Humanities
Jasmine Alinder

Dean of University Extension
P.K. Agarwal

Associate Vice Chancellor—Enrollment Management
Michelle Whittingham

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Grace McClintock

Assistant Vice Chancellor for Research Administration
Csilla M. Csaplar

Executive Director, Sponsored Project Administration
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Vacant

Director, Center for Coastal Climate Resilience
Mick Beck

Director, Research Development
Molly McCarthy

Assistant Vice Chancellor—Constituent and Donor Engagement
Meg Corman

Director, Government and Community Relations
Melissa Whatley

Associate Vice Chancellor—Colleges, Housing and Educational Services (CHES)
Dave Keller

Associate Vice Chancellor—Risk and Safety Services
Clement O. Stokes

Associate Vice Chancellor—Chief Human Resources Officer
Kamala Green

Senior Directors, College Student Life

Kathy Cooney, Porter and Kresge Colleges
Mari Ortiz-McGuire, Oakes and Rachel Carson Colleges
Sarah Woodside Bury, College Nine, John R. Lewis College, Cowell, and Stevenson Colleges
Alex Belisario, Crown and Merrill Colleges

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